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Loyola University Chicago

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AN INVESTIGATION OF NONVERBAL SOCIAL PERCEPTION IN LEARNING DISABLED ADOLESCENTS: ASSESSMENT AND TRAINING

by

Lee Axelrod

A Dissertation Submitted to the Faculty
of the Graduate School of
Loyola University of Chicago
in Partial Fulfillment
of the Requirements for the Degree of
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VITA

The author, Lee Axelrod, was born in Chicago, Illinois, on May 23, 1933. She has been married since 1952 and has two daughters.

She graduated from Senn High School, Chicago, Illinois, in June of 1950. She received the degree of Bachelor of Arts with honors, major in primary education, from Northeastern Illinois State College in December of 1968. In June of 1973 she received a Master of Arts in Learning Disabilities from Northwestern University, Evanston, Illinois.

She was a certified teacher in the Chicago Public Schools from 1968 to 1970 and has been a teacher of the learning disabled at Highland Park High School, Highland Park, Illinois, since 1973.

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CHAPTER I

INTRODUCTION

Authorities in the field of Learning Disabilities agree that, in addition to academic deficits, many children exhibit concomitant difficulties in the area of social interaction. Much of the inappropriate social behavior observed in younger learning disabled children is considered symptomatic (i.e. hyperactive, distractible, disinhibited behavior patterns). However, as the child improves in academic abilities, poor social skills become a focal concern of both teachers and parents. By the middle grades, the learning disabled child has been shown to be unpopular with peers (Bryan 1974, 1976, Scranton and Ryckman 1979, Siperstein, Bopp and Bak 1978) and easily identified as "different" by strangers (Bryan 1978). It has even been proposed that many children, who have been labeled as primarily having behavior problems, in reality have a learning disability in social perception (Wallbrown, Fremont, Nelson, Wilson and Fischer 1979).

With the onset of adolescence, the problems faced by the learning disabled child are compounded by the stresses peculiar to that period of development. The

inappropriate social behavior of learning disabled adolescents has been mentioned by several authors (Goodman and Mann 1976, Gordon 1969, 1970, Kronick 1976, Siegel 1975, Weiner 1970). Attempts to identify the traits which could indicate a deficiency in social knowledge have been made; these include gullibility (Siegel 1975), disinterest in the needs of others (Kronick 1976) and lack of understanding in personal relations (Weiner 1970). The move into the high school, made during this period, has been examined as to its effect on the child. Goodman and Mann (1976) feel that, because secondary schools are typically more flexible than elementary schools, the learning disabled adolescent can function there with some social success. However, Siegel (1975) postulates that the inappropriate social behavior of the elementary school child which could be considered "cute" becomes unappealing in high school and an unattractive personality can often be considered the child's greatest single handicap at this age.

If the social interaction difficulties of learning disabled adolescents stem from a deficit in social perception, what constitutes social perception ability? The concept of social perception has been discussed under many and varied titles (Rosenthal, Hall, DiMatteo, Rogers and Archer 1979, Walker and Foley 1973). Within the field

of Learning Disabilities, Johnson and Myklebust (1967) first described the socially misperceptive child as one with a deficiency in "the ability to immediately identify and recognize the meaning and significance of the behavior of others". Wender (1971) took a more global approach to social interactive difficulties and felt they should be considered a general symptom of learning disabled children caused by brain damage or biochemical abnormality. Bader (1975), after reviewing the literature relating to social perception in children with learning disabilities, concludes that it is the ability ". . . to read and understand verbal and nonverbal behavior in order to master and react to one's environment". This approach was expanded in Mischio's (1980) definition:

> Social perception requires making social judgments about the feelings of others by interpreting nonverbal cues, e.g., facial expression, body language, physical contact, or verbal cues, e.g., intonation, volume, and other vocal qualities, as well as the content of the verbally presented message. Adequate social perception enables the individual to review and analyze the demands of a social situation and then respond appropriately.

Mischio also acknowledges that there is a more restricted view, popular among researchers, with emphasis on nonverbal interpretation of cues. This perspective hypothesizes that some children with learning disabilities can have a deficit in the processing of the nonverbal cues involved in social interactions and that this is a primary cause of their social interactive problems (Bryan 1977, Johnson and

Myklebust 1976, Minskoff 1980, Myklebust 1975, Siegel 1975, Wallbrown, Fremont, Nelson, Wilson and Fischer 1979). It has been suggested that the tasks involved in reading, discriminating and integrating visual and auditory symbols, are the same processes involved in decoding nonverbal behavior (Bryan 1977, Emery 1975). Myklebust (1975), however, feels that nonverbal visual memory, storage not recall, is the specific processing disturbance involved and that auditory deficits are secondary.

The Statement of Problem

Learning disabled adolescents, deficient in social perception ability, should exhibit a specific inability to decode the nonverbal cues involved in social interactions. If this deficiency can be assessed by standardized tests, the learning disability specialist can then perhaps use the results to determine achievement levels and evaluate the effect of remedial programs. Esther H. Minskoff (1980) feels that the presently available tests have no predictive value and that assessment must be based on observation. However, the authors of both the Four Factor Tests of Social Intelligence (O'Sullivan and Guilford 1976) and The Pons Test (Rosenthal, Hall, DiMatteo, Rogers and Archer 1979) propose that their instruments can, in fact, measure this skill adequately.

Given the above, the following specific problems led to the formulation of the hypotheses that were tested in the present investigation:

(1) Can currently available standardized tests (The Four Factor Tests of Social Intelligence, The Pons Test) measure the social deficiencies of learning disabled adolescents?

(2) Are the learning disabled child's problems greater in elementary or secondary school? (Generally, the emphasis in remediation should be at the time of greatest need.)

(3) Do the Four Factor and Pons tests, despite different formats, measure the same construct and therefore can they be used interchangeably?

(4) Are the standardized tests (Four Factor and Pons) measuring the same construct as that which learning disability teachers observe and call social perception?

(5) Can nonverbal social perception be taught in a short term training program?

Definition of Terms

Nonverbal social perception is defined in two ways:

(1) social intelligence or the ability to (a) match facial expressions, hand gestures, and body postures that have similar meaning, (b) sequence nonverbal interaction

patterns and (c) predict nonverbal sequence (O'Sullivan and Guilford 1976)

(2) skill in decoding nonverbal communication or the ability to match a nonverbal facial, body or voice cue to its verbal equivalent (Rosenthal, Hall, DiMatteo, Rogers and Archer 1979).

The currently accepted definition of learning disabilities that was suggested by the National Advisory Committee on Handicapped Children of the U.S. Office of Education (Federal Register 1977) was used. The learning disabled child does not achieve commensurate with his or her age and ability levels in specified areas when provided with appropriate learning experience. A team finds a severe discrepancy between achievement and intellectual ability in one or more areas. These areas include oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematic calculation, and mathematic reasoning. The child does not have a specific learning disability if this discrepancy is primarily due to (1) visual, hearing, or motor handicap, (2) emotional disturbance, or (3) environmental, cultural or economic disadvantage.

CHAPTER II

REVIEW OF RELATED LITERATURE

Although the present investigation focused on the rather restricted meanings of social perception from both the fields of social intelligence and nonverbal communication, a wide array of studies do include this concept. Several general approaches (role-taking, empathy, social intelligence) based on theoretical models (Piaget, Gestalt, Structure-of-Intellect) seem to emerge and this review begins with a selective overview of the field of social perception. Because the present study is specifically concerned with the development of nonverbal social perception during adolescence, a controversial topic in this context, a special attempt is made to define social perception in this age child. In addition, research on the development of social perception skill with emphasis on the adolescent period is systematically presented. Since poorly developed social perception skill could make a major contribution to the social interactive problems of the learning disabled child, the few studies of learning disabled children which have dealt with assessment of social perception are discussed. Finally, if social perception is in fact a deficit of learning disabled children,

it should theoretically be remediable. Therefore the training programs which have been proposed to increase social skill in learning disabled children are also presented.

Approaches to the Study of Social Perception

Social perception, the ability to understand others, has been investigated under a variety of titles among which are role-taking, empathy, person perception, interpersonal perception, interpersonal sensitivity, social understanding, social judgment, social intelligence, and nonverbal communication. These designations usually imply slightly different orientations to research; Taft (1955) has outlined some commonly used methodologies (e.g. identifying emotional expressions in pictures, trait rating, personality descriptions, personality matching, and prediction of behavior).

Role-taking, an area of investigation which includes social perception, has been based on the cognitive developmental theories presented by Piaget (Feffer 1971, Flavell, Botkin, Fry, Wright and Jarvis 1968). The decentering from childish egocentric thought to making inferences about another's point of view (Piaget 1926) has led researchers into attempting to identify both the components which comprise decentering as a social skill and the relationship between it and other factors.

Flavell, Botkin, Fry, Wright and Jarvis (1968) hypothesize that a synthesis of the perceptual input from cues in the immediate situation and a general knowledge about the behavior of people is necessary for true role-taking.

Empathy, another well known area of study, also includes social perception in its domain. It has been defined as ". . . the imaginative transposing of oneself into the thinking, feeling and acting of another and so structuring the world as he does" (Dymond 1949). Using this definition, empathy can be viewed as contingent upon role-taking skills. However, a broader perspective of empathy has been presented by Feshback (1978). After reviewing the literature, the personality construct of empathy was found to include: (1) the cognitive ability to discriminate and label affective states in others, (2) the ability to assume the perspective of another and (3) emotional responsiveness. Empathy has been found to be a measurable trait which can be increased with training (Campbell, Kagan and Krathwohl 1971). It was then hypothesized that a person with a low score in empathy may be high in affective sensitivity but not be able to effectively use this aptitude or he may not be able to accurately perceive the affective states in others. It does appear that social comprehension is a necessary prerequisite for empathy (Feshback 1978) and, by extension, for role-taking.

Social perception, even as a contributing skill, is a complex subject; interactions between the judge, the stimulus person, the context, and the characteristics to be judged need to be considered in person perception (Tagiuri 1969) while awareness of others as a class or group can also be a factor (Bronfenbrenner, Harding and Gallway 1958). Reviewers conclude that the results of studies in perceiving others are confused because differing methodologies make comparisons of these factors difficult (Cline 1964, Tagiuri 1969, Taft 1955). The orientation to the study of how judgments of others are formed comes from classical Gestalt theory (Feffer 1971, Gollin 1958). However, the recognition of emotions has been referred to as an essential part of social perception (Bronfenbrenner, Harding and Gallway 1958) and person perception (Tagiuri 1969).

An attempt to isolate the decoding of nonverbal social cues as a unique processing skill, called social intelligence, has been made by J. P. Guilford (1967). He defined the cognitive operation on behavioral content as ". . . information, essentially nonverbal, involved in human interactions, where awareness of attention, perceptions, thoughts, desires, feelings, moods, emotions, intentions, and actions of other persons and of ourselves is important". This is a part of his structure-of-intellect model in which any intellectual factor is

classified by (1) operation: cognition, memory, divergent production, convergent production, evaluation, (2) content: semantic, symbolic, figural, behavioral, and (3) product: units, classes, relations, systems, transformations, implications. Within his category of behavioral cognition, a hierarchy in the product dimension infers that each skill is dependent on the mastery of the preceding one (Meeker 1969). Research has shown that social intelligence is distinct from abstract intelligence (Futterer 1973, Nightingale 1973, Tenopyr 1967). In spite of Guilford's work, an adequate operational definition of this factor has not been presented (Walker and Foley 1973).

Even in this more restricted subject of social comprehension or understanding others, there is difficulty in relating the title to the skill that is discussed. An example of why there are differing orientations to the same abilities comes from the areas of person perception and social intelligence. Walker and Foley (1973), in their paper on the history and measurement of social intelligence, list several reasons why these two fields have developed separately: (1) testing person perception has been more successful than testing social intelligence, (2) person perception researchers normally worked with group data while those in social intelligence had an individual difference orientation, (3) person perception

has become identified with social psychology while social intelligence researchers prefer psychometric techniques and a cognitive-developmental approach. These authors stress the differences in understanding another's behavior or decoding and acting wisely in social situations.

As research on the meaning of social perception was progressing, nonverbal communication has been developing into an independent field of study. Even here, as Harper, Weins, and Matarazzo (1978) discuss in the introduction to their rather thorough review of the literature, difficulties of definition arise: there is ". . . a lack of agreement on the boundary between verbal and nonverbal and the distinction between communicative or noncommunicative behavior". If nonverbal communication can be broadly defined as the exchange of information through nonlinguistic signs, then the four major areas of (1) human sounds, (2) human face, (3) hands and body, (4) time, space and object (Harrison 1974) would appear to comprise the components which can be subdivided in a number of ways. Harper, Weins and Matarazzo (1978) reviewed six major areas of research: (1) paralanguage, (2) silence, (3) facial expression, (4) visual behavior, (5) kinesics, and (6) proxemics. Other authors have omitted silence as a category but included appearance, particularly physical characteristics and artifacts (Argyle 1975, Knapp 1972). Not only must children learn

all these areas of the nonverbal code for their particular culture, they must discriminate the ways it interacts with verbal behavior: (1) repeating, (2) contradicting, (3) substituting, (4) complementing, (5) accenting, (6) relating and regulating (Knapp 1972). Research in this area has been classified into two general approaches: structural (an attempt to fit nonverbal communication into a framework similar to that of verbal communication) and external variable (looking for the relationship between other variables and nonverbal behavior) (Duncan 1969). Within the external variable approach, encoding and decoding of nonverbal cues can be treated as distinct abilities; decoding corresponds to perception. Rosenthal, Hall, DiMatteo, Rogers and Archer (1979) have attempted to add a third approach, that of examining individual differences in nonverbal decoding skill in their book which presents The Pons Test. The important role research in nonverbal communication plays in developing the understanding of the communication of emotional meaning has been mentioned (Davitz 1964).

To summarize, social perception can be viewed as an integral part of empathy and role-taking behavior or as a unique area of investigation which itself has a variety of supporting skills (e.g. interpreting facial expressions, body language, paralanguage). It would seem that recognizing emotions in others through interpreting

nonverbal cues is basic to this process. But just how the subject is treated seems to depend on the frame of reference of the researcher (i.e. social psychology, cognitive-developmental). Because varied approaches lead to disparate methodologies, results have proved difficult to compare. The focus on individual differences in nonverbal communication, now a growing area of interest, could possibly provide a much needed structure for combining social psychology and cognitive-developmental studies which would enhance future research.

Development in Normal Subjects

The instruments used in the present study have been investigated with respect to the development of social skills in children. Shanley, Walker and Foley (1971) administered the Six Factor Tests of Social Intelligence to three hundred children. This is the same test that was later shortened to the Four Factor Tests (O'Sullivan and Guilford 1976). Significant differences between subjects in each of grades six, nine and twelve demonstrated a true developmental progression in this social skill. The Pons Test, too, has revealed an increase in the skill used to decode the nonverbal behavior of others with age. DePaulo and Rosenthal (1979) performed a factor analysis on the eleven situations each of which occurs twenty times within The Pons Test. The results supported their contention that,

in younger children, the abilities to decode different types of situations would be strongly related to each other and that the percent of variance attributable to the first factor in the analysis would lessen as the child grows. Development proceeded from a state of relative globality to differentiation in the sample which spanned third grade to the adult level.

The exact ages at which the various components of nonverbal social perception develop in children, however, appears to depend not only on the methodology but on the definition used by the researcher. For example, Borke (1971) in attempting to identify the age at which empathic responses develop in children found evidence that children as young as three years of age can differentiate between happy and unhappy feelings in other people. This finding was criticized by Chandler and Greenspan (1972) on the basis of the definition of empathy used. With the criteria that true empathy is the ability to adopt a point of view that is measurably different from one's own, they had children tell stories from others' perspectives as well as anticiapting the emotional reaction of the main character. This skill did not emerge until late childhood, age twelve or thirteen. Feffer and Gourevitch (1960) also examined children's stories told from the differing viewpoints of characters in a scene. They termed this role-taking, defined as taking another's

point of view. There were increases in ability up to ages ten-eleven but no further skill was shown in the twelve-thirteen year group. In a later paper Feffer (1971) described three main patterns in the development of role-taking. At age six there is discontinuity between versions of a story told from different viewpoints which he calls uncorrected decentering. By age seven or eight the child has a limited fluctuating form of coordination between perspectives and by nine years of age he can synthesize different perspectives.

An early study by Gates (1923) investigated the development of social perception by asking subjects to identify the basic emotion depicted on each of six photographs. Recognition developed at different rates for the different emotions but, in general, the children met adult standards by age fourteen. However, when Walton (1936) used twenty of the same type of pictures with adolescents, significant yearly increases were found in a thirteen to sixteen year old group. Other researchers have used motion pictures to evaluate children's impressions of others. Flapan (1968) found that girls aged six, nine and twelve progressed from literal descriptions to inferring the psychological state of the person observed in an interaction. When the person observed in the film behaves in diverse ways, Gollin (1958) found that most children could make inferences about the motives

behind the behavior by age thirteen but could not form a concept to account for it until age sixteen. There also appears to be a progressive increase in the ability to identify the emotional meaning of vocal expressions. An increase in sensitivity was found to age twelve (Dimitrovsky 1964) and continued growth through early adolescence has been suggested (Davitz 1964).

Shantz (1975), in a classic review paper, traced the development of social understanding in children. The child prior to age five has only a simple understanding of other people's thoughts and feelings but between the ages of five and seven he does begin to make inferences about others and can characterize them in a global manner. By middle childhood he realizes that others evaluate his thoughts, feelings and intentions and now he hypothesizes about others' inner experiences and the social relations between people. He can infer the feelings of others in unfamiliar situations. The early and middle adolescent, the focus of this study, is then described.

> The perspective of the adolescent extends further to include himself, the other person, the inner experiences of each, and the relation between himself and the other as a third-part observer might understand it. In social episodes, the adolescent is much more oriented toward and accurate in making inferences about the thoughts, intentions, and feelings of each participant in the episode. Particularly, there is a spontaneous tendency to try to explain such thoughts and feelings, not merely to describe them. Likewise, the descriptions of others show much greater subtlety and refinement in the use of traits, the recognition

> of contradictory tendencies without an individual, and relating situational factors to another's behavior. The refinement, breadth, and depth of understanding others does not have, of course, an "end point".

This difference between younger children and those over thirteen years has been called qualitative rather than quantitative (Flapan 1968, Livesley and Bromley 1973). In their study of person perception, Livesley and Bromley (1973) asked subjects to describe in detail someone they disliked. When the content of these descriptions were analyzed, older children not only increased but shifted the range of ideas and qualities assigned to other people. By adolescence, the child was aware that behavior is a function of a total situation, he could integrate and organize information about others in a selective, coherent manner.

In reviewing the above developmental studies, there seems to be no question that social skill does increase with age. However, specific ages of accomplishment vary with the approach and methodology used by the researcher. Whether increments in skill during adolescence are simply increases in precision or constitute a leap to a qualitatively different stage is a moot question at this point. A logical supposition would be that, because this age group is where the transition to Piaget's stage of formal operations occurs, there would be carry-over to operations on nonverbal social perception.

Assessment of Social Perception in Learning Disabled Children

Budreck (1975) examined social perception of learning disabled students in grades three through six. Ratings of interpretive responses to selected cards from the Michigan Picture Test and teacher's evaluations on the Pupil Rating Scale were used to measure social perception ability. Although a small sample (sixteen learning disabled and sixteen normal students from small rural elementary schools) was used, the results revealed that normal children scored significantly higher on the measures than did learning disabled children.

Goldman (1980) also investigated differences in social perception between learning disabled and normal children ages nine to eleven. However, in this study social perception was defined in terms of processes (personality), self-concept, locus of control and nonverbal information (field dependence-independence). The standardized tests used were (1) the Socialization Scale of the California Psychological Inventory, (2) Piers-Harris Children's Self-Concept Scale, (3) Children's Nowicki-Strickland Internal-External Control Scale and (4) Children's Embedded Figures Test. The results indicated that the learning disabled group differed significantly on each of the four measures; the variable of sex was not significant and there was no interaction.

A somewhat different approach to the evaluation of social perception in learning disabled seven to twelve year olds was used by Emery (1975). Cartoon films of faces depicting emotional states (angry, happy, sad, neutral) both in isolation and interaction with each other in various motion patterns (approach, chase, bump, withdraw) were shown to both learning disabled and normal children. The results of the study showed learning disabled children were less accurate in identification of facial expressions and in making friendly/unfriendly judgments of social interactions than normal children. Both skills showed a developmental increase and the patterns suggested that, during the preadolescent period, the learning disabled children begin to fall even further behind the normals in accuracy of judging social interactions.

The Children's Pons Test, then the forty video face and body items plus the forty audio randomized spliced and content-filtered items from the original Pons Test together with low vocabulary answer sheets, was used by Tanis Bryan (1977) prior to the publication of the test for distribution. She administered this test to twenty-three learning disabled and eleven normal children in grades three, four, and five, reading alternative responses to both groups. The estimated equivalent reliability at the 220-item length of the published Face

and Body Pons and the Child Sender Audio Pons was reported to be .66 (Rosenthal, Hall, DiMatteo, Rogers and Archer 1979). The results of Bryan's study showed that the learning disabled children obtained lower mean accuracy scores on this instrument in both audio and visual channels than did normal children; there were no differences for race of subject and there was no interaction. The hypothesis that the difficulty in understanding nonverbal communication may be one of the specific aspects of the social interaction problems experienced by learning disabled children is presented in the discussion of this study.

A well known study using learning disabled adolescents as subjects was conducted by Wiig and Harris (1974). Both learning disabled and normal adolescents watched videotaped nonverbal expressions of anger, embarrassment, fear, frustration, joy and love and then were asked to match verbal labels to the expressions of emotion. The subjects were from grades nine through eleven in an upper middle class, suburban public school. Learning disabled adolescents misinterpreted the emotions significantly more than achieving controls. They further found that the scores correlated positively with Block Design and Object Assembly subtests of the Wechsler Intelligence Scale for Children or the Wechsler Adult Intelligence Scale and scores on the Design subtest of

the Detroit Tests of Learning Aptitude. This contrasts to Johnson and Myklebust's (1967) contention that the Picture Arrangement subtest of the Wechsler is associated with social perception. The Wiig and Harris study concluded that ". . . reductions in affective sensitivity in learning disabled adolescents relate to reduced visual-motor organization and to the assessment or recognition of kinesic patterns."

Summarizing, all studies found learning disabled children lower in nonverbal social perception than normal peers. The children in these studies ranged in grade level from second to eleventh grade. The varied methods included interpretation of emotions from still pictures and from films of both cartoons and posed humans. Standardized tests designed to assess nonverbal communication decoding and other skills proposed to be allied to social perception were also used. Overall, sex and race were not found to be factors in nonverbal social perception skill in learning disabled children. However, social perception ability is developmental and related to visual-motor organization ability.

Social Perception Training Programs for Learning Disabled Children

In her book Social Perception and Learning Disabilities, Bader (1975) reports on a questionnaire sent to professionals and parents active in the field of

learning disabilities. One question asked for materials or techniques that would be adaptable to social perception training for children with learning disabilities. Although a varied list of suggestions was presented, the responses seemed to focus on general programs designed to promote interpersonal competence and emotional development. In particular, the Developing Understanding of Self and Others (DUSO), appropriate for kindergarten through grade four children, was recommended. (See Appendix C.)

Mischio (1980) listed both informal techniques and ten formal programs adaptable for use in training social perception in learning disabled children. He presented a conceptual framework for the development of instructional strategies which included the dimensions of (1) self perception, (2) social learning, (3) social judgment and (4) verbal and nonverbal communication. The programs were listed by dimension and by grade level. Most programs were aimed at primary and intermediate grades and the only formal program appropriate for high school level that included nonverbal communication skill development was the Social Perception Curriculum of Edmonson, DeJung and Leland (1965). Their ten week curriculum was developed for high school age educable mentally retarded children. There are five units which begin with commonly used broad gestures and move to the signal properties of settings. The students also view

simulations of behavior appropriate to various participant roles and role play in school setting situations. Included too is a unit on nonverbal communication relating gestures, facial expressions and postures to attitudes, feelings and goals. The techniques list activities as movies, games, field trips, written exercises and tests.

At least two programs designed specifically to increase social perception ability in learning disabled children have been developed. They are based on analyses of social skills and presented without objective evaluations of pupil gains derived from their administration. Ferguson and Silberberg (1979) described a remedial program in social skills they had used with special adolescents. Students made videotapes of each other and used the feedback to evaluate their behavior in both natural and role playing situations. Minskoff (1980, 1980) described a teaching approach for developing skills in learning disabled students with social perception deficits. The teaching activities outlined are based on the precepts from the field of nonverbal communication and utilized a training approach consistent with learning disability methodology. She states that the effective use of nonverbal communication is the factor most cited as a cause of social perception disability and that a program such as this can develop social competence. A fuller description of this program is given in Chapter III.

A study that did attempt to evaluate the effects of social skill training was done by Wiener (1978). The subjects were a group of thirty-three moderately to severely learning disabled children aged eight to twelve at a special summer camp. The training was a fixed part of the camp experience and incorporated interpersonal relationship skill development and counselling of appropriate social behaviors into the academic and group activities. Several hypotheses were tested but it was found that the ecological intervention of the camp experience did have a positive effect on the interpersonal cognitive problem solving skills and classroom behavior of the campers. The measurement of gains in interpersonal cognitive problem solving was accomplished with tests which tell the child the story of a situation and have him supply an appropriate solution; behavior was assessed by the classroom teacher. Although no control group was used, a pretest-posttest follow-up design indicated changes in behavior of such magnitude that the assumption of camp experience based gains was plausible.

In sum, authors have presented various programs designed for mentally retarded and for normal children in social skill development that could be adapted for the learning disabled. Specifically, one program using videotaping techniques and one based on teaching nonverbal

communication skills were proposed as helpful in building social competence in learning disabled children. An attempt to discover if gains actually can be made in this area indicated that learning disabled children did improve after a summer camp remedial program designed, in part, to raise social skill level.

Recapitulation

In attempting to review the literature on social perception, the reviewer is faced with many areas of investigation which include this concept. The broader fields of empathy and role-taking are concerned with "putting oneself in another's shoes" or transposing into another's feelings and thinking (Dymond 1949, Feshbach 1978, Flavell, Botkin, Fry, Wright and Jarvis 1968). Being able to discriminate what the other person is feeling or thinking is certainly a prerequisite skill. Even this skill can be complicated when one considers the context, the people involved and what feelings or thoughts are part of the process (Tagiuri 1969). Most of the information received about another's thoughts and feelings is nonverbal (Davitz 1964). Social Intelligence, when contemplated as part of the Structure-of-Intellect model (Guilford 1967), is essentially nonverbal social perception. However, even further delimitation of this topic is included in the field of nonverbal

communication. This field attempts to identify the exact cues processed when we perceive and make inferences about others (Argyle 1975, Harrison 1974, Knapp 1972). To further complicate any attempt at an overview of the literature, various methodologies have been employed in studies (Taft 1955). It seems that the circumstances of the experimenter's background dictates the methods used to study social perception and comparison of results across studies is often difficult if not impossible (Walker and Foley 1973).

Development of social perception, too, has been approached from varying vantage points and has used indigenous methodology (Shantz 1975). The development of skill during the adolescent period is particularly difficult to describe. Some researchers believe there is continued development of social perception skills throughout adolescence (Gollin 1958, Walton 1936) while others conclude that the adult level is reached early in the teen-age years (Feffer and Gourevitch 1960, Gates 1923). There is also a question of the progression of development in social perception. Some authors believe it is a gradually accumulating skill (DePaulo and Rosenthal 1979, Gollin 1958, Shantz 1975) while others feel there are plateaus analogous to Piaget's cognitive developmental states (Chandler and Greenspan 1972, Feffer 1971, Flapan 1968, Livesley and Bromley 1973).

Although much has been written about the social interactive problems of learning disabled children, few studies have attempted to relate this to a deficit in social perception. In the studies that have been reported, learning disabled children do consistently score lower than normal peers (Bryan 1977, Budreck 1975, Emery 1975, Goldman 1980, Wiig and Harris 1974). Again, a variety of methodologies have been used to assess social perception. There seems to be disagreement about what, if any, factors are related to social perception skill. Certainly, visual perception is a constituent process. However, if Guilford's Structure-of-Intellect model is accepted, social perception is a unique component of general intelligence.

After endeavoring to define social perception, to trace its development, and to ascertain if this is, indeed, a skill deficit in learning disabled children, attention turns to possible training programs. Social perception training programs for learning disabled children have been proposed (Ferguson and Silverberg 1979, Minskoff 1980, 1980) and an overall evaluation of training suggests that it can be effective in raising the social skill level of learning disabled children (Wiener 1978).

CHAPTER III

METHOD

Investigation One

Hypotheses to be Tested: The questions investigated in this part of the study were: (1) Is there any difference in nonverbal social perception, as measured by standardized tests, between learning disabled and normal adolescents? (2) Does passing from junior high school to senior high school make a difference in nonverbal social perception ability? (3) Do pencil-and-paper instruments measure nonverbal social perception in the same way as a filmed instrument will in learning disabled adolescents? (4) Do teachers of learning disabled adolescents assess social perception the same way as standardized instruments do? To answer these questions the following null hypotheses were tested:

Hypothesis 1: There is no significant difference between the nonverbal social perception test socres of the learning disabled and normal adolescents (Nonverbal social perception was assessed by The Four Factor Tests of Social Intelligence and The Pons Test).

Hypothesis 2: There is no significant difference between the nonverbal social perception test socres of

learning disabled and normal adolescents in the junior high school and the senior high school samples.

Hypothesis 3: There is no significant relationship between the paper-and-pencil instrument (The Four Factor Tests of Social Intelligence) and the filmed instrument (The Pons Test) in the assessment of nonverbal social perception in learning disabled adolescents.

Hypothesis 4: There is no significant relationship between teacher's ratings of learning disabled adolescents and the student's nonverbal social perception test scores.

Description of the Research Setting: The six schools from which the subjects were drawn included three junior high schools, grades six through eight, and three senior high schools, grades nine through twelve. All schools were in high socio-economic communities (U.S. Department of Housing and Urban Development 1978) serving the Chicago, Illinois, north suburban area. The junior high schools have average enrollments of about 400 students while the senior high schools contain approximately 1500 students each. Two of the senior high schools comprise the school district with which the investigator is affiliated; the junior high schools feed into one of these high schools. It was found that the sample of all learning disabled students enrolled in

programs in these schools was unbalanced (i.e. there were more junior high school students). So another high school in a comparable community was added to the sample. This study was conducted during February, March and April of 1980.

Subjects: The subjects for this study included 54 learning disabled and 93 normal children in grades eight and nine. There were 12 girls and 16 boys in the junior high school learning disabled group, 26 girls and 24 boys in the junior high school control group, 8 girls and 18 boys in the high school learning disabled group, 22 girls and 21 boys in the high school control group. The composition of the matched groups is presented in Chapter IV. The learning disabled students were so identified by the school and were receiving service from a learning disability specialist on a regular basis. The sample of learning disabled students included all students in the appropriate grade seen by the learning disability specialist on any one day of the week. The normal students were from a class chosen by the school administrator. The class was either a study hall or an activity period so that testing would not impinge on instructional time. In three schools learning disabled children were a part of the normal study hall and were either excused from the testing if they had already

participated or included in the results of the learning disability group if they had not.

Instrumentation: The Four Factor Tests of Social Intelligence were designed to be ". . . measures of the ability to cognize or understand the thoughts, feelings and intentions of other people as these are expressed in behavior and in so far as these are communicated by static materials such as cartoons, drawings, photographs, and similar materials" (O'Sullivan and Guilford 1976). There are four pencil-and-paper subtests; one of these, Social Translations, was not used in the present study since it involved reading groups of verbal statements and was considered unfair to the learning disabled students. The remaining three subtests are Cartoon Predictions (Cognition of Behavioral Implications), Missing Cartoons (Cognition of Behavioral Systems), and Expression Grouping (Cognition of Behavioral Classes). In Cartoon Predictions the subject's task is to choose one of three alternative cartoons which depict what is most likely to follow a cartoon sequence of an interpersonal situation. The Missing Cartoon Subtest involves choosing one of four alternative cartoons that best fills a blank in an otherwise complete cartoon panel; each panel consists of two or more individuals interacting within a situation. In Expression Grouping the

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subject is asked to choose one of four alternative drawings of facial expression, hand gesture, or body posture that shows the same feeling as a given group of expressions. Internal consistency reliability for the normative tenth grade sample ranged from .61 to .85. The corrected for guessing score for the test counts the number of right responses plus 1/k times the number of items left blank, k being the number of alternative answers. Cartoon Predictions has 30 items and requires 12 minutes for instructions and test, Missing Cartoons 28 items and 20 minutes, and Expression Grouping 30 items and 14 minutes.

The second measure used was the Pons Test, a standardized measure of individual accuracy in the decoding of nonverbal cues (Rosenthal, Hall, Archer, DiMatteo, and Rogers 1979). The test is a 220 item presentation of two-second film clips of three visual channels (face, body, and face-plus-body) and two voice-tone channels (scrambled speech and electronically filtered speech). Twenty scenarios portrayed by a young woman comprise the content of these clips; the task consists of viewing or listening to each clip and choosing the correct written description of the scenario from two response alternatives, one of which is correct. There are five pure channels (1) face alone, no voice; (2) body from neck to knees, no voice; (3) face and body

down to thighs, no voice; (4) electronically content-filtered voice, no picture; and (5) randomized spliced voice, no picture. In addition the mixed channels include (6) face plus randomized spliced voice; (7) face plus electronically filtered voice; (8) body plus randomized spliced voice; (9) body plus electronically filtered voice; (10) figure plus randomized spliced voice; and (11) figure plus electronically filtered voice. Internal consistency reliability was reported at .86 and test-retest reliability at .69. Females have consistently scored higher than males on the total test. A male sender audio Pons was compared to the female sender test and the results indicated that the sender's sex did not effect the magnitude of the female's advantage at decoding (Rosenthal, Hall, DiMatteo, Rogers and Archer 1979). The film runs for approximately 45 minutes.

Observational Ratings: Informal teacher ratings were obtained from all learning disability teachers involved in the study. The teachers simply were given a list of their students and asked to rate them in social perception skill using number 1 for the most socially perceptive child. For example, if on a list of ten students, the teacher felt that Mary was the most adept in social perception she was assigned the number 1. If

John was considered the next most socially perceptive, he was assigned the number 2. This procedure was followed for all students who the teacher had observed interacting with others.

These ratings were gathered to provide information on which, if any, of the subtests of the standardized tests used in the study (i.e. The Four Factor Tests, The Pons Test) assessed each of the skills that teachers normally observe in their students and call social perception. It should follow that, if learning disabled adolescents were deficient in social perception skill, those most deficient would exhibit behavior that would confirm their low ability level.

Procedure: Prior to the testing, letters of consent were sent to the parents of all students involved in the study. (See Appendix A.) The parents were provided with the child's test results on the Four Factors Test and The Pons Test if they called for clarification of the letter; out of 147 letters sent, 4 parents called and were subsequently called back and given their child's Pons profile and standing relative to their group. No parents objected to their child's score being used in the research data.

Each group was tested during the same class period at one week intervals. During one class period

The Pons Test was administered and during the other the three subtests of The Four Factor Tests of Social Intelligence were administered and a short explanation of the research study was given. It is important to point out that the order of administration was altered so that half of the sample first completed the Four Factor Tests while the other half first completed The Pons Test. The order of presentation of the subtests of The Four Factor Tests was (1) Cartoon Predictions, (2) Missing Cartoons and (3) Expression Grouping. O'Sullivan and Guilford (1976) state in the test manual that the order of subtest administration may be varied however it may be desirable to give easier tests as Cartoon Predictions first. Two exceptions to the one class period presentation of The Pons Test were made: the film broke in the middle of a high school control class presentation and one high school learning disability class became unusually restless during the presentation. In these cases an additional class period the following week was utilized. All testing was done by one investigator.

To prevent spurious results due primarily to differences in reading ability, the two written choices for each scenario of The Pons Test were read to the learning disabled group as they were marking their answer sheet. To control for vocabulary development, the twelve phrases that have been lowered in vocabulary level on the

Children's Pons Test (grades three through six) were defined after reading the possible answers to the students. Appendix B lists these changes. The first ten items on The Pons Test were similarly read and defined for the control groups. The same instructions for The Pons Test (see Appendix B) were given to both groups.

The instructions on each subtest booklet of The Four Factor Tests were read to all students. No answer sheets were used; students were instructed to make an X on their answer directly in the test booklet. As some learning disabled students have difficulty with spatial arrangement in machine-scored answer sheets, this was considered a simplification of the task.

Treatment of Data: For Hypothesis 1 (there is no significant difference between the nonverbal social perception test scores of the learning disabled and normal adolescents) and Hypothesis 2 (there is no significant difference between the nonverbal social perception test scores of learning disabled and normal adolescents in the junior high school and the senior high school samples), a repeated measures randomized block factorial design was used. A 2x2 analysis of variance partitioning grade level (junior high school/senior high school) and class placement (learning disabled/normal) was performed on the data obtained from the three subtests of the Four Factor Tests

of Social Intelligence and the eleven channel categories of The Pons Test. This was done on groups matched for sex and on the total sample obtained.

For Hypothesis 3 (there is no significant relationship between the paper-and-pencil instrument and the filmed instrument in the assessment of nonverbal social perception of learning disabled adolescents), Pearson product-moment correlations were calculated for each of the three subtests of The Four Factor Tests with each channel category and the total Pons Test. Significance tests were performed for each coefficient; these were derived from the use of Student's t with N-2 degrees of freedom for the computed quantity. This was done for all the learning disabled students included in the sample.

For Hypothesis 4 (there is no significant relationship between teacher's ratings of learning disabled adolescents and the student's nonverbal social perception test scores), Spearman rank-order correlation coefficients were computed for the learning disability teacher's rating of his or her students with the student's ranking in his school class on each subtest of the Four Factor Tests and on the total Pons Test score. Again, significance tests were derived from the use of Student's t with N-2 degree of freedom.

Investigation Two

Hypothesis to be Tested: If learning disabled adolescents are deficient in nonverbal social perception skill as indicated in Investigation One, the question then raised is whether this skill level can be improved. Rosenthal, Hall, DiMatteo, Rogers and Archer (1979) reported that a ninety minute training program with professional adults (N=41) was only moderately successful when measured by retesting on The Pons Test; however, a similar sensitivity to nonverbal communication workshop for teachers (N=60) did show positive results. Tagiuri (1969) in a review of the literature on person perception discusses the findings on training subjects to improve their recognition of emotions. Although early studies conflict, it was shown that the worst judges improved the most, the best improved the least. These studies have used normal subjects and it would seem that the learning disabled population would be even more amenable to amelioration. So the following null hypothesis was formulated and tested:

Hypothesis: There is no significant difference between the learning disabled adolescent's skill in decoding nonverbal social behavior before and after training.

Subject Selection: Four learning disabled freshmen attending one senior high school were selected; the major criterion for selection was a free period at the same time each afternoon. The students were then asked if they would be interested in attending the social perception skill development class. Three students, one girl and two boys, consented and one boy refused. A letter was then sent to the parents of these three students asking for permission for their child to attend the class and for access to the child's school records. The form of the consent letter is found in Appendix A. All three parents signed and returned the letter. The three subjects were assigned the coded names of Betty, Nick, and Charles.

Description of the Three Case Study Subjects: Information about the subject's history, psychological test results and current school status was taken from their files in the Special Education Department office. Additionally, the results of the social perception tests given to these students in Investigation One were extracted from the data.

Case Study Subject Number One (Betty) was age 15 years and 10 months at the time of Investigation Two. Her family came to the United States from Italy after she had completed second grade in elementary school. The

emphasis in her educational planning here was on the acquisition of English as a second language until seventh grade when learning problems were noted. At that time weaknesses in auditory discrimination /b/d/p/, visual and auditory memory, and written expression were made the focus of remediation.

A bilingual psychological examination was given to Betty in grade 7, age 13-11. The Wechsler Intelligence Scale for Children yielded a Verbal Scale IQ of 76, Performance Scale IQ of 80, and a Full Scale IQ of 76. Although the subtest scores were not reported, scatter was noted by the examiner. "A high score on the Similarities subtest of the Verbal Scale is indicative of a comparatively well-developed capacity for ideational synthesis, and on the Coding subtest of the Performance Scale, of facility in immediate recall and recognition." In addition, the Beery-Buktenica Test of Visual Motor Integration C.A. score was 13-11, VMI Index of 8-8. The Wepman Auditory Discrimination Test revealed 2 errors and the Peabody Picture Vocabulary Test score was reported as I.Q. 83. The Wide Range Achievement Test, Level II, Reading subtest score was grade 6.5, Spelling subtest score was 4.6, and Arithmetic subtest score was grade 2.9.

At the time of the present study Betty's grade levels of performance are: word pronunciation 6.9, reading comprehension 5.5, listening comprehension 3.8,

spelling 4.3 and math 3.4. She sees the learning disability teacher three times a week and works on remedial exercises in written expression. Her English class is with the bilingual education teacher on an individualized basis. Her other high school classes include Essential Mathematics, Typing, Home Economics, and Physical Education.

Betty's profile of nonverbal sensitivity (Pons) indicated average or above average ability in decoding all visual and mixed visual-auditory channels. The auditory-only input, both distortions in sequence and tone, was considered significantly lower indicating problems in the decoding of paralanguage. Her total Pons score was 168 (z= +1.49) in the matched learning disabled group in both the junior and senior high schools. On the three subtests of The Four Factor Tests of Social Intelligence, Betty's scores were average for her group. Her score on Cartoon Predictions was 18 (z= -.05), Missing Cartoons 10 (z= -.33), and Expression Grouping 13 (z= +.12). These tests have no auditory decoding component.

Case Study Subject Number Two (Nick) was 15 years and 6 months of age. A neurological examination at age thirteen reported no evidence of dysfunction other than difficulty in fine motor control; normal gestation, delivery and early motoric milestones were described.

However, Nick has had many problems in school systematically documented since kindergarten. In kindergarten he had difficulties following directions and exhibited a lack of self control of movement. In the primary grades he was described as a student showing immature behavior and low academic skills. Nick has been receiving learning disability services since first grade; his school program has been individualized since fourth grade. He has been taking Ritalin since age nine and it is felt there still is a therapeutic effect from medication. Overall his low academic achievement has been ascribed to severe difficulty in the areas of short-term visual and auditory memory, visual-motor integration, and attention span.

A psychological examination was completed when Nick was in grade 7, age 13-2. The Wechsler Intelligence Scale for Children - Revised yielded a Verbal Scale IQ of 88, a Performance Scale IQ of 121 and a Full Scale IQ of 103. The Verbal Test Scaled Scores were: Information 6, Similarities 10, Arithmetic 4, Vocabulary 10, Comprehension 11, Digit Span 6. The Performance Test Scaled Scores were: Picture Completion 18, Picture Arrangement 15, Block Design 12, Object Assembly 13, Coding 7. The results of the Peabody Picture Vocabulary Test, Form A, were M.A. 16-11, I.Q. 118. The Developmental Test of Visual-Motor Integration yielded a VMI age equivalent of 6-10 and there was 1 error reported on the Wepman Auditory

Discrimination Test. The results of the Wide Range Achievement Test were reported as: Reading subtest grade score 3.9, Spelling subtest grade score 2.6, Arithmetic subtest grade score 3.2. Lastly, the Peabody Individual Achievement Test yielded a Mathematics subtest grade score of 3.7, a Reading Recognition subtest grade score of 4.1 and a Reading Comprehension subtest grade score of 3.9. In summary, the school psychologist noted Nick's below grade level achievement and deficits in memory and concentration. Inconsistencies in visual-motor and visual memory tasks indicated problems in this area are of a highly specific nature.

Nick is currently described as having a severe learning disability with performance at least two years below grade level. He is characterized as easily distracted and having a short attention span. It is felt his inconsistent academic performance requires a structured setting with definite limits and expectations. He spends one period daily with the learning disability specialist working on remedial language arts material. In addition, his mathematics and science classes are taught within the Special Education Department. His Art and Physical Education classes are part of the general high school curriculum.

Nick's Pons Test total score was better than the average when compared to the learning disabled group:

159 (z= +.98). However, he scored considerably higher on the pure channel inputs (tone only and video only) than when the stimulus contained both auditory and visual input. This pattern suggests overloading when he is called upon to process auditory and visual information simultaneously. His scores on the three subtests of The Four Factor Tests of Social Intelligence were considered average for his group. Cartoon Predictions score was 19 (z= +.18), Missing Cartoons 11 (z= +.02), and Expression Grouping 12 (z= -.12). These subtests contained visual input only.

Case Study Subject Number Three (Charles) was age 15 years and 8 months at the time of Investigation Two. He had spent two years in kindergarten where his problems were described as visual motor difficulty, poor small muscle control, and directionality. In addition it was noted that he didn't recognize letters, was very slow to process information, and needed constant direction. Multiple allergies were reported at age six. He was placed in special education classes in first grade and the individualized instruction was found to be extremely beneficial; he learned to read in three weeks. He continued in special education individualized reading and learning resources programs throughout grade school. His current evaluation describes intellectual ability in the low-average range with strengths in visual

sequencing and short-term visual memory, reasoning ability, and long-term memory for factual information. His weaknesses are considered to be in visual spatial organization and social judgment; handwriting and written language skills are adversely effected by visual-motor integration and spatial orientation deficits.

A psychological examination was completed three months after Charles entered high school when he was age 15 years, 4 months old. The Wechsler Intelligence Scale for Children - Revised indicated a Verbal Scale IQ of 91, a Performance Scale IQ of 85, and a Full Scale IQ of 87. The Verbal Test Scaled Scores were: Information 10, Similarities 9, Arithmetic 9, Vocabulary 8, Comprehension 7. The Performance Test Scaled Scores were: Picture Completion 7, Picture Arrangement 10, Block Design 7, Object Assembly 5, Coding 10. The Bender Visual Motor Gestalt Test was interpreted as showing orientation errors, distortions, and perseveration. The Wide Range Achievement Test yielded a Reading subtest grade score of 9.0, a Spelling subtest grade score of 7.9, and an Arithmetic subtest grade score of 8.1. Reading Comprehension was informally assessed at 11th grade level.

Charles is currently seeing the learning disability specialist at the high school for one class period daily. Although his academic skills are adequate

to meet curriculum expectations, additional help in the writing of English compositions, spelling assignments, and Spanish vocabulary is given. His program includes English, Algebra, Spanish, Politics, Mechanical Drawing and Physical Education.

Charles also scored within the average range of learning disabled students on The Pons Test, his score was 155 (z= +.76). His lowest channel score was in the decoding of randomized spliced voice which reflects a difficulty in resequencing auditory input. The general trend of results indicated that Charles receives more information from visual than auditory social input and more from facial expression than body postures and gestures. On the subtests of The Four Factor Tests of Social Intelligence, Charles scored 21 (z= +.65) on Cartoon Predictions, 17 (z= +2.13) on Missing Cartoons, and 14 (z= +.36) on Expression Grouping. The high score on the Missing Cartoons subtest supports a strength in visual sequencing found in his original school evaluation.

Description of the Instructional Setting: The experimenter met with the three students from 12:50 to 1:30 p.m. on six consecutive school days. A small conference room in the Special Education area of the high school was used. The room contained a circular table

and chairs; there was no window. The sessions were informal and the students were encouraged to participate in discussions at any time.

Description of the Instructional Plan: Esther Minskoff (1980, 1980), in a series of two articles, described a nonverbal communication skill training approach for use with learning disabled students. She presented teaching activities to be used as a remedial program in social perception skill building. Included are four areas of nonverbal communication: kinesics, proxemics, vocalics, and artifactual cues. For each area a four stage teaching approach was attempted: (1) discrimination of specific social cues, (2) understanding the social meanings of cues, (3) appropriate usage of cues, and (4) application of cues to actual social problems. This approach emphasizes both the decoding and encoding of nonverbal cues. The decoding is mainly accomplished through the use of verbal descriptions, explanations, and problem solving while the encoding stresses role-playing.

Dr. William Berkowitz's training program in sensitivity to nonverbal cues used with staff members at a mental health center has been outlined by Rosenthal, Hall, DiMatteo, Rogers and Archer (1979). The ninety minute program included (1) a brief lecture on the

possible importance of nonverbal communication in clinical settings, (2) a demonstration of content-filtered and randomized spliced speech and a description of how these techniques helped to focus on tones of voice, (3) practice in judging the affects represented in the voices of a male adult, a female adult, and a female child (content-filtered, randomized spliced, and standard content speech), (4) practice in listening for slight differences in the emphasis given various words, (5) practice in judging the affects represented in adult male and female faces shown in color slides, and (6) practice in judging the affects represented in an adult female's face and/or body shown in brief video tape clips. This program was designed specifically to increase nonverbal skill as measured by The Pons Test.

The lesson plans constructed for the present study attempted to synthesize the methodology appropriate for learning disabled students with tasks measurable by The Pons Test. Therefore the areas of proxemics and artifacts were excluded from the training program. Materials used in the lessons are listed in Appendix C.

The Lessons: The objectives of the lessons generally followed the instructional plan. They were as follows:

(1) To recognize that nonverbal communication

consists of messages sent by facial expression, gesture, posture and voice quality and that individuals have strengths and weaknesses in decoding these messages.

(2) To name some commonly accepted meanings of a variety of gestures, body postures and facial expressions.

(3) To classify paralanguage as vocalizations and voice qualities and name some emotions commonly expressed by paralanguage.

(4) To identify several nonverbally portrayed emotions.

(5) To recognize that nonverbal communication plays a role in adult life.

(6) To describe a situation on the basis of nonverbal cues.

(7) To evaluate the lessons.

The six lessons were taught during the same class period on consecutive school days.

Class Period 1

(A) Each child's Pons Profile of Nonverbal Sensitivity form was given to him and individual areas in need of remediation were discussed by the instructor.

(B) The instructor lectured on nonverbal communication and how it is used in everyday life. Included were the concepts that nonverbal communication (1) conveys

our preferences, feelings and attitudes, (2) must always be viewed in context, (3) can be purposeful or accidental and (4) involves facial expression, gestures, body postures, voice tones, clothing and smells as opposed to words. Examples such as a friend turning away when we greet him were discussed by the class.

(C) The instructor lectured on the function of gestures in communication. The lecture stressed gestures (1) as expressive meaning, (2) divided into categories of specific meaning, speech emphasis, regulating interaction and conveying status.

(D) The 10"x14" hand gesture illustrations #17-35 from the Toward Affective Development Kit were presented. The class discussed the pictures of gestures. The instructor emphasized the identification of critical body parts in the pictures and verbal equivalents of gestures.

Class Period 2

(A) The instructor presented various gestures taken from the previous day's lesson and the students identified them.

(B) The students were given slips of paper with words that could be represented by gesture. One student encoded while the other two guessed the meaning. Examples included: come here, be silent, I can't hear you, follow

me, I'm cold, I don't know, good-bye, hitchhiking.

(C) The instructor presented and discussed gestures in communication situations, inappropriate gestures, and discrepant gestures and verbalizations.

(D) The instructor presented and discussed gestures in communication and body as a source of information about mental attitudes. Examples cited (1) stoop shoulders and downcast eyes mean depression, (2) erect posture and high head mean well being, (3) leaning against something means casual disinterest and (4) leaning toward someone when they are talking means interest. Mention was made that postures during class indicate to the teacher how the student feels about the lesson.

(E) The 10"x14" posture illustrations #11-16 from the Toward Affective Development Kit were presented. The instructor and the students discussed the pictures of postures. The instructor emphasized the various body parts involved in each posture and their relative positions; verbal labels were attached to these postures.

(F) The instructor lectured on the function of facial expression in communication, the importance of face for conveying meaning, and the necessity for looking at people's faces when we communicate. Examples of eye movements and smiles as communicators were demonstrated.

Class Period 3

(A) Eckman, Friesen and Tomkin's Facial Poses pictures were presented. The instructor and the students discussed the critical parts of the face involved in the communication of the emotions of surprise, fear, anger, happiness and sadness. For example, when the face is surprised the brows are raised, the skin below the brow is stretched, horizontal wrinkles cross the forehead, the eyes are open so the white shows, and the jaw drops open so that lips and teeth are parted.

(B) The 10"x14" face illustrations #1-10 from the Toward Affective Development Kit and Moods and Emotions pictures #5 and #7 from Understanding Our Feelings were presented. The instructor and the students discussed how the pictures are the same and different and attached verbal labels to the pictures.

(C) The instructor told each student of a situation which would elicit a specific emotion and then took instant-processing photos of the student role playing that emotion. Discussion was guided to the parts of the face which are emotional indicators, the difficulty of "faking" feelings for pictures, and discrepant facial expressions and verbalizations.

(D) The instructor lectured on the function of paralanguage in communication. Vocalizations include (1) sounds as laughing/crying and yawning/moaning,

(2) sounds as uh huh/ummm and (3) word stress through volume. Voice qualities include (1) loudness, (2) pitch, (3) rate and (4) rhythm. Through voice set identification of characteristics as masculine/feminine, sick/healthy, excited/calm, and boss/worker are possible. Particular use is made of voice qualities in interpreting telephone conversations.

Class Period 4

(A) The students listened to the audio casette Demonstration Pons Test, the nature of content-filtered and randomized spliced sound.

(B) The students listened to and discussed the audio cassette Demonstration Pons Test, male sender audio pons.

(C) The students recorded their voices saying, "I'm very happy to be here today" projecting anger, love, joy and sadness on a blank tape cartridge. They then attempted to identify the vocal qualities which communicate meaning. The qualities are loudness, high and low pitch, fast and slow rate, regular and irregular rhythm, slurred and clipped enunciation. For example, anger is loud, high pitched, of fast rate, irregular rhythm, and clipped enunciation.

(D) The instructor and students played Body Talk card game. Each person was dealt cards naming emotions

to portray with all or part of their bodies. In turn each one put a card face down on the table and acted out the named emotion. When another person correctly guessed the emotion, they were allowed to slough that card. The object of the game was to slough all cards.

Class Period 5

(A) The students viewed the film Communication: The Nonverbal Agenda.

(B) The instructor and students discussed the film on nonverbal communication in adult life.

Class Period 6

(A) The students took the Nonverbal Sensitivity Test from Harrison's Beyond Words. In this test a blank card is moved down a picture of two men and the cues from the figures and background given at each level are discussed. The meaning of the picture changes as more cues are revealed.

(B) The students took the (1) Self-Administered Still Pons Test: Photo Version and (2) Audio-Only Version of The Pons Test: Female Sender.

(C) Each student gave an oral presentation on his perception of the value of the lessons.

Evaluation: Two methods of evaluating the effectiveness of the training program were employed. The

three students were tested at the end of the sessions with the Photo Booklet Pons and the Original Sender Audio Pons. The Photo Booklet Pons is a self-administered forty-item set of photographs taken from the face and body channels of the full Pons Test. The order of presentation is identical to the order of these items in the full Pons Test and the response alternatives are also the same. The authors report that for two samples, 62 teachers and 24 business executives, the correlations of this test with the total score of the full Pons were .64 and .05. The Original Sender Audio Pons is a tape of the twenty randomized spliced and twenty content-filtered items from the full Pons Test randomly recorded. The answer sheet contains the same pairs of alternative answers that appeared with these items on the full Pons Test. Alternative test answers were read to the students in both test administrations.

Additionally, the three students were interviewed during the final session of the training program. Questions centered upon (1) the student's perceptions of what they learned during the program, (2) the parts of the lessons they felt were the most valuable and (3) any applications they had made of what they learned during the sessions.

CHAPTER IV

RESULTS

Results of Investigation One

Class Placement and Grade Level (Hypotheses 1 and 2): The data was analyzed in two ways. Although the manual for the Four Factor Tests of Social Intelligence did not indicate any sex differences, the Pons Test Manual has reported that females scored higher than males in general. So the groups were matched for sex in each of the six schools; additionally two learning disabled students that the examiner suspected were randomly marking their answer sheet and two control students who had histories of learning problems were eliminated. The resulting group contained a total of 94 cases, 10 girls and 14 boys in the junior high school learning disabled group, 10 girls and 14 boys in the junior high school control group, 7 girls and 16 boys in the high school learning disabled group, and 7 girls and 16 boys in the high school control group. The total sample consisted of 147 students.

To analyze the data for differences between learning disabled and control groups at the junior and senior high school levels, a 2x2 ANOVA was performed on

the three subtests of The Four Factor Tests of Social Intelligence and on each of the eleven channels of The Pons Test. In the matched group, the differences between the learning disabled and control class was significant at the .001 level for all measures with the exception of the audio channels of the Pons; random spliced voice was significant at the .05 level and content-filtered voice was not significant. When the groups were not matched, the same trend was evident. The three subtests of the Four Factor Tests and the total Pons plus nine of the eleven channels of the Pons Test were significant at the .001 level. Again the audio channels of the Pons differed in that randomized spliced voice was significant at the .01 level and content filtered voice was not significant. There was no interaction and grade level (junior or senior high school) was not significant under either condition. Table 1 presents the summary of analyses of variance of class placement and grade level on matched groups (Four Factor Tests and Pons Test channels) while Table 2 presents the same information for unmatched groups. As grade level was not a factor, junior and senior high schools were combined and Figure 1 shows the means in the learning disabled and control matched groups on all measures while Figure 2 presents this information for unmatched groups.

TABLE 1

SUMMARY OF ANALYSES OF VARIANCE OF CLASS PLACEMENT
AND GRADE LEVEL ON MATCHED GROUPS

Four Factor Tests of Social Intelligence

	DF	MS	F	Sig. of F		L.D.	Control
Cartoon Predictions							
level	1	37.525	2.945	.090	junior	Mean=18.680	Mean=21.542
class	1	154.056	12.092	.001	high	S.D.= 4.103	S.D.= 2.904
interaction	1	2.231	.175	.677		N=24	N=24
residual	90	12.740					
					high	Mean=17.724	Mean=19.970
					school	S.D.= 4.475	S.D.= 2.384
						N=23	N=23
Missing Cartoons							
level	1	1.439	.110	.741	junior	Mean=11.073	Mean=13.063
class	1	148.756	11.374	.001	high	S.D.= 3.012	S.D.= 4.537
interaction	1	6.794	.519	.473		N=24	N=24
residual	90	13.079					
					high	Mean=10.783	Mean=13.848
					school	S.D.= 2.729	S.D.= 3.879
						N=23	N=23

TABLE 1 - Continued

	DF	MS	F	Sig. of F		L.D.	Control
Expression Grouping							
level	1	1.629	.124	.725	junior high	Mean=12.552 S.D.= 3.978 N=24	Mean=16.312 S.D.= 3.154 N=24
class	1	395.240	30.107	.000			
interaction	1	2.846	.217	.643			
residual	90	13.128			high school	Mean=12.467 S.D.= 4.448 N=23	Mean=16.924 S.D.= 2.641 N=23
The Pons Test							
Total Pons							
level	1	50.578	.201	.655	junior high	Mean=143.042 S.D.= 18.172 N-24	Mean=161.958 S.D.= 11.246 N=24
class	1	10061.234	40.051	.000			
interaction	1	77.243	.307	.581			
residual	90	251.212			high school	Mean=139.761 S.D.= 17.830 N=23	Mean=162.304 S.D.= 15.243 N=23
Face							
level	1	5.756	1.203	.276	junior high	Mean=14.479 S.D.= 2.389 N=24	Mean=15.750 S.D.= 2.377 N=24
class	1	75.064	15.689	.000			
interaction	1	6.539	1.367	.245			
residual	90	4.784			high school	Mean=13.457 S.D.= 1.994 N=23	Mean=15.783 S.D.= 1.930 N=23

TABLE 1 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Body							
level	1	.372	.063	.802	junior high	Mean=12.521 S.D.= 1.754 N=24	Mean=14.688 S.D.= 1.780 N=24
class	1	75.064	12.738	.001			
interaction	1	3.530	.599	.441			
residual	90	5.893					
					high school	Mean=12.783 S.D.= 2.522 N=23	Mean=14.174 S.D.= 3.349 N=23
Figure							
level	1	.221	.032	.859	junior high	Mean=12.604 S.D.= 2.874 N=24	Mean=15.438 S.D.= 1.820 N=24
class	1	189.598	27.221	.000			
interaction	1	.001	.000	.989.			
residual	90	6.965					
					high school	Mean=12.500 S.D.= 3.093 N=23	Mean=15.348 S.D.= 2.613 N=23
Randomized Spliced							
level	1	3.400	.741	.391	junior high	Mean=10.438 S.D.= 2.521 N=24	Mean=11.063 S.D.= 1.980 N=24
class	1	18.766	4.093	.046			
interaction	1	1.769	.386	.536			
residual	90	4.585					
					high school	Mean=10.543 S.D.= 2.083 N=23	Mean=11.717 S.D.= 1.918 N=23

TABLE 1 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Content-Filtered							
level	1	.043	.011	.917	junior high	Mean=11.688 S.D.= 1.988 N=24	Mean=11.792 S.D.= 2.231 N=24
class	1	8.045	2.019	.159			
interaction	1	5.672	1.424	.236			
residual	90	3.984					
					high school	Mean=11.239 S.D.= 1.580 N=23	Mean=12.326 S.D.= 2.114 N=23
Face + Randomized Spliced							
level	1	.733	.112	.738	junior high	Mean=14.021 S.D.= 2.823 N=24	Mean=17.354 S.D.= 1.914 N=24
class	1	274.045	41.957	.000			
interaction	1	.163	.025	.875			
residual	90	6.532					
					high school	Mean=13.761 S.D.= 3.306 N=23	Mean=17.261 S.D.= 1.906 N=23
Face + Content-Filtered							
level	1	.786	.188	.665	junior high	Mean=13.667 S.D.= 2.408 N=24	Mean=15.917 S.D.= 1.828 N=24
class	1	63.074	15.113	.000			
interaction	1	9.176	2.199	.142			
residual	90	4.174					
					high	Mean=14.109 S.D.= 2.383 N=23	Mean=15.109 S.D.= 1.356 N=23

TABLE 1 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Body + Randomized Spliced							
level	1	10.214	2.308	.132	junior	Mean=13.000	Mean=15.167
class	1	75.960	17.162	.000	high	S.D.= 2.405	S.D.= 1.530
interaction	1	3.335	.754	.388		N=24	N=24
residual	90	4.426					
					high	Mean=12.717	Mean=14.130
					school	S.D.= 2.504	S.D.= 1.829
						N=23	N=23
Body + Content-Filtered							
level	1	3.580	.697	.406	junior	Mean=11.688	Mean=12.771
class	1	65.556	12.769	.001	high	S.D.= 2.649	S.D.= 2.172
interaction	1	8.446	1.645	.203		N=24	N=24
residual	90	5.134					
					high	Mean=11.478	Mean=13.761
					school	S.D.= 2.274	S.D.= 1.888
						N=23	N=23
Figure + Randomized Spliced							
level	1	2.307	.535	.466	junior	Mean=14.708	Mean=15.875
class	1	71.532	16.585	.000	high	S.D.= 2.221	S.D.= 1.801
interaction	1	8.193	1.900	.172		N=24	N=24
residual	90	4.313					
					high	Mean=13.804	Mean=16.152
					school	S.D.= 2.733	S.D.= 1.274
						N=23	N=23

TABLE 1 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Figure + Content-Filtered							
level	1	1.253	.212	.646	junior high	Mean=14.229 S.D.= 2.432 N=24	Mean=16.146 S.D.= 1.862 N=24
class	1	150.649	25.520	.000			
interaction	1	9.282	1.572	.213			
residual	90	5.903			high school	Mean=13.370 S.D.= 2.909 N=23	Mean=16.543 S.D.= 2.426 N=23

TABLE 2

SUMMARY OF ANALYSES OF VARIANCE OF CLASS PLACEMENT AND GRADE LEVEL ON UNMATCHED GROUPS

Four Factor Tests of Social Intelligence

	DF	MS	F	Sig. of F		L.D.	Control
Cartoon Predictions							
level	1	8.227	.592	.443	junior high	Mean=17.797 S.D.= 4.468 N=28	Mean=20.768 S.D.= 3.068 N=49
class	1	241.192	17.356	.000			
interaction	1	3.154	.227	.635			
residual	140	13.897			high school	Mean=17.706 S.D.= 4.402 N=25	Mean=20.062 S.D.= 3.455 N=42
Missing Cartoons							
level	1	9.059	.663	.417	junior high	Mean=10.366 S.D.= 3.381 N=28	Mean=13.179 S.D.= 4.039 N=49
class	1	293.417	21.491	.000			
interaction	1	.828	.061	.806			
residual	140	13.653			high school	Mean=10.670 S.D.= 2.960 N=25	Mean=13.798 S.D.= 3.855 N=42

TABLE 2 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Expression Grouping							
level	1	68.898	5.505	.020	junior	Mean=11.955	Mean=14.837
class	1	429.162	34.291	.000	high	S.D.= 3.997	S.D.= 3.379
interaction	1	18.572	1.484	.225		N=28	N=49
residual	140	12.515					
					high	Mean=12.400	Mean=16.774
					school	S.D.= 4.291	S.D.= 2.841
						N=25	N=42
The Pons Test							
Total Pons							
level	1	248.495	.872	.352	junior	Mean=139.074	Mean=158.924
class	1	14989.633	52.576	.000	high	S.D.= 21.035	S.D.= 13.455
interaction	1	103.591	.363	.548		N=27	N=46
residual	135	285.102					
					high	Mean=139.479	Mean=162.917
					school	S.D.= 17.493	S.D.= 16.965
						N=24	N=42
Face							
level	1	.870	.163	.687	junior	Mean=14.000	Mean=15.533
class	1	97.866	18.285	.000	high	S.D.= 2.638	S.D.= 2.356
interaction	1	1.562	.292	.590		N=27	N=46
residual	135	5.352					
					high	Mean=13.563	Mean=15.536
					school	S.D.= 2.018	S.D.= 2.199
						N=24	N=42

TABLE 2 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Body							
level	1	3.804	.643	.424	junior	Mean=12.333	Mean=13.957
class	1	75.413	12.743	.000	high	S.D.= 1.781	S.D.= 2.311
interaction	1	.324	.055	.815		N=27	N=46
residual	135	5.918					
					high	Mean=12.792	Mean=14.214
					school	S.D.= 2.467	S.D.= 2.863
						N=24	N=42
Figure							
level	1	6.194	.856	.356	junior	Mean=12.204	Mean=14.837
class	1	248.510	34.362	.000	high	S.D.= 3.030	S.D.= 2.425
interaction	1	.716	.099	.753		N=27	N=46
residual	135	7.232					
					high	Mean=12.438	Mean=15.369
					school	S.D.= 3.041	S.D.= 2.521
						N=24	N=42
Randomized Spliced							
level	1	9.204	2.054	.154	junior	Mean=10.315	Mean=11.043
class	1	31.693	7.074	.009	high	S.D.= 2.418	S.D.= 1.960
interaction	1	2.471	.551	.459		N=27	N=46
residual	135	4.480					
					high	Mean=10.479	Mean=11.762
					school	S.D.= 2.061	S.D.= 2.108
						N=24	N=42

TABLE 2 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Content-Filtered							
level	1	2.926	.687	.409	junior	Mean=11.222	Mean=11.652
class	1	14.617	3.432	.066	high	S.D.= 2.451	S.D.= 2.022
interaction	1	2.122	.498	.481		N=27	N=46
residual	135	4.259					
					high	Mean=11.188	Mean=12.131
					school	S.D.= 1.566	S.D.= 2.087
						N=24	N=42
Face + Randomized Spliced							
level	1	.578	.078	.781	junior	Mean=13.574	Mean=16.826
class	1	343.913	46.195	.000	high	S.D.= 2.989	S.D.= 2.271
interaction	1	.005	.001	.979		N=27	N=46
residual	135	7.445					
					high	Mean=13.688	Mean=16.964
					school	S.D.= 3.253	S.D.= 2.692
						N=24	N=42
Face + Content-Filtered							
level	1	2.512	.561	.455	junior	Mean=13.185	Mean=15.391
class	1	109.945	24.530	.000	high	S.D.= 2.774	S.D.= 1.871
interaction	1	4.681	1.044	.309		N=27	N=46
residual	135	4.482					
					high	Mean=13.938	Mean=15.381
					school	S.D.= 2.477	S.D.= 1.611
						N=24	N=42

TABLE 2 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Body + Randomized Spliced							
level	1	.557	.097	.756	junior	Mean=12.778	Mean=14.826
class	1	135.976	23.655	.000	high	S.D.= 2.757	S.D.= 1.820
interaction	1	.001	.000	.992		N=27	N=46
residual	135	5.748					
					high	Mean=12.646	Mean=14.702
					school	S.D.= 2.474	S.D.= 2.653
						N=24	N=42
Body + Content-Filtered							
level	1	16.508	3.009	.085	junior	Mean=11.537	Mean=13.043
class	1	139.766	25.473	.000	high	S.D.= 2.564	S.D.= 1.960
interaction	1	11.857	2.161	.144		N=27	N=46
residual	135	5.487					
					high	Mean=11.458	Mean=14.179
					school	S.D.= 2.226	S.D.= 2.627
						N=24	N=42
Figure + Randomized Spliced							
level	1	.679	.156	.696	junior	Mean=14.222	Mean=15.804
class	1	120.318	27.119	.000	high	S.D.= 2.654	S.D.= 1.787
interaction	1	4.364	.984	.323		N=27	N=46
residual	135	4.437					
					high	Mean=13.896	Mean=16.214
					school	S.D.= 2.711	S.D.= 1.586
						N=24	N=42

TABLE 2 - continued

	DF	MS	F	Sig. of F		L.D.	Control
Figure + Content-Filtered							
level	1	1.054	.176	.676	junior high	Mean=13.704 S.D.= 2.816 N=27	Mean=16.011 S.D.= 2.007 N=46
class	1	229.699	38.352	.000			
interaction	1	4.664	.779	.379			
residual	135	5.989			high school	Mean=13.396 S.D.= 2.847 N=24	Mean=16.464 S.D.= 2.393 N=42

Figure 1

FOUR FACTOR AND PONS TEST MEANS OF THE
LEARNING DISABLED AND NORMAL MATCHED GROUPS

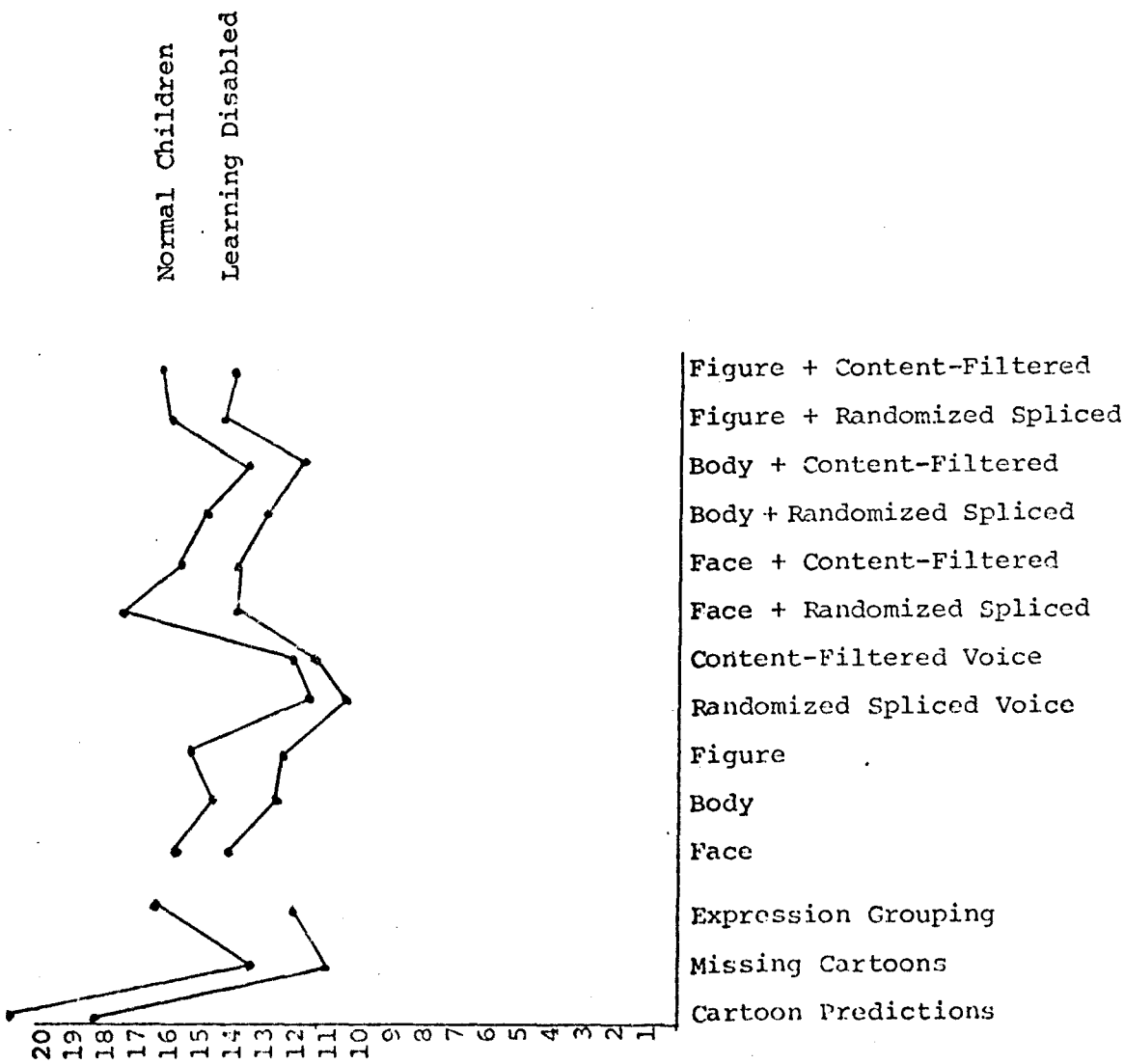
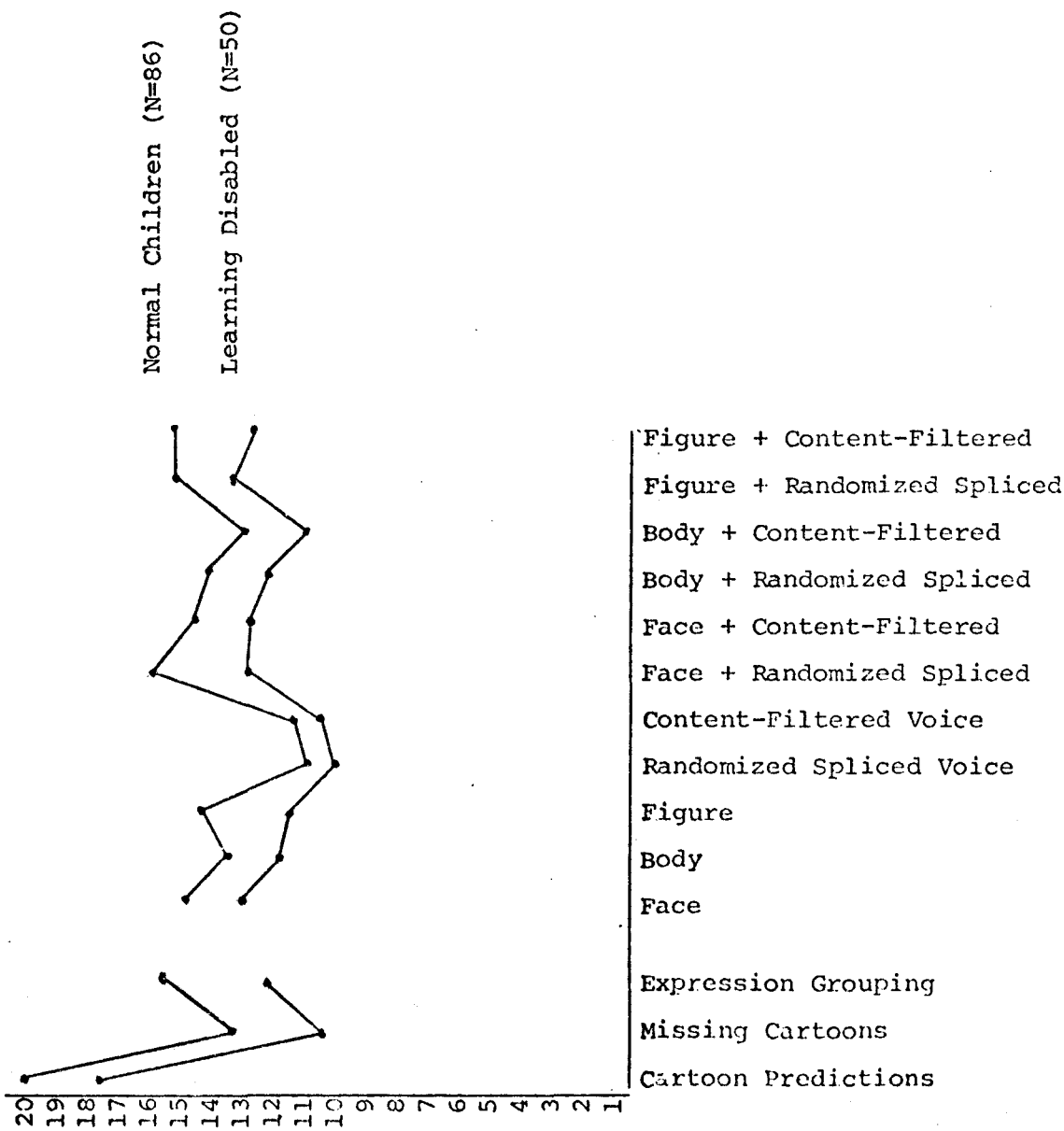


Figure 2

FOUR FACTOR AND PONS TEST MEANS OF THE
LEARNING DISABLED AND NORMAL UNMATCHED GROUPS



Null Hypothesis 1 which stated that there was no significant difference between the nonverbal social perception test scores of learning disabled and normal adolescents was therefore rejected. Learning disabled adolescents scored significantly lower on all tests of nonverbal social perception with visual components. The two channel tests which utilized only auditory input were the exception and did not differentiate the groups to a satisfactory degree. However, null Hypothesis 2, which stated that there is no significant difference between the nonverbal social perception test scores of learning disabled and normal adolescents in the junior high school sample and senior high school sample, was not rejected. Interestingly, grade level, junior or senior high school, was not a significant factor in either matched or total sample groups for any of the test results and no interaction was found between class placement and grade level on any measure.

Instruments (Hypothesis 3): To examine the relationship between pencil-and-paper and filmed instruments to measure the social perception of learning disabled students, Pearson product-moment correlations were computed for each of the three subtests of the Four Factor Tests of Social Intelligence with the eleven channels of The Pons Test as well as with the total Pons Test score.

For 50 learning disabled students the total Pons Test correlated ($r = .4403$, $p \leq .01$) with Cartoon Predictions, with Missing Cartoons ($r = .3123$, $p \leq .05$), and with Expression Grouping ($r = .3487$, $p \leq .01$). Table 3 lists the individual channel correlations. No pattern of relationship was evident; one of the audio channels of input, Randomized Spliced, which was not tested in the Four Factor Tests still correlated significantly with Cartoon Predictions and correlations were not significant for any of the Four Factor subtests when the body channel was combined with auditory input.

To further examine the instrument relationships, correlations were also computed for the normal sample of 86 students who took all tests. The total Pons Test correlated with Cartoon Predictions ($r = .3380$, $p \leq .01$), Missing Cartoons ($r = .2842$, $p \leq .01$), and Expression Grouping ($r = .3808$, $p \leq .01$). Table 4 lists these channel correlations. In both samples Content-Filtered speech channel was not significantly correlated with any Four Factor subtest.

The results of these analyses support the findings of Fields and O'Sullivan (1976) obtained from a group of 55 college students. They found the Cartoon Predictions subtest of the Four Factor Tests of Social Intelligence to correlate significantly with the total Pons Test ($r = .3576$, $p < .008$). The Cartoon Predictions subtest had

TABLE 3

PEARSON PRODUCT-MOMENT CORRELATIONS FOR THE FOUR FACTOR SUBTESTS WITH THE CHANNELS OF THE PONS TEST

50 LEARNING DISABLED STUDENTS

	Cartoon Predictions	Missing Cartoons	Expression Grouping
Face	.2460*	.2932*	.2677*
Body	.3205*	.2110	.3370**
Figure	.4825**	.1757	.3006*
Randomized Spliced	.2783*	.1152	.1622
Content-Filtered	.1990	.2156	.1509
Face + R.S.	.2592*	.2377*	.2865*
Face + C.F.	.4125**	.3066*	.3180*
Body + R.S.	.2172	.0887	.0619
Body + C.F.	.2257	.1281	.2259
Figure + R.S.	.2893*	.2390*	.1710
Figure + C.F.	.3593**	.3405**	.3342**
Pons	.4403**	.3123*	.3487**

* $p \leq .05$
** $p \leq .01$

TABLE 4

PEARSON PRODUCT-MOMENT CORRELATIONS FOR THE FOUR FACTOR SUBTESTS WITH THE CHANNELS OF THE PONS TEST

86 NORMAL STUDENTS

	Cartoon Predictions	Missing Cartoons	Expression Grouping
Face	.2066*	.0047	.2349*
Body	.2682**	.1822*	.2847**
Figure	.3078**	.1949*	.2488**
Randomized Spliced	.2434*	.2115*	.1787*
Content-Filtered	.0343	.1474	.1748
Face + R.S.	.3853**	.2313*	.2018*
Face + C.F.	.2362*	.1023	.2183*
Body + R.S.	.2951**	.2178*	.3168**
Body + C.F.	.2737**	.2147*	.2701**
Figure + R.S.	.2120*	.1445	.2147*
Figure + C.F.	.1993*	.3077**	.2986**
Pons	.3880**	.2842**	.3808**

* $p \leq .05$
** $p \leq .01$

the highest correlation with the total Pons Test for both learning disabled and normal adolescents. If one test, short and easy to administer, is required to determine an individual child's nonverbal social perception ability the results of this study seem to indicate that Cartoon Predictions would be the choice.

Therefore, null Hypothesis 3, which stated that there is no significant relationship between the paper-and-pencil instrument (The Four Factor Tests of Social Perception) and the filmed instrument (The Pons Test) in the assessment of nonverbal social perception in learning disabled adolescents, was also rejected. A significant relationship was found between the total Pons Test score and each of the three subtests of The Four Factor Tests of Social Intelligence.

Teacher Rating and Test Scores (Hypothesis 4):

To determine the relationship between rankings made by learning disability teachers of their students and the student's social perception test results, Spearman rank-order correlation coefficients were computed. Correlations between teacher's ratings and scores yielded by the standardized tests ranged from .1919 and .1920 for the total Pons and Expression Grouping to .5240 and .5218 for Cartoon Predictions and Missing Cartoons. Table 5 shows the result of this correlational analysis for the 39

TABLE 5

SPEARMAN CORRELATION COEFFICIENTS OF TEACHER'S RATINGS AND TEST RESULTS OF 39 LEARNING DISABLED STUDENTS

Teacher Rating with Cartoon Predictions	.5240*
Teacher Rating with Missing Cartoons	.5218*
Teacher Rating with Expression Grouping	.1920
Teacher Rating with Total Pons Test	.1919

*$p \leq .001$

learning disabled students for whom teacher ratings were available. In two schools a portion of the learning disabled students were part of a class taught by a second teacher in the school and this teacher was not available at the time the ranking was done. The high school learning disability teachers had known most of their students for one school semester; the junior high school teachers for two and a half years.

These results indicate that the Cartoon Predictions and the Missing Cartoons subtests of the Four Factor Tests of Social Intelligence do measure the factor that teachers label social perception. Of course, the teachers base their ratings on observable behavior which involves not only the child's decoding of nonverbal social cues (that which is measured by the tests) but also the inclination to act on this information in an appropriate manner in the presence of the teacher.

Therefore, null Hypothesis 4, which stated that there is no significant relationship between teacher's ratings of learning disabled adolescents and the student's nonverbal social perception test scores, would be rejected for the Cartoon Predictions and Missing Cartoons subtests of the Four Factor Tests of Social Intelligence. However, Hypothesis 4 would not be rejected for the measures of the full Pons Test and the Expression Grouping subtest of the Four Factor Tests of Social Intelligence, both

of which attempt to measure only the decoding of nonverbal cues.

Results of Investigation Two

The channel scores from the full Pons Test administered during Investigation One were compared to the two tests given to each of the three students at the end of the training program. The forty items from the Face and the Body channels were used to contrast with the Photo Booklet Pons and the forty audio only items, randomized spliced and content-filtered, were contrasted to The Original Sender Audio Pons. These short forms are essentially the same as the original test but are designed to be given as an independent unit.

The greater gains made in the auditory channel could be due to the test forms. The Original Sender Audio Pons uses the same items and the same sender as the full Pons, so learning from the first test administration could be responsible for the increase in scores. The still photos in the Photo Booklet Pons, although taken from the filmed scenes, do not include the movement which adds to the subject's accuracy in decoding. However, the overall trend does indicate that student's sensitivity to nonverbal cues can be increased. On an individual basis, it seemed that Betty, the child with the greatest deficit in auditory processing, benefited most from the exposure to the material.

TABLE 6

PRE-TEST AND POST-TEST SCORES OF STUDENTS IN TRAINING PROGRAM

	Pre-test	Post-test	% of change
Visual Channel			
Petty	31	32	+2.50
Nick	29	31	+5.00
Charles	31	31	-
Auditory Channel			
Betty	21	31	+25.00
Nick	20.5	24	+ 8.75
Charles	20	25	+12.50

Charles, whose auditory processing was measured as lower than visual on the full Pons, gained more in that area. The ability to combine auditory and visual inputs which appeared to be a deficit of Nick's was not measured by the two post-tests.

When the students were interviewed and asked what they had learned they seemed to feel that their attention had been focused on decoding nonverbal cues even though it was a skill they had been using to some degree. Betty said, "I learned about people's faces and their bodies and their voices on the telephone". Nick said, "I knew most of the things but I didn't know the names for it and now I can talk about it". Charles said, "What I learned really was that I do look at people's faces but I never thought about it. Now maybe I'll look at their faces more to see what they are thinking about."

When the students were asked to comment on their evaluation of specific activities in the sessions, all three mentioned the movie. This could have been due to the fact that the movie was shown in the lesson on the day before the interview and so was the best recalled activity. Both Betty and Nick liked the movie but Charles felt it was bad since it didn't hold his attention. Betty mentioned the Body Talk card game as an activity she enjoyed. In fact, all three students appeared very animated when the card game was played.

The students had difficulty in describing any applications they had made of what was learned. However Charles commented that now that he knew what he had been doing he would do it more often.

In summary, the effects of training in sensitivity to nonverbal cues are difficult to accurately assess in such a small sample. However, the results of post-session testing with the short forms of The Pons Test did indicate that all the students raised their scores, two in both the auditory and visual modalities and one in the auditory only. This supports the test author's contention that it is possible to increase sensitivity to nonverbal stimuli through practice or training but did not agree with his statement that the greater gains are made in the visual channel (Rosenthal, etal, 1979). But it is important to point out that the test instruments, the small sample or even the nature of the learning disabled's processing deficits could account for this finding.

During the interviews the students indicated that their awareness of nonverbal cues had been heightened. This is a necessary first step in social perception; correct interpretation needs to follow. A longer program, perhaps a part of the year's language arts curriculum, could provide practice in decoding nonverbal cues in many situations.

Therefore, the null hypothesis that there is no significant difference between the learning disabled adolescent's skill in decoding nonverbal social behavior before and after training was rejected. The results of the post-session testing and the student interviews seemed to indicate that the training did improve their awareness in this area. At this time, however, the very small sample, the differences in test instruments, and the subjective nature of the interview allow only tentative conclusions to be presented.

CHAPTER V

DISCUSSION

Summary

It has been proposed that the social interaction problems of the learning disabled child are primarily caused by a specific deficit in the ability to decode nonverbal cues in social situations (Bryan 1977, Johnson and Myklebust 1976, Minskoff 1980, Mischio 1980, Myklebust 1975, Siegel 1975, Wallbrown, Fremont, Nelson, Wilson and Fisher 1979). This study first investigated nonverbal social perception in learning disabled adolescents using standardized tests of social intelligence and nonverbal communication. Secondly, three students were placed in a short term training program designed to raise their nonverbal social perception skill level. An additional question of whether a larger social environment, such as the high school, is more or less conducive to equalizing the learning disabled child's deficit was raised. If an individual learning disabled child's nonverbal social skill level can be conveniently measured then a remedial program can be planned to help him or her function in this vital area.

The subjects for the first part of this study included 54 learning disabled and 93 normal children in six schools in a suburban Chicago, Illinois, area. All students were administered the Cartoon Predictions, Missing Cartoons, and Expression Grouping subtests of The Four Factor Tests of Social Intelligence and the total Pons Test (Profile of Nonverbal Sensitivity). The teachers of the learning disabled students involved in the study were asked to rank their students in social perception ability. Following this testing, three learning disabled high school students, one girl and two boys, were enrolled in a social skill training program. Six sessions, forty minutes long, on consecutive school days were then used to teach decoding of nonverbal communication through lectures, discussions, pictures, film, casettes, and games.

The null hypotheses generated for the first part of this investigation were as follows:

Hypothesis 1: There is no significant difference between the nonverbal social perception test scores of the learning disabled and normal adolescents. (Nonverbal social perception was assessed by The Four Factor Tests of Social Intelligence and The Pons Test).

Hypothesis 2: There is no significant difference between the nonverbal social perception test scores of the learning disabled and normal adolescents in the junior

high school sample and the senior high school sample.

Hypothesis 3: There is no significant relationship between the paper-and-pencil instrument (The Four Factor Tests of Social Intelligence) and the filmed instrument (The Pons Test) in the assessment of nonverbal social perception in learning disabled adolescents.

Hypothesis 4: There is no significant relationship between teacher's ratings of learning disabled adolescents and the student's nonverbal social perception test scores.

The null hypothesis for the second investigation was: There is no significant difference between the learning disabled adolescent's skill in decoding nonverbal social behavior before and after training.

To test Hypotheses 1 and 2 (class placement and grade level), a 2x2 ANOVA was performed on the three subtests of the Four Factor Tests of Social Intelligence which were used in the study and on each of the eleven channels of The Pons Test. The data was analyzed for the total group and for a group of 94 cases matched for sex in each school. The results indicated that the normal children scored significantly higher on all measures with the exception of the two audio channels of The Pons Test. Grade level was not significant in either analysis and there was no interaction. So Hypothesis 1, that postulated no difference between learning disabled and normal

adolescents on the tests was rejected, while Hypothesis 2 which stated that there would be no differences between the learning disabled and normal junior high school and senior high school groups was not rejected.

To test Hypothesis 3 (the relationship between the Four Factor Tests and The Pons Test when measuring learning disabled children), Pearson product-moment correlations were computed. All three subtests of the Four Factor Tests correlated significantly with the total Pons Test but no pattern of Pons channel relationships was evident. The Cartoon Predictions subtest of the Four Factors Test appeared to be the paper-and-pencil measure which was most closely related to the factors measured by The Pons Test in learning disabled adolescents. Hypothesis 3, which stated there was no significant relationship between the two instruments used in this investigation, was therefore rejected.

The final hypothesis in the first part of this study stated that there was no significant relationship between teacher's ratings of learning disabled adolescents and the student's nonverbal social perception test scores. The teacher's rankings of 39 learning disabled students and score rankings on the three subtests of the Four Factor Tests and the total Pons Test were compared by computing Spearman rank-order correlation coefficients. Only the Cartoon Predictions and Missing Cartoons subtests were

found to be significant and so Hypothesis 4 was rejected for these two subtests and not rejected for the Expression Grouping subtest of the Four Factor Tests of Social Intelligence and for the total Pons Test, both of which purport to measure cue decoding in isolation.

The null hypothesis for the second investigation postulated that learning disabled adolescents cannot improve their skill in decoding nonverbal social behavior after training. Evaluation of the training program was based on testing with short forms of The Pons Test and interviews with the students centering on their perceptions of the value of the lessons. Although all students showed gains on the retesting, greater gains were shown in the auditory channel. This was possibly due to the short Pons Test formats: the auditory items were the same as the original test while the visual test used still photos and the original was a film. When the students were interviewed, all felt that their attention had been focused on decoding nonverbal cues even though it was a skill they had already possessed to some degree. On the basis of these two program evaluations, the null hypothesis that the learning disabled adolescents could not improve their nonverbal social behavior decoding after training was rejected.

Conclusions

The results of the first investigation revealed that learning disabled adolescents in both grades eight and nine were significantly lower in nonverbal social perception skill than their normal counterparts. This agreed with other researchers who, through various methods, also found learning disabled children lower in social perception skill (Bryan 1977, Budreck 1978, Emery 1975, Goldman 1980, Wiig and Harris 1974). The pattern of channel scores in this study indicated that the modality which differentiates the groups is visual; the audio channels of The Pons Test did not show differences of the same magnitude. However, presenting speech so that only its nonverbal aspects may be judged is a difficult task and the two methods used by The Pons Test, filtering and resplicing, result in sound patterns not normally found in life situations. These tasks have not been practiced by either learning disabled or normal children and the artificiality of the situation could contribute to an equal performance that would not be true in everyday life.

The result that the larger social context of the high school made no difference to the learning disabled child's deficit in decoding nonverbal social cues compared to normal students, leads to the conclusion that the problem is with the child and not the social situation.

This finding refutes both Siegel's (1975) contention that the larger, more impersonal high school places greater demands on the social skills of students and so would work to the detriment of the learning disabled students and Goodman and Mann's (1976) statement that the more flexible high school would make the learning disabled adolescent more socially successful. A program to help remediate any nonverbal social perception problems should likely begin when the child begins school and continue, adding age appropriate materials, until he or she can function at a normal level (Bader 1975).

The two instruments used to measure the decoding of nonverbal social cues in this study differ not only in format but, theoretically, in the conceptual level needed. While The Pons Test presents the stimuli in isolation, the subtests of the Four Factor Tests attempt to include various levels of intellectual products: classes, systems, and implications. Expression Grouping, choosing the drawing of the emotion that does not match the others, is proposed to measure the same single factor as The Pons Test, match the emotion to its verbal meaning. While Expression Grouping did correlate significantly with The Pons Test for both learning disabled and normal adolescents, these were also the two measures that did not correlate with the learning disability teachers' rankings of their students. It would seem that when

teachers evaluate social perception ability in their students they include the student's higher conceptual processes rather than just the decoding of social cues in isolation. As the teachers do see their students reacting in everyday situations, it would be likely that the higher skills were involved.

The interviews of the students included in Investigation Two indicated that, during training, they became aware of the need to attend to nonverbal cues. This could support Bryan's (1979) finding that learning disabled children do look less at others when interacting than do non-LD children and this gives the LD child less opportunity to read the other's responses and also makes him appear less socially attractive. According to the case histories presented for the three students, the full Pons Test appears to yield a profile which is consistent with the type of disability which has been documented. The results of this test should be helpful to any practitioner planning a social perception remediation program based on individual strengths and weaknesses. However, this filmed test takes 45 minutes to administer and is expensive to purchase. An alternative test which would appear to be useful for Individualized Education Program (IEP) levels of achievement is the Cartoon Predictions subtest of the Four Factor Tests of Social Intelligence. This paper-and-pencil test requires only

twelve minutes to administer and, although it yields only one score, could function as a gross index of nonverbal social perception ability. This also was the only subtest of the Four Factor Tests in which the mean obtained from the control group in this study closely agreed with that of the normative sample of ninth graders published in the test manual. It should be remembered, however, that the Cartoon Predictions subtest does include higher conceptual processes and is not a pure measure of the decoding of the cues involved in social interactions.

Finally, although training programs such as the one presented in Investigation Two and that of Minskoff (1980, 1980) would appear to be helpful in bringing up the social perception skill level of learning disabled adolescents, they require a great deal of teacher time to prepare and administer. A workbook and tape presentation on which a student could work independently would be an ideal aid to the busy teacher. A kit has been published by Wandling and Knapp (1973). It is designed for adults and the material is rather sophisticated. However this program could prove useful for specified older students.

Limitations of the Study

The subjects in this study were normal and learning disabled students in grades eight and nine from a suburban Chicago area. Generalizations to populations in other settings should be made with considerable caution.

In Investigation Two, the very small sample size (N=3) has obvious limitations to generalizing results. Additionally, the methods of measuring the gains made from training, both post-tests on alternate test forms and interviews, can only be considered as rough estimates of student achievement. However, the general tenor of the investigation does seem to suggest that the social perception skill level of learning disabled adolescents, particularly in the deficit modality, can be raised through training.

Implications for Future Research

The decoding of the nonverbal cues in social interactions is a restricted view of the concept of social perception. Mann, Goodman and Wiederholt (1978) state that poor social perception in older learning disabled students can manifest itself in an inability to generalize from one situation to another, oversensitivity to the reactions of others, inflexibility in acting, difficulty in determining the impact of one's actions on others, as well as difficulty in accurately interpreting the moods and communications (verbal and nonverbal) of others. Future research should include all aspects of social interactions, cognitive and emotional, and attempt to build a more comprehensive model of social behavior. Additionally, the encoding of nonverbal

communication as a distinct ability needs to be evaluated in relation to the learning disabled child.

Training programs in nonverbal social perception designed specifically for learning disabled children at each grade level, beginning with first grade, need to be written and materials published. Although academic skills are, and should be, a prime consideration of the learning disability program, ongoing programs in social skill development should be an integral part of helping a learning disabled child become a functional adult.

Alternately, the decoding of nonverbal social cues could be linked to already established areas of investigation. For example, a relationship between reading readiness tests and future performance on social perception tasks could be examined. Cultural variations in nonverbal behavior have been discussed (Harper, Wiens, and Matarazzo 1978, Rosenthal, Hall, DiMatteo, Rogers and Archer 1979) and the transferability of skill should be of interest. Finally, the selective attention aspect mentioned in the discussion of the present study could be considered within the framework of a functional model of instruction such as that presented by Case (1978).

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APPENDIX A

LETTER OF CONSENT SENT TO THE PARENTS
OF ALL CHILDREN INVOLVED IN THE STUDY

Dear Parents,

Your child has been scheduled to take two tests of his ability to understand nonverbal communication. These tests are a portion of a reserach program designed in part to develop a high school class in improving proficiency in these skills.

Your child's name will not be recorded but if you do have any objection to his taking these tests and his score being used in the research data or if you have any questions about this project, please call me at _____.

Thank you for your cooperation.

LETTER OF CONSENT SENT TO THE PARENTS
OF ALL CHILDREN INVOLVED IN THE CLASS

Dear _____,

I recently wrote to you concerning _____'s inclusion in the program to test student's ability to understand non-verbal communication. His scores were in the average range for his group and I do appreciate his participation in this research project.

From April 14 to April 23 I will be teaching a one period daily class at the high school. This class is designed to improve the awareness of body language, facial expression and voice tone meanings. There will be discussions, games and exercises to help the students understand the more subtle aspects of interpersonal communication. Hopefully, this unit will eventually be included in the Learning Methods class curriculum.

I would like _____ to be one of three students included in this pilot class. This would be during a free period in his school day so no class work would be missed.

As this is a research project, I will need your written permission both to allow _____ to attend the class and to permit me access to his school records. All information will be treated as confidential. In the event this study is published, names and other identifying data will be changed to protect the privacy of the students and their families.

If you have any questions, please call me at _____. Please sign and return this form as soon as possible.

Thank you for your cooperation.

I hereby consent to my child's participation in the above described class, to allow access to his school file, and to the dissemination and/or publication of the findings of the study under the condition that identifying information by reasonably disguised.

SIGNATURE _____ DATE _____
Parent or Guardian

APPENDIX B

ANSWERS LOWERED IN VOCABULARY
LEVEL ON THE PONS TEST

expressing jealous anger	mad because another girl took her boyfriend
admiring nature	likes pretty flowers
criticizing someone for being late	mad at someone for being late
expressing gratitude	saying thank you
nagging a child	telling a child to pick up his toys
asking forgiveness	sorry for what she did
helping a customer	working in a store
trying to seduce someone	wants a kiss from her boyfriend
expressing deep affection	loves her boyfriend
returning faulty item to store	wants the man to fix her broken clock
threatening someone	saying "watch out or I will make you sorry"
expressing strong dislike	hates someone

INSTRUCTIONS FOR THE PONS TEST

The instructions to be read by the test administrator, given by the test authors (Rosenthal, Hall, DiMatteo, Rogers and Archer 1979), were simplified. The essential content remained the same but a shorter presentation, lowered in vocabulary level, was used. The following paragraph was read to each group:

In this film you are to match facial expressions, body movements, and tone of voice to actual situations. Some you will see, some you will hear, some both see and hear. Circle A or B on your answer sheet that matches what you just saw or heard. Keep your finger on the number on your test to keep your place. Some will be hard, guess if you have any idea of the answer. The first one will be sound only. Ready.

APPENDIX C

LESSON MATERIALS

Audio Cassette Demonstration Tape: Pons Test Components. Irvington Publishers, Inc., 551 Fifth Avenue, New York, N.Y. 10017.

Body Talk Game: The Game of Feeling and Expression. Psychology Today Games, Communications/Research/ Machines Inc., Del Mar, California, 1970.

Ekman, P., Friesen, W. V. and Tomkins, S. S. "Facial Affect Scoring Technique: A First Validity Study." Semiotica 3, 1971, 37-58.

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Illustrations, 7630, 10"x14" pictures from Toward Affective Development Instructional Program. American Guidance Service, Circle Pines, Minnesota.

Instructo Pictures No. 1215 Understanding Our Feelings. The Instructo Corporation, Paoli, Pennsylvania.

Nonverbal Sensitivity Test in Harrison, Randall P. Beyond Words: An Introduction to Nonverbal Communication. Prentice-Hall, Englewood Cliffs, New Jersey, 1974.

APPROVAL SHEET

The dissertation submitted by Lee Axelrod has been read and approved by the following committee:

Dr. Ronald R. Morgan, Director
Associate Professor, Educational Foundations, Loyola

Dr. Anne M. Juhasz
Professor, Educational Foundations, Loyola

Dr. Jack A. Kavanagh
Associate Professor and Chairman, Educational Foundations, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

3/4/81
Date

Ronald R. Morgan
Director's Signature