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Social-Emotional Adjustment in Deaf Children: An Investigation of the Relationship between Academic and Speech Perception Abilities to Social-Emotional Adjustment

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Independent Study
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Social-Emotional Development of Children

Most children are born with a capacity to develop socially and emotionally. Socially, they learn to relate to other people through a set of learned behaviors and interactions with their mother, who possesses the most integral bond with the infant. Emotionally, they develop through the interaction of their experiences and their genetic predispositions. Furthermore, experience can shape the interpretation of social interactions. Many theorists agree that emotional experience originates with autonomic nervous system arousal. What occurs next is often debated. In recent years, the major disagreement centers on whether cognition determines emotion or not, according to Denham (1998). Current research suggests that emotion and cognition often work together in the creation of emotional experiences, although at times one or the other may take the lead, indicating that neither takes precedence over the other. In addition, emotions work to regulate behaviors within oneself and in interactions with others.

Furthermore, Jones (1992) proposed that social *and* emotional development are interrelated psychological perspectives concerned with social relationships, emotional stability, social perspective-taking, social regulation and moral development, social problem-solving, metacognition, and self-concept development. She asserted that social and emotional growth and development are closely linked with all aspects of child development. Most children follow a "normal" range of

social and emotional developmental patterns in their interactions with adults and children, play skill development, and in self-concept development.

Each child brings a particular set of abilities to his or her emotional life. Children differ in their ability to cope with the complexity of interactions with other people and to take the perspective of these other persons. Hence, differences in these abilities contribute to variability in expressiveness, understanding, and regulation of emotions. Denham (1998) suggests that as language, self-concept, perspective taking, and moral sense develop, so do the experience, expression, and understanding of intricate emotions, such as empathy, contempt, guilt, and shame. Significant deviation in the development of language, self-concept, perspective taking, and moral sense can create impairment in the ability to fully develop emotional competence.

In addition to a child's own set of abilities, other persons play an important role in the development of emotional competence. Interpersonal socialization factors also contribute in a major way to the development of individual differences in emotional competence. During the infant and toddler years, parents are the foremost socializers of their child. Children learn a great deal from various socializing situations about the appropriate expression of emotions, the nature of emotional expressions and situations, means of coping with emotions, and even potential reactions to others' positive and negative emotions. As described by Denham (1998), "Parental modeling, coaching, and contingent reactions to children's

emotions contribute to the children's own patterns of expressiveness, understanding of emotion, and coping with their own emotions and those of others." The importance of acceptance by parents of the child leads to a special role for the parent. Their specific reactions to children's emotions either encourage or discourage certain patterns of expressiveness.

It is difficult to describe a distinct difference between social and emotional development in children. Typically, both develop in a manner that relies on one to influence the other. Successfully moving into the world of peers is a major developmental task. The young child's emotional competence, in particular managing emotional arousal that occurs with social interactions, is crucial for the ability to interact and form relationships with others.

Social-Emotional Development of Deaf Children

Hearing loss is a sensory deprivation that limits the world of experience (Kusche, Garfield, & Greenberg, 1983). Levine (1960) states that for an individual to be socially mature, he needs to acquire information regarding social customs, habits and experience by putting that information into practice. Furthermore, he needs an opportunity to enjoy social relationships, attitudes that impel him to seek out new experiences, and a healthy psychic structure that provides well-balanced motivation. Deaf children, however, are typically ill prepared to function effectively in the hearing world. Delayed language and social skills will contribute

to delayed personal and social development (Becker, 1997). Meadow (1980) states that social development and language acquisition are intertwined. She asserts that it is to be expected that deaf children, whose language development is delayed, will have fewer opportunities for social interaction, both within and outside the family. The concept of social maturity is concerned with behavior that is appropriate for particular ages and stages of development. When a child is disabled, family and close friends in his environment may scale down their expectations for social development. Additionally, attempts at interaction between the deaf and hearing people may often be unsuccessful, leaving negative feelings on the part of the deaf person that leads that person to seek isolation from social interaction.

Appropriate and satisfying social interaction is based, at least to some degree, on the ability of an individual to "take the role of the other" (Meadow, 1980). This means that one must be able to empathize with another person to facilitate appropriate and meaningful interactions. Cates and Shontz (1990) report that a number of investigators have suggested that problems in social behavior and emotional adjustment among the deaf may be due in part to delays in the development of social cognitive processes. They explain that social cognition refers to a person's conceptualizations of others and the processes by which a person comes to understand others' experiences (1990). The study of deaf children's role taking ability has received increasing attention. Flavell (1963) noted that role taking is believed to develop largely through social interactions in which children

reevaluate their beliefs and perceptions when faced with opposing views from others.

Deaf children with deaf parents generally exhibit normal patterns of development in social, linguistic and cognitive domains relative to their hearing peers (Marschark, 1993). This appears to be a function of the quality of early interactions with parents who share a common mode of communication. For deaf children with hearing parents, communication with significant people in their lives is drastically limited due to a language barrier, therefore creating a major disadvantage in their ability to learn ways of personal coping and interaction within society. Society places expectations upon individuals that can either positively or negatively effect the perception of one's social and emotional abilities.

The Role of Parents in the Social-Emotional Development of Deaf Children

Early mother-child interactions mark the beginning of any parent-child relationship, which is a combination of the parent and child's initial states. Essential in the relationship is that the mother and child become attuned to each other through similar behavior patterns and understanding each other's signaling system. Marschark (1993) emphasizes that only mothers and infants stimulate and respond to each other, developing behavior patterns that usually vary from those

between the infant and other people. Early interactions between mothers and infants allow a support network to develop for later emotional bonding.

Most hearing-impaired children are born to parents with normal hearing. Upon diagnosis of a deaf child, parents often experience feelings of frustration, grief and anger. Occasionally, negative feelings are inadvertently directed toward the child, which in turn affects the environment in which the child is raised. Inexperience with deafness coupled with a denial of the child's hearing loss can foster an environment in which unrealistic expectations are placed on the child. According to Day (1986), hearing parents use reduced amounts of explanatory or inquisitive language when they communicate with their deaf children. For these reasons, it is possible that deaf children who have hearing parents receive language models, which differ from those presented to hearing children. This may lead to delayed social maturity in the deaf child.

Some of the ways in which child rearing methods differ in families with young deaf children as compared to families without deaf children, are illustrated in Schlesinger and Meadow's (1972) interviews with parents of preschool children. The parents of deaf children reported that they felt a greater need to constantly supervise their child to protect them from accidents. Their disciplinary techniques were fewer, including a heavier reliance on spanking, and expressed greater general frustration about child rearing than the parents of hearing children.

It is apparent from the differences in interactions between parents of deaf children and parents of hearing children how the deaf child acquires diminished or delayed social concepts and behaviors. Many studies show that hearing parents of deaf children place lower expectations on their children as a direct result of their child's hearing impairment. The parent's lack of confidence in their deaf child only inhibits that child's growth potential to interact appropriately within society. A deaf child is then destined to behave in ways we consider to be immature or emotionally delayed since there is a tendency to have low expectations for them.

Deaf Children in School

Historically, it was assumed that by placing deaf children in school with hearing children there would be a beneficial effect on the development of speech, behavior, and academic skills for deaf children (Moores, 1990). It was believed that by moving into a hearing environment, deaf children would absorb the language and expectations of the larger community more easily than if they were segregated in residential institutions with other deaf children and used manual languages of communication. Moores (1990) emphasized that it was a classic example of fitting the child into the environment and expecting the child to adapt instead of altering the environment to facilitate development.

Research has suggested that mainstreamed hearing-impaired children have greater difficulty with social-emotional adjustment issues than their hearing peers,

despite the potential academic benefits of mainstreaming. The communicative patterns of school aged children have an impact upon their social interactions. Antia (1982) reports that mainstreamed hearing-impaired children in grades one through six tend to interact more with their teachers than with their hearing peers. This adult dependence is viewed negatively by normal hearing children and further limits the opportunity for peer interactions.

Farrugia and Austin (1980) examined the social-emotional patterns of hearing-impaired children in different educational settings. They found that deaf children in public schools ranked lower on measures of self-esteem, social-emotional adjustment and maturity than age matched groups of hard of hearing children in public schools, deaf children in residential schools and normal hearing children. This finding suggested that social rejection as well as social isolation contribute to the lower self-esteem and adjustment in hearing-impaired children. In addition, Reich, Hambleton, and Houldin (1977) noted that the child's ability to comprehend speech was related to his social and emotional success in the mainstream. This research suggested that hearing-impaired children in the mainstream are at-risk for poor social-emotional adjustment. The ability to appropriately evaluate the issues concerning adjustment of these children would allow professionals to identify and address the specific difficulties the hearing-impaired children are experiencing.

Previous Research with Specific Relevance for this Investigation

In the area of social maturity, Schlesinger and Meadow (1971, cited in Meadow, 1980) conducted a study of 40 deaf preschoolers using the Vineland Social Maturity Scale (a test which assesses communication, social interactions, daily living skills and motor development). Their results indicated that a significant positive correlation existed between the Vineland score and an index of communicative competence, demonstrating that a firm relationship exists between the ability to communicate and the maturity level of the child.

Chovan and Roberts (1993) questioned whether self-concept affects achievement outcomes or if achievement outcomes affect self-concept. They studied 35 moderately to profoundly deaf students, ranging in age from nine to 19 years. By using two tests, the Self-description Questionnaire I and the Meadow-Kendall Social-Emotional Assessment Inventory for Deaf and Hearing-impaired Students they discovered a positive correlation for social adjustment inferences and percentile scores for reading comprehension. This study clearly indicated that deaf students' concepts of self are associated with their academic successes, especially reading.

Kluwin, Blennehassett, and Sweet (1990) set out to define and assess social or emotional competence within a school setting which would be related to adult functioning in society. They viewed most measures in this area as fixed or

relatively static, meaning that they merely evaluate a person's life in terms of a single instant and not in terms of the person's ability to deal with life's challenges.

Coping is a process in which the individual uses cognitive processes to manage tension or anxiety producing situations (Kluwin, et al., 1990). Kluwin and his colleagues report three reasons why coping is a more useful model for understanding the social and emotional response of hearing-impaired children to public school situations. First, coping is not a static construct; secondly, it offers the ability to predict success in future situations; and, finally, it can be contextually or situationally evaluated.

In the Kluwin, et al. (1990) study, the Meadow-Kendall Social Emotional Assessment Inventory (M-KSEAI) and the Adolescent-Coping Orientation for Problem Experiences (ACOPE) were administered to 324 hearing-impaired students who were in the ninth to 11th grade at the time of testing. The M-KSEAI subscales of social adjustment, self-image, and emotional adjustment were used to determine concurrent validity of the ACOPE by correlating them with three factors in the ACOPE – personal solutions, seeks diversions, and emotional response. Kluwin, et al. (1990) predicted negative correlations between measures of problem avoidance (or seeks diversions) and measures of maturity or adjustment. The correlations for "seeks diversions" significantly demonstrated their prediction with the three M-KSEAI subscales. However, predicted negative correlations among social and

emotional adjustment and emotional response, especially the use of emotional outbursts as a coping strategy were not statistically significant.

Meadow-Kendall Social-Emotional Adjustment Assessment Inventory of Deaf and Hearing-Impaired Children

In 1975 Public Law 94-142, The Education for All Handicapped Children Act, was passed and mandated individualized educational planning for every handicapped child in the United States (Federal Register, 1977, cited in Meadow, 1983). With no measure of social and emotional adjustment of deaf children in place, a requirement that all areas of assessment be validated initiated the inception of an inventory of social and emotional adjustment of deaf and hearing-impaired students ages seven to 21. An inventory for younger hearing-impaired students ages three to 6 was also made, based on the original.

The M-KSEAI inventory was intended as an aid to teachers and administrators in identifying children who need additional help in the areas of social and emotional development. It was not designed as a diagnostic test, and is only as useful as the observations of the evaluator are informed and sensitive (Meadow, 1983).

Purpose of the Present Study

This study is based on a population of deaf children who have all used a cochlear implant for at least four years. The outcome measures of interest are both measures of social-emotional adjustment. One is a teacher-report measure (the Meadow-Kendall) which is completed by the parent in this case and the other is a self-report measure (the Perceived Self-Competence Questionnaire) which is completed by the deaf child. The questions to be addressed are as follows:

➢ Among the deaf children with implants, is good social-emotional adjustment associated with high levels of speech perception ability?

➢ Among deaf children with implants, is good social-emotional adjustment associated with higher academic achievement?

➢ Among deaf children with implants, is good social-emotional adjustment associated with good receptive language ability?

METHOD

Participants

The sample used was part of a larger study examining the effects of different amounts of rehabilitation on language and speech perception abilities in children who have cochlear implants. Subjects were school-aged deaf children (n=92) who have cochlear implants (years of use: $\geq$ 4 years) who participated in a study at the Central Institute for the Deaf in 1997 and 1998. Various educational

settings were represented (full-time special education, n=27; part-time mainstream, n=21; full-time mainstream, n=44), and several communication modalities were utilized by the children (speech, sign, and various combinations thereof).

Procedure

Psychological Variables. The Meadow-Kendall SEAI school-age inventory (7 to 21) was designed to be completed by the student's teacher. Because teacher ratings were not available, parents were instructed to complete the Meadow Kendall (M-K) form, rating their child on the various items as compared with other children of the same age. The school-age inventory contains 59 items divided into three subscales: social adjustment, self-image, and emotional adjustment. The items are based on directly observable behaviors. Norms are provided for girls and boys ages seven to 15 and ages 16 to 21. Those norms are based on inventories collected on more than 2,400 students enrolled in 10 different schools and programs for the hearing-impaired (Meadow-Orlans, 1983).

The CID-Perceived Self-Competence (PSC) questionnaire was administered to all children in the same large study of implant benefit, by one examiner. This examiner was proficient in both spoken and signed English. This instrument was developed from Susan Harter's (1982) Perceived Competence Scale for Children, which was designed to assess self-competency and self-worth in typically-developing children. The child is seated across a table from an examiner and is shown two color drawings, one on each side (left and right) of a horizontal notebook

page. Each page of drawings has a corresponding set of statements that are read by the examiner. One picture on each page depicts a well-adjusted, socially accepted child and the other depicts a less well-adjusted and accepted child. The child is asked to identify which picture and corresponding statement is most like himself/herself. Next, the child must indicate to the examiner whether that statement is a "lot like me" or a "little like me". The examiner records the child's choice and tallies these responses. The items in the instrument are grouped into five categories of interest: cognitive, physical, social, school, and communication.

Other Variables. Areas of interest that were analyzed with the M-K and PSC were speech perception, receptive language, and reading comprehension. Speech perception was reported through administration of the Lexical Neighborhood Test (LNT). The LNT examines the ability of the student to organize words into "similarity neighborhoods". They use this information to recognize words. The test categorizes words into easy and hard lists; this is based upon word frequency and lexical similarity. Lexical similarity can be defined as words that differ by one phoneme from the test word. Easy words have fewer lexical neighbors and occur frequently. Hard words have more lexical neighbors and occur less frequently. While seated in a sound proof booth, the examiner produces a test word from the list and the student is expected to repeat the word. The examiner then records the responses from the student and a score is derived according to the number

correct (Kirk, 1995). A percentage is then established of their speech perception ability, which provided the score used for this study.

The Test for Auditory Comprehension of Language (TACL) accounted for individual assessment of the receptive language skills of the students. This test is normed on children with normal language ages 3 – 9.11. The TACL consists of 120 test items ordered according to difficulty and divided equally into three sections, 1) Word Classes and Relations, 2) Grammatical Morphemes, and 3) Elaborated Sentences. A spiral bound book contains simple black and white line drawings that are arranged three on a page. For each item the examiner reads a word or phrase and the student points to the correct picture. By allowing the student to point, this test permits the assessment of non-verbal students. A standard score was provided and of benefit for the purpose of this study (Compton, 1990).

Reading comprehension was recorded by way of the Peabody Individual Achievement Test (PIAT). For the purpose of this study, raw scores were used for the analyses. The reading comprehension subtest includes 82 multiple-choice items. For each item, a sentence is provided on one page for the student to read silently. The next page contains four illustrations, and the student selects the picture that best illustrates the sentence. The reading comprehension portion of the PIAT requires that the student work on his own (Compton, 1990).

RESULTS

Descriptive Statistics on the psychological measures

Meadow Kendall. First, descriptive statistics about the children's performance on the M-K measure were calculated. These results are displayed in Table 1.

Table 1. Mean, Standard Deviations, and Range of Percentile Ranks by Subscale: Meadow-Kendall

	Mean PR	SD of PR	Range
M-K 1	61	25	0-90
M-K 2	64	20	0-90
M-K 3	63	19	10-90

The mean scores from this table show that these children with cochlear implants scored slightly above average as compared with the deaf children in the M-K normative sample. The normative sample comprised 2,365 deaf children from many geographic regions around the U. S.; 1,793 (76%) were from residential programs and 572 (24%) from day programs. It should be noted here that one potentially important difference of these two samples is that for the M-K normative sample, teachers (not parents) were the respondents.

Table 2 displays the inter-correlations of the M-K subscales. The subscales are all moderately (and significantly) related to each other.

Table 2. M-K Inter-Correlation Matrix

	M-K 1	M-K 2
M-K 1		
M-K 2	.506*	
M-K 3	.550*	.514*

MK 1 – social   *p< .001
MK 2 – self-image
MK 3 – emotional

Perceived Self-Competence. As a first attempt at quantifying the responses on the PSC, we determined what percentage of items were answered in a "positive" (i.e., well-adjusted or socially acceptable) direction. The mean percentage of items responded to "positively" was 93% for this study sample as a whole.

Next presented is the inter-correlation matrix of the PSC subscales. These correlations demonstrate the strength of the relationship among the different areas of perceived self-competence.

Table 3. PSC Inter-Correlation Matrix

	PSC 1	PSC 2	PSC 3	PSC 4
PSC 1				
PSC 2	.366*			
PSC 3	.483*	.433*		
PSC 4	.433*	.359*	.363*	
PSC 5	.544*	.376*	.397*	.572*

PSC 1 – cognitive   *p< .001
PSC 2 – physical
PSC 3 – social
PSC 4 – school
PSC 5 – communication

It was also of interest to compare the inter-correlations of the two psychological measures. These results are found in Table 4.

Table 4. M-K and PSC Correlation Matrix

	M-K 1	M-K 2	M-K 3
PSC 1	-.045	.118	.048
PSC 2	-.088	.294	.099
PSC 3	-.010	.161	.016
PSC 4	-.046	.180	.068
PSC 5	.005	.189	.033

PSC 1 – cognitive   MK 1 – social   *p< .001
PSC 2 – physical   MK 2 – self-image
PSC 3 – social   MK 3 – emotional
PSC 4 – school
PSC 5 – communication

None of the PSC subscales were significantly related to parents' judgements of their childs social or emotional adjustment.

Relationships among non-psychological variables

Table 5. LNT, TACL, and PIAT Inter-Correlation Matrix

	TACL	PIAT
LNT	.581*	.585*
TACL		.691*

*p< .001

This table shows moderate positive correlations between speech perception (LNT) and reading comprehension (PIAT) and speech perception and auditory comprehension of language (TACL) measures. The above inter-correlations between the non-psychological variables were expected due to the direct relationship

between the ability to perceive speech to abilities in reading comprehension and auditory comprehension of language.

<u>The relationship between speech perception,</u>

<u>reading, receptive language and the psychological variables</u>

In the following tables, the correlation matrices showing the relationships among the LNT, TACL, PIAT and all M-K and PSC variables are presented. All correlations are Bonferroni corrected. (See Tables 6 – 11)

Table 6. LNT and PSC Correlation Matrix

	LNT
PSC 1	.06
PSC 2	-.007
PSC 3	.096
PSC 4	.080
PSC 5	.249

PSC 1 – cognitive   *p< .001
PSC 2 – physical
PSC 3 – social
PSC 4 - school
PSC 5 - communication

Table 7. LNT and M-K Correlation Matrix

	LNT
M-K 1	.341*
M-K 2	.238
M-K 3	.330**

M-K 1 – social adjustment   *p< .001
M-K 2 – self-image   **p< .005
M-K 3 – emotional adjustment

Table 8. PIAT and PSC Correlation Matrix

	PIAT
PSC 1	.088
PSC 2	-.058
PSC 3	.091
PSC 4	-.004
PSC 5	.119

PSC 1 – cognitive   *p< .001
PSC 2 – physical
PSC 3 – social
PSC 4 - school
PSC 5 – communication

Table 9. PIAT and M-K Correlation Matrix

	PIAT
M-K 1	.266
M-K 2	.132
M-K 3	.324**

M-K 1 – social adjustment   *p< .001
M-K 2 – self-image   **p< .005
M-K 3 – emotional adjustment

Table 10. TACL and PSC Correlation Matrix

	TAC-L
PSC 1	.167
PSC 2	-.046
PSC 3	.104
PSC 4	.035
PSC 5	.149

PSC 1 – cognitive   *p< .001
PSC 2 – physical
PSC 3 – social
PSC 4 - school
PSC 5 – communication

Table 11. TACL and M-K Correlation Matrix

	TACL
M-K 1	.258
M-K 2	.184
M-K 3	.247

M-K 1 – social adjustment   *p< .001
M-K 2 – self-image
M-K 3 – emotional adjustment

The correlations between the PSC and non-psychological variables showed no significant associations. The M-K instrument was related, however, to some of the non-psychological variables: (a) emotional adjustment was significantly related to reading and speech perception scores and (b) social adjustment was significantly related to speech perception.

Associations with current educational placement

It was of interest to see whether scores on the psychological measures would vary by current educational placement. Table 12 (and Figure 1) show the means and standard deviations of M-KSEAI percentile ranks divided by education placement category. No significant differences were found between fully-, partially-, or non-mainstreamed children.

Educational Placement	Mean (s.d.) M-K 1	Mean (s.d.) M-K 2	Mean (s.d.) M-K 3
Fully MS	66.59 (21.34)	68.86 (18.07)	66.82 (19.97)
Partially MS	57.14 (28.31)	60.00 (22.13)	62.38 (17.00)
Special Ed.	55.93 (25.61)	60.37 (20.66)	58.15 (18.41)

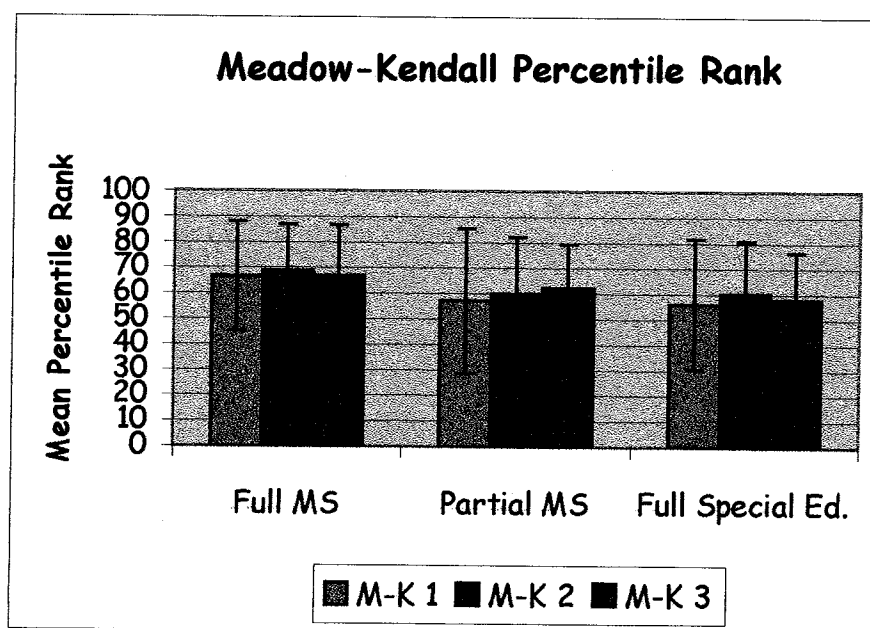**Table 12. Mean and Standard Deviations by Educational Placement M-K**

Figure 1

Likewise, educational placement was considered as a factor in examining the percent of positive responses on the PSC questionnaire. The means of the fully-, partially-, and non-mainstreamed children were virtually identical on this measure as well. Table 13 (and Figure 2) display these means and standard deviations.

Educational Placement	Mean % positive	s.d. % positive
Fully MS	92.73	9.96
Partially MS	93.29	10.34
Special Ed.	94.64	7.01

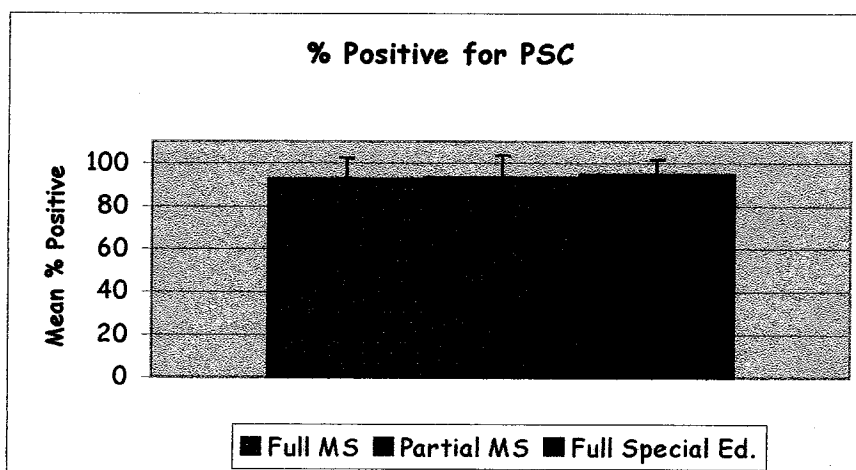Table 13. Mean and Standard Deviation of % Positive by Education Placement – PSC

Figure 2

Discussion

Although, significant correlations were found between 1) emotional adjustment and reading and speech perception scores and 2) social adjustment and speech perception scores, the psychological variables examined in this study did not appear to be related to any other cognitive/academic variables measured. The results of this study fail to establish the predicted correlations among speech and

language perception abilities to social-emotional adjustment. There are several possible explanations why significant correlations were not found when analyzing the data for this measure. The child self report measure and parent report measure may be too subjective, in other words, the motivation of the examinee may have been to represent an idealized view of their true identity. The child may have replied in a way that made them appear more confident; and the parent may have responded in a way that they wished to view their child's social-emotional adjustment.

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