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Social skills intervention for young children with visual impairment and additional disabilities.

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SOCIAL SKILLS INTERVENTION FOR YOUNG CHILDREN WITH VISUAL IMPAIRMENT AND ADDITIONAL DISABILITIES

A Dissertation Presented

by

TRACY EVANS

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ABSTRACT

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The purpose of this study was to evaluate three different teaching approaches that might improve the social functioning of young children with visual impairment and additional disabilities. These three methods included: (1) the arrangement of ecological variables (child-selected play materials), (2) peer-mediated training procedures, and (3) teacher-directed prompting strategies to promote and reinforce social behaviors. Of the four children studied, two failed to show changes in verbal and physical interactive behaviors across baseline and peer-mediated conditions. However, these same two students demonstrated increases albeit highly variable, during the teacher-prompting phase. For the other two students, physical and verbal

interactive behaviors increased during both peer and teacher prompting conditions when contrasted to baseline phases. Overall, these findings suggest that teacher-prompting procedures may be an effective teaching method to improve social skills of young children with vision impairment and additional disabilities.

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INTRODUCTION

1.1 Background

A primary and current challenge for the fields of both special and regular education involves facilitating the inclusion of children with handicapping conditions within regular education settings (Guralnick, 1993). Clearly, there is great interest in developing ways to promote social competence in children who have disabilities (Guralnick, 1990). Social competence can be described as the combination of (a) the specific elements of a child's social behavior that are successful in influencing a peer's social behavior, and (b) the appropriateness of the child's social behavior within specific settings and contexts (Odom, McConnell, & McEvoy, 1992; Guralnick, 1992). Therefore, the very nature of social competence requires that it be viewed or studied during the exchange or reciprocity of individual social behaviors, that is, social interaction.

While a significant amount of existing research has produced promising technologies for promoting

social interaction between children with handicaps and their nonhandicapped peers (McConnell, McEvoy, & Odom, 1992), instructional strategies that assist teachers in employing these technologies with children who have multiple handicapping conditions are not available (i.e., sensory impairments, cerebral palsy, medically fragile, severe/profound retardation) (Odom & McConnell, 1992). Developing this knowledge base is particularly important, in that there are increasing numbers of severely and multihandicapped children who are now being integrated into the regular educational system (Wolery & Fleming, 1993).

From a personnel preparation and research-to-practice viewpoint, it also might be posited that most teachers have had little to no training in the implementation and evaluation of these documented technologies (McCollum, & McCartan, 1988; McConnell et al, 1992; Odom, 1988; Peck, 1993). The majority of research concerning social interaction and integration has targeted children with mild to moderate developmental delays, who have functional language abilities, and intact sensory systems (i.e., normal vision and hearing abilities) (Anitia & Kreimeyer,

1992; Skellenger, Hill, & Hill, 1992). Yet, more and more children, who have severe, multihandicapping conditions and limited language skills, are being placed in regular education classrooms (Goldstein & Gallagher, 1992).

There also is increasing controversy and litigation being introduced by those factions who defend and oppose the inclusion of children in classrooms with their nonhandicapped peers (Bricker, Peck, & Odom, 1993). These conflicts underscore the urgent need for documentation of effective educational practices that promote the social participation of all children in integrated settings. For example, there is a growing group of proponents who advocate for the right of every child to be educated within his or her "home school" and regular education classroom, regardless of the type or magnitude of disability (Bricker, Odom, & Peck, 1992). This group also espouses the model of "full inclusion", in which the child with a handicap receives all educational services within the regular education setting, and with regular and special education services unified under one delivery system. Other professionals argue that the

needs of children with handicaps are too burdensome to the regular educational system, resulting in an exorbitant drain on the fiscal system, a loss of resources for children who are more "capable", unrealistic demands placed on classroom teachers, and a loss of valuable teacher time and resources for more "brighter" students. Unfortunately, the debate concerning inclusion in early childhood settings, as discussed by Richarz (1993), seems to involve rhetoric from both regular and special education that " . . . is based more on personal experience and emotional response rather than a solid foundation of carefully constructed research" (p. 90).

1.2 Statement of the Problem

The aforementioned issues facing both regular and special educators underscore the necessity for the development of social skills teaching procedures that can be administered in applied settings and employed with special needs populations that have a wide spectrum or level of ability. For children with visual impairment, there is a paucity of empirical evidence on how to facilitate their social interactions with their nonhandicapped peers, particularly with regard to young

children at the preschool level (Ammerman, Van Hasselt, & Hersen, 1986; Esposito & Koorland, 1989; Sisson, Van Hasselt, Hersen, & Strain, 1985; Skellenger et al, 1992). This information is uniquely important because the impact of vision loss typically has been associated with delayed development of early interactive and social behaviors (Fraiberg, 1977; Kekelis, 1988).

When analyzing social skills interventions and methodologies used with other disabilities, it is not clear whether similar procedures would be effective in promoting social competence in children with visual handicaps. Typically, research in the area of social skills intervention and developmental disabilities has been conducted using children who are characterized as "environmentally at risk" or "autistic". Other characteristics of the vast majority of children studied are that they had moderate language delays and intact sensory systems (i.e., normal vision and hearing ability)(Demchak & Drinkwater, 1992).

Whether the social variables used in previous research are even relevant when addressing social skills assessment and intervention in young children with visual impairment also needs to be determined.

Indeed, one might suppose that variables such as verbal description of the play environment, tactual cues, and physical proximity to peers might even be more meaningful for young children with impaired vision. The lack of information regarding social skills intervention for young children with visual impairment is particularly significant in two major areas of instruction. First, it is not clear what specific environmental variables should be manipulated to set the occasion for interactive behaviors (e.g., activities that promote closer proximity to peers; providing a choice of preferred play materials that have obvious tactual qualities). Second, the type or frequency of teacher prompting requires investigation. Previous research has suggested that teacher prompting may actually interfere with the interactions of young children (Strain & Fox, 1981), and issues regarding how to eliminate teacher prompting also have been emphasized (Odom & Strain, 1986; Odom, Chandler, Ostrosky, McConnell, & Reaney, 1992). The elimination or "fading" of teacher-prompting presents a paradox, in that, many young children who are visually impaired require some level of teacher assistance to detect

environmental changes and to move from one activity to the next. It also is common for these children to seek out adult verbal descriptions of ongoing events and discrimination of unfamiliar auditory stimuli.

Research on the efficacy of early intervention for young children with visual impairments has been historically problematic due to the heterogeneous nature of the population (Warren, 1984). The prevalence of other handicapping conditions accompanying a diagnosis of visual impairment also is increasingly more common (Erwin, 1993; Hart, 1984). Research in the area of young children with visual impairment lacks consistent criteria that defines "visual impairment", as well as accurate descriptions of the functional ability of participants (i.e., some children functioned at age level while others had additional handicapping conditions and developmental delays) (Kirchner, 1985). The results from this research seemingly has produced a body of knowledge that suggests more questions than answers.

1.3 Purpose of the Study

The primary purpose of the study was to evaluate three different intervention approaches to improve the

social functioning of children with visual and additional handicaps. The three methods that were evaluated stemmed from an examination of the current literature in social skills intervention with children who have developmental disabilities. Specifically, these methods included: (a) the arrangement of ecological variables (in this case, child-selected play activities); (b) the employment of peer-mediated procedures that were designed specifically for use with children having limited or impaired visual ability, and (c) the systematic use of teacher-prompting strategies to direct and reinforce social behavior. Additional components of this investigation involved the amount of teacher intervention and program complexity, and social validity assessment to determine whether nonhandicapped peers actually preferred to play with the target child.

1.4 Definition of Terms

Social skills are generally viewed as ingredients of the broader context of social competence. These situation-specific behaviors typically function as either an initiation or response during social interaction. Social skills also are seen as behaviors

that involve (1) peer-acceptance or popularity, and (2) significant others' judgements of the social skill (McConnell, 1986).

Social competence recently has been described as bipolar in nature. It involves the child's ability to select an effective as well as appropriate social behavior to either initiate interaction with a peer or respond to the overture of a peer (Guralnick, 1990).

Inclusion refers to the participation of students with disabilities in their home school and within the general education classroom.

Peer-mediated training procedures involves training nonhandicapped peers to initiate and respond to targeted playmates. Generally, these procedures are conducted using role play and rehearsal strategies and include reinforcement for appropriate social behaviors taught during the training process.

Teacher-prompting procedures are used to systematically prompt social behaviors of the child with developmental disabilities during naturally-occurring play periods or free play. Frequently, these procedures incorporate some type of reinforcement program, such as a token

economy system, delivery of verbal praise, or immediate delivery of tangible items following the desired social behavior(s).

Visual impairment refers to an incapacity of the visual system. The specific level of disability may range from a total loss of vision, as in the case of total blindness, to a mild impairment in which normal vision may be achieved with corrective lenses. Other defects such as field constriction may also be at issue.

Visually impaired with additional disabilities refers to a deficit of the visual system, accompanied by another disability(s) such as physical disability, or language delays.

Physical interactive behavior refers to a behavioral category used in this study to connote interactive behavior. This category was scored when the child was physically interacting with a peer and engaged in a purposeful activity (i.e., physically directing another child to explore or manipulate a toy, physically directing a child toward an activity, displaying physical affection such as hugging, holding hands, or touching a child's shoulder or face). Physical interactive behavior also was considered to be a

deliberate physical contact such as holding hands, tapping a child on the shoulder, or placing a toy in another child's hand or lap. If children were leaning on one another during play or a child brushed another child's arm as he/she was reaching for a toy, this was not considered to be deliberate physical contact.

Verbal interactive behavior refers to a behavioral category used in this study to connote interactive behavior. This category was scored when the child directed a verbalization toward a peer such as talking about the play activity, verbally directing, or questioning the peer. This category also was scored for single word utterances or verbal behavior that mimicked a peer's verbal behavior.

Proximate behavior was scored in this study whenever a target child was within three feet of peer(s) but was not physically or verbally interacting with other children.

Isolate behavior was scored in this study whenever a target child was outside a three foot radius from his/her peers.

Engaged/Nonengaged was scored in either isolate or proximate categories and was used to indicate the

target child's functional play with similar materials (e.g., parallel play) or nonengaged behavior (e.g., staring or playing with dissimilar materials).

Inappropriate/Negative categories was used to indicate behavior that was inappropriate or repetitive (e.g., rocking, touching object to mouth, striking another child, yelling, throwing materials).

Sociometric assessment involves asking children to make preferential responses or statements about peers in their play group (McConnell, 1986). For the purpose of this study, peers who were nonhandicapped were asked who they wanted to play with prior to freeplay periods.

1.5 Organization of the Dissertation

The remainder of the dissertation is organized into five chapters. Chapter 2 contains a review of the literature regarding research on social skills interventions for young children with disabilities. Chapter 3 provides an explanation of the methodology and experimental design used in this investigation. Chapter 4 contains the results of the study. Lastly, a discussion of the conclusions from this study is presented in Chapter 5.

CHAPTER 2

REVIEW OF THE LITERATURE

2.1 Introduction

The scene is a preschool class at a local elementary school, servicing a total of ten children in the morning session, three of whom have mild to severe developmental delays. Of these three children, one young boy, Nicholas (age 3 and a half) has a significant visual impairment with a total loss of vision in his right eye and a visual acuity of 20/300 in the left eye.

At the beginning of the free-play session, Nicholas was sitting on the floor, next to a toy box of dolls and assorted doll clothing. Periodically, he would pick up a doll, touch the face parts and hair methodically, and touch the doll to his upper lip and while tilting his head backward and gazing at the fluorescent lights in the ceiling. There was a group of four children building a block tower approximately three feet away. At one point, the tower fell, the other children scurried about picking up the pieces and one child accidentally rolled over onto Nick's leg. Nick then kicked the child away and called out for the

classroom aide, "Debbie, rockingboat, Debbie, Debbie". Nick then waited for a response, but the aide was across the room attending to another child and didn't hear him. At that moment, the classroom next door began music class, and upon hearing the piano music and singing, Nick began to press his eye with one hand, and sing the words of the song while tilting his head downward. After a few minutes the music dissipated, Nick listened to the other children still playing in the block area and he repeated the conversation of one of the children by saying, "That's my car". Then Nick tilted his head upward, looked toward the window, and intermittently pressed his left eye while maintaining his head in a downward position. At no time during the observation did Nick appear to move more than a foot away from his original position or seek out verbal or physical play with another child.

The above depiction is presented to highlight common issues that confront educators of young, visually impaired children who have additional handicaps. Typically, these children have a visual impairment with one or more other handicapping

conditions such as physical, cognitive, social-emotional, and learning disabilities. Determining the prevalence of young children with these characteristics historically has been difficult and relates directly to problems in the diagnosis of young children with visual or sensory impairments, general assessment issues in the area of early intervention, and federal and state recording procedures (Fredericks & Baldwin, 1987). Prevalence data as to the numbers of young visually handicapped children who have accompanying handicaps do not exist (Kirchner, 1985). Ferrell (1984) predicted that by 1990, as many as 20,000 children under the age of three would have a vision impairment, suggesting at least a 65% increase during the past decade. This anticipated increase probably can be attributed to improvements in neonatology resulting in increased numbers of low birth weight infants, as well as the assessment and identification of children with visual impairment via the use of functional vision assessments and preferential looking test procedures (Campbell, 1987). Another limitation is that some studies of

young visually handicapped children have not adequately described their participants who in many cases have had additional disabilities.

2.2 Vision Loss: Its Impact on Early Development

In order to describe the unique issues related to the education of young children with visual and additional impairments, it is first necessary to discuss the current literature as it applies to visual impairment and its suspected impact on early childhood development. Some of the most frequently cited characteristics or skill deficiencies noted in the description of young children with visual impairments include the following: (1) a limited exploration of their immediate environment and general level of "passivity" (Adelson & Fraiberg, 1977; Kekelis, 1988), (2) play that tends to be isolate and repetitive (Sandler & Wills, 1965; Fraiberg & Adelson, 1977; Parsons, 1986), (3) an over-reliance on adults to interpret environmental events and frequent selection of adult interaction rather than interaction with peers (Fraiberg, 1977; Kekelis, 1988), (4) language development during the early years that often is echolalic and comprised of repetitive verbalizations

and questions (Anderson, Dunlea, & Kekelis, 1984; Chernus-Mansfield, Hayashi, Horn, & Kekelis, 1985; Erin, 1986; Fewell & Kaminski, 1988; Kekelis & Anderson, 1984; Fraiberg, 1977), (5) topics of conversation are often focused only on self-interests, (6) concept development that may be incomplete and a misinterpretation of environmental events (Kekelis & Sacks, 1988), and (7) stereotypic behaviors that frequently interfere with environmental exploration and social skill development (Ammerman, Van Hasselt, & Hersen, 1986; Leonhart, 1990; Van Hasselt, 1983).

It has been noted frequently that the myriad of opportunities for incidental learning or learning through modeling are severely reduced in young children with visual impairments (Van Hasselt, Hersen, Kazdin, Simon, & Mastantuono, 1983). Several researchers have emphasized that the absence of visual cues prevents the interpretation of critical interaction behaviors such as smiling, directed gaze, physical postures, and gestures (Fraiberg, 1977; Langely, 1980; Morse, 1991; Warren, 1984). Smiling typically has been thought to play a critical role in the development of secure parent-infant attachment (Frodi, Lamb, Leavitt,

Donovan, Neff, & Sherry, 1978). In viewing the very early development of infants with visual impairments, parent-infant interaction has been reported to be negatively impacted (Fraiberg, 1977; Seigel-Causey & Downing, 1987). Frequently, when a mother of a visually impaired infant approaches her child, the infant may not smile or show any signs of recognition until she hears her mother's voice. In fact, some young visually impaired children do not smile to their parent's voice (Fraiberg, 1970).

In Fraiberg's investigations of parent-infant attachment (1977), it was found that while a familiar voice tended to produce smiling in two month old blind infants, only tactile stimulation (tickling) consistently elicited smiling in blind infants beyond the age of two months (p. 117). Thus, unresponsiveness or <u>differences</u> in infant responding may often be confusing to a parent and result in problems with attachment (Ainsworth, Blehar, Waters, & Wall, 1978; Fewell, Fraiberg, 1977).

Seigel-Causey and Downing (1987) emphasize that with visually impaired children, the contingent nature of parent-infant interactions typically is interrupted,

whereby the parent (usually the mother) tends to assume responsibility for beginning and maintaining an interaction. Therefore, parent-infant interaction tends to be one-sided rather than a series of dyadic responses (Seigel-Causey & Downing, 1987). However, Ammerman, Van Hasselt, and Hersen (1987) caution that there is no empirical evidence linking decreased smiling with attachment problems between mothers and their infants with visual impairments. At best, the evidence is anecdotal and not experimental. In fact, the vast majority of studies related to social development and adjustment have involved adolescents and adults (Van Hasselt, 1983). Therefore, to claim a direct causal relationship between visual impairment and developmental problems or maladjustment would be inaccurate in view of the existing research. What may be suggested, however, is that visual impairment places a young child "at risk" for delays in a variety of developmental areas particularly social development (Ammerman et al, 1986; Warren 1977).

Given the risk of delay, it is important to identify those areas in which young children with visual impairments may be more vulnerable. The most

obvious area is that of social competence because the primary means of learning social skills is through modeling and observation of how other children initiate and respond to their environment. Also, the issue of social competence is particularly relevant as it applies to integrated programming in early intervention. Guralnick (1990) has highlighted the following examples of patterns in the social competence of young children with developmental delays: (1) difficulties engaging in group play, (2) absence of initiations towards peers and use of social skills to organize play with peers, (3) atypical patterns of development, (4) problems in the development of reciprocal friendships, (5) absence of or limited use of social/communicative processes such as requests, compromises, negotiation, and (6) lower ratings by peers on sociometric measures. The importance of developing effective procedures and strategies to facilitate the integration of young children with sensory impairment, therefore, is critical given their increased risk of delay in social development. The rising number of children with multiple and sensory

handicaps also suggests that more and more of these children will be involved in the early intervention system (Ferrell, 1990).

2.3 Current Research Promoting Social Skill Development in Young Children with Developmental Disabilities

Existing trends in integration and legislation (Education of the Handicapped Act Amendments of 1986, P.L. 99-457) have resulted in greater numbers of multihandicapped children being involved in integrated play groups. However, the technology for facilitating social interaction patterns in these children is significantly limited (Erwin, 1991; Sisson, Van Hasselt, Hersen, & Strain, 1985). As noted previously, state-of-the-art technology for promoting social skills in young children primarily has been conducted with those children who have developmental disabilities such as language delay or autism. Major contributions to this research have been provided by both Strain and Odom during the late 1970's and throughout the 1980's (Odom, Hoyson, Jamieson, & Strain, 1985; Odom, & Strain, 1986; Ragland, Kerr, & Strain, 1978; Strain, Kerr, & Ragland, 1978; Strain, Shores, & Timm, 1977).

During this period, research progressed from treatment of an individual child with social skill delays to development of a training curriculum and educational approach for use in integrated preschool settings (Odom, Silver, Sandler, & Straïn, 1983). It is clear that much of this research was sparked by the educational changes mandated by P.L. 94-142 and P.L. 99-457, and the integration of children with developmental disabilities into day care and preschool settings that traditionally had serviced only non-handicapped children. With these environmental and political changes came the opportunity for special education researchers to obtain normative data on the social behavior of non-handicapped peers and level of interactions between handicapped and non-handicapped children (Tremblay, Strain, Hendrickson, & Shores, 1981). In addition, investigators were able to identify social skill target behaviors based on sociometric measures (Strain, 1981; 1983).

As noted by Guralnick (1981), research in the area of social interaction behaviors has provided the following information relative to young children's social behaviors in integrated settings:

(a) interactions between handicapped and non-handicapped children do not occur spontaneously above a minimum level, (b) interactions can be enhanced by educational programming to promote interactions and careful structuring of the environment, and (c) nonhandicapped children are capable of adjusting the level and complexity of their speech when interacting with their handicapped peers. Most important perhaps is the absence of detrimental findings reported for either handicapped or nonhandicapped children who have been placed in integrated settings (Strain, 1991). While information exists as to the types of social behaviors that are most prevalent in the social interactions of nonhandicapped children, there is still a dearth of knowledge regarding the promotion of social interactions between handicapped and nonhandicapped children. Specific information as to how often and what types of social behaviors should be targeted for children with various handicapping conditions is absent, particularly in the study of visually and multihandicapped children (Strain & Kohler, 1988; Sisson et al, 1985).

Perhaps one of the primary problems in developing social skill interventions for children with handicaps is the lack of a uniform and operational definition for the term "social skill". The research conducted by Strain and his colleagues has identified behaviors that increase the probability of a handicapped child being accepted by his/her peers. Currently three behavioral observation measures have been utilized in the investigation of children's social behaviors: (1) assessment of target children's performance to pinpoint the specific responses that can occur at problematic rates, (2) observation of peer behavior to determine which additional children and behaviors should be included in training, and (3) observation of normative peers to indicate what interaction behaviors are typical for a particular setting and age group, but are not exhibited by the target child and peer interactions (Strain & Kohler, 1988). Odom and McConnell (1985) have emphasized that a performance-based approach is best suited to social skills intervention with young children with the measurement of specific outcomes such as peer acceptance,

significant others' judgments of liking for the child, and the child's response to desired behaviors of peers.

2.3.1 Emergence of Peer-Mediated Interventions

The use of peer social initiations as a treatment for children with social deficits came about due to problems in teacher prompting and reinforcement procedures that interrupted the ongoing interactions between children. The view also developed that peers could be employed as an instructional resource rather than using only teachers as behavior change agents (Odom, & Strain, 1986). In addition, a more theoretical view of social behavior began to develop that emphasized reciprocity as a critical feature. Therefore, instruction for the development of isolated social behaviors was thought to be only a small component in the development of social behavior between children. Instead, an instructional technology was developed for training the interactional component or social exchange between two children. The major components of the peer initiation approach included: (1) the selection of specific peer initiations or entrees, (2) the arrangement of the environment to

promote interaction, (3) training of peers to implement the intervention, and (4) frequent intervention sessions (Odom, & Strain, 1986).

2.3.2 Analysis of "Spillover" Effects

In their experimental analyses of social interaction between a nonhandicapped child and her peers, Strain and Timm (1974) began the earliest work of determining a class of target behaviors and topographical characteristics of these behaviors. In this study, the participant was a young girl with language delay (age 3.8), who did not interact with peers or siblings, was unaware of danger and considered to be "hyperactive". The peer group (14 boys, 3 girls, ages 3-4.4) consisted of other preschool children with language delays, behavioral deficits, and oppositional behavior. Target behaviors included the following definition of motor-gestural responses: all movements emitted that cause children's head, arms, or feet, to come into direct contact with the body of another child; involve waving, extending arms directly toward another child; involve placing hands on material, toy, or movable apparatus being touched or manipulated by another child. Motor-gestural responding could be

classified as: (1) Positive: touch with hand(s); hugs, holding hands, kiss, wave, all cooperative responses involved with sharing toys, (2) Initiated: all discrete motor-gestural behaviors emitted at least three seconds before or after other children's motor-gestural behaviors, (3) Responded: all discrete motor-gestural behaviors emitted within three seconds following other children's motor-gestural behaviors, and (4) Adult Attention: verbal praise, physical contact to subject or peers contingent upon positive initiated or responded child behaviors.

Using a reversal design, the authors measured the daily frequency of total positive motor-gestural behaviors (initiated and responded) for the subject and her peers that occurred during a 25-minute free-play period. The experimental conditions included: Baseline (freeplay without intervention), Intervention I (contingent teacher attention to peers whenever they emitted target behaviors toward the subject), Baseline II (withholding of attention in presence of target behaviors) and Intervention II (contingent attention to the subject when she emitted positive initiations or responded with target behavior).

The results of this study indicated that teacher reinforcement or contingent adult attention systematically manipulated rates of positive interactions between both the subject and her peers. Although this investigation is not an example of a "peer-mediated intervention", it provided a recording methodology that was later used in the development of peer interventions conducted by Strain and his colleagues (1977)(i.e., continuous measurement of social interaction between subject and peers, and identification of specific target behaviors and topographical definitions). The notion of "spillover effects" from social reinforcement also surfaced in this study, suggesting that close physical proximity to interacting partners may have affected the children's social behaviors. Specifically, "spillover" was described as the change in behavior of untreated subjects due to vicarious learning or in this case, vicarious reinforcement, modeling, or imitation of peer behavior.

During analysis of environmental manipulations that would promote interaction with a child across both reinforcement conditions, contingent attention to the

recipient produced consistently higher rates of positive behavior than during baseline phases of the investigation. In addition, it was found that contingent attention to the target subject resulted in consistently higher rates of positive behavior than did attention to peers. The reasons provided for this outcome were that during Intervention I, attention was dispersed among several peers and, therefore, individual peers may have been reinforced less frequently for positive behaviors than the target child during Intervention II. Also, the order of presentation of intervention procedures may have been critical, since it was noted that in Baseline II, the subject remained closer to her peers than she had during the initial baseline.

In a follow-up study that addressed the question of "spillover", Strain, Shores, and Kerr (1976) investigated whether individual behavioral repertoires of the peer group (nonreinforced children) affected the degree of "spillover" observed. Three preschool boys described as "behaviorally handicapped" and ten other children (peers) comprised the study. The dependent measures were the same motor-gestural behaviors used by

Strain and Timm (1974), plus vocal-verbal behavior directed toward another child, negative behaviors such as striking another child, and teacher behaviors (delivering prompts and reinforcement). The intervention consisted of a combination of verbal and physical prompts combined with verbal praise contingent on appropriate social behaviors.

Using reversal and multiple baseline designs across subjects, the authors assessed direct and "spillover" effects of intervention. By introducing the intervention at different times, it was now possible to examine the behavior of these children as individual members of the nonreinforced peer group. At the same time, this experimental design allowed for the assessment of differential "spillover" effects on children with different social reinforcement histories and differing behavioral repertoires. For example, one of the subjects who did not respond as well to the intervention had a reinforcement history that included the use of edibles for reinforcement of desirable behaviors whereas the other two children had traditionally received social praise for desirable behaviors exhibited during educational programming.

The results indicated that the intervention directed toward the target children reliably increased positive social behavior and decreased negative social behavior. It also was found that the intervention procedures had different "spillover" effects among children with varying reinforcement histories, and that the "spillover" was greater when intervention was applied to two children at once, rather than to one at a time. A critical result in this study was that for one of the subjects no "spillover" effects were found. The authors emphasized that imitation skills were not under stimulus control for this child, and that for children with different imitation abilities there should be differential "spillover" effects. Therefore, it was cautioned that teachers should assess children's social and imitative repertoires, as well as past and concurrent exposure to reinforcement.

2.3.3 Analysis of Differential Effects

Another study that addressed the "spillover" and setting effects described in the earlier studies was conducted by Strain, Shores, and Timm (1977). This investigation was directed at evaluating the setting effect of peer-delivered social stimuli on the social

behavior of isolate preschool children with limited imitative skills. The initial premise was that for vicarious reinforcement to occur, the nonrewarded peers must possess, to some extent, a generalized imitative repertoire. Second, it was thought that the consequences delivered to target children must be reinforcing for children who are not rewarded directly if imitation is to occur.

The target children in this study included six, behaviorally handicapped preschool boys, ranging in age from 39-53 months, with language delays, low rates of social initiations, and histories of oppositional behaviors. Evaluations using the Stanford Binet yielded scores between 25-58. These children were enrolled in a private treatment center, and intervention procedures were conducted in a playroom with manipulatives, toys, dress-up clothes, gross motor equipment, and a one-way mirror. The room dimensions were also identical to the children's actual classroom.

The peers or confederates who participated were actually siblings of other children who attended the center, and were considered socially competent with no delays in general areas of development. One peer

confederate was assigned to a triad of target children, with the goal being to train the peers to socially initiate toward the target children, in order to increase the target children's frequency of emitting positive motor-gestural and vocal-verbal behaviors. Although this study was progressive in its attempt to use socially competent peers, the selection of siblings of handicapped children may have affected the outcome, since the peers already had a history of interaction with the handicapped children.

The behavioral measures were the same as those described in the Strain et al (1976) study. However, the intervention procedures included four, twenty minute training sessions conducted with each confederate separately before the initial intervention period began. These training sessions consisted of role-playing with the experimenter and praise for specific behaviors. A withdrawal of treatment design was employed to analyze the following experimental conditions: (a) Baseline (peer was told not to initiate any social play with the subjects and to "just play as you usually do"), (b) Intervention I (peer was instructed to try their best to get target children to

play with them, and no teacher prompting or reinforcement was provided), (c) Baseline II (return to Baseline I conditions), and (d) Intervention II (return to Intervention I conditions).

The major findings of the study were that the intervention of increased social initiation by a peer increased the positive social behaviors of all subjects, increased the frequency of initiated positive social behaviors by five of the six subjects, and produced differential effects in direct relation to the subject's initial social behavior repertoire. However, the authors cautioned that although imitation of social responses was noted and most of the target children benefited from integration with their peers, the mere integration of children with varying social repertoires may not produce substantial changes in social responding. Rather, careful instruction and programming of peers seemed to be required to achieve these positive results.

Another important outcome highlighted by the authors was that the target child who exhibited lower rates of social behavior also was considered to be essentially nonverbal, thus explaining the differential

findings. These differential effects suggested the need for analysis of multiple response deficits with accompanying demands for differential treatment procedures. Another example of differential effects due to varying social repertoires related to a target child who exhibited higher rates of aggressive behavior. It was noted that peers tended to interact more using verbal behaviors rather than motor-gestural responses and the peers were observed to exhibit these behaviors while standing far away from the target child. As a result, there was less opportunity for the target to exhibit motor-gestural behaviors as well.

2.3.4 Further Analysis of "Spillover" Effects

In a study conducted by Ragland et al, (1978), the application of peer-mediated procedures previously mentioned was used to evaluate the generalizability of the peer-mediated procedures for elementary-age autistic children, and to determine whether increased social initiations directed toward one child would result in accelerated levels of social behavior exhibited by children who were not exposed to intervention procedures. The participants were three children with autism (one girl, age 8; two boys, age 9)

who "actively avoided peers during free-play sessions". Prebaseline observations revealed that these children physically isolated themselves from peers and engaged in brief tantrums when approached. The peer agent was a ten year old boy, diagnosed as behaviorally disordered, but with a large social repertoire. The setting was a playroom in a public school, and all of the participants were enrolled in self-contained special education classrooms.

The behavioral measures and observational system were the same as that employed by Strain et al. (1976). A reversal and multiple baseline design was used and experimental conditions were as follows: (a) Baseline (peer trainer was instructed not to initiate any social play toward the target children, no attempt was made to alter peer responses to target children's initiations, and observation was continued until stable responding was obtained), (b) Intervention I (peer was instructed to try his best to get target children to play with him (c) Baseline II (return to Baseline I conditions), and (d) Intervention II (reintroduction of Intervention I). The multiple baseline design required that intervention be applied at different points in time for

each subject to determine whether increased social initiations toward a target child would also affect the social behavior of other withdrawn children.

The major findings of this study were that the intervention procedure consisting of increased social initiations by a peer improved the positive social behavior of all subjects. Furthermore, the subjects showed no evidence of increased positive social behavior when other children were under intervention conditions and they were not. Although other studies using peer-mediated interventions have employed socially withdrawn children, the children in this study actively refused social initiations prior to the intervention procedure. The authors also point out that the peer agent in this study exhibited inappropriate behaviors himself. Therefore, this child was dissimilar to the peer-agents utilized in previous studies who were considered socially competent in all areas. However, the authors suggest that nonhandicapped or children with less disabling conditions may be employed to increase the social repertoire of their withdrawn peers. It should be noted that this study provides little information as to

the selection process that was conducted in determining categories of handicapped children and peer agents who are less handicapped. A more detailed assessment process would seem advisable prior to the selection of experimental groups.

The critical finding of this study was that "spillover" effects were not observed, thereby contradicting results obtained in earlier research. It was suggested that the children in previous research (Strain & Timm, 1974; Strain et al, 1976) did not exhibit behaviors that prevented them from observing the ongoing intervention. In this study the children with autism engaged in behaviors which prevented them from observing ongoing interactions and allowing for imitation of socially appropriate behaviors.

It should be noted that the authors did not provide specific information as to what the target children were actually doing when unable to observe ongoing interactions. This information would be most important in the analysis of "spillover" effects, and analysis of peer-mediated interventions with children with autism. Lastly, it was suggested that since reinforcement was not provided contingent upon the

target child's positive social behaviors, imitation may not have occurred due to the absence of salient cues. Low performances in developmental areas also were cited as a possible reason for the target subjects' limited imitative behaviors.

2.3.5 Analysis of Peer-Mediated Interventions Within Integrated Settings

Analysis of peer-mediated interventions within integrated preschool settings was conducted by Odom and Strain (1985). The objectives of this study were to train social behaviors via peer initiation, determine if intervention effects generalized across classroom settings, and analyze components of the peer-initiation intervention. The social behaviors which were targeted were based on earlier work conducted by Strain (1983) that employed sociometric ratings to determine social skill targets. Strain found that children who received higher ratings shared toys, organized play, were affectionate, and responded to peer initiations more than lower rated children. It also was found that lower rated children engaged in more negative social interactions such as hitting, name calling, and taking another's toy without permission.

In the Odom and Strain (1985) investigation, the authors were able to refine the social behaviors to include operational definitions of play organizer, share, share request, assistance, affection, and complimentary statements. The subjects included three handicapped preschoolers (34-52 months) who received scores on the McCarthy Scales ranging from no basal level to 97. Six nonhandicapped preschoolers also participated. In the first setting, a play activity was scheduled that included one target child, one peer confederate, and one nonhandicapped child (i.e., grocery store, cooking supper, dressing dolls). Setting 2 consisted of an independent table activity that included fine motor tasks plus the target child and peer confederate seated next to each other. In Setting 3, learning center activities were conducted such as sand/water table. It should be noted that this study provided much greater detail than previous research as to subject abilities based on standardized tests.

Training consisted of five, twenty-minute sessions conducted outside the classroom, in which the instructor described ways to encourage initiations with

the other children, and role-played positive social initiations with another adult. In addition, the intervention included a token reinforcement program so that when the peer exhibited the desired social behavior toward the target child, the teacher held up a card within the peer's view, drew a happy face, and presented a reinforcer once a criterion was established. This token reinforcement procedure was introduced to the peer agent during the training process. However, it should be noted that the authors did not provide any information as to how criterion rates were determined and whether they were the same for every peer agent. It also is unclear as to whether peer agents were allowed to select reinforcers prior to the implementation of the study.

The research findings demonstrated that the peer-initiation package increased the types of social interactions that Strain (1983) found to be related to sociometric acceptance by nonhandicapped peers (i.e., sharing, play organization, responding to peer social initiations). Furthermore, although positive responses to peer initiations increased, the targets' social initiations to peers occurred at low rates across the

study. The explanation provided was that the intensive intervention may have directly caused a suppression of the target children's spontaneous social initiations. The authors emphasized further that while previous research (Strain, 1977) obtained increases in social initiations by handicapped children, social initiations and responding to initiations may be " . . . different classes of social behavior that require complimentary treatment approaches" (p. 13).

Additional findings were that intensive strategies to promote generalization of treatment gains such as programming naturally maintaining contingencies and common discriminative stimuli did not produce cross-setting increases in the children's social interactions. Therefore, it was cautioned that practitioners should use "sequential modification approaches" to ensure generalization of treatment effects across settings. These approaches included correspondence training for peer agents, providing multiple exemplars, and incorporating multiple confederates. Also, practitioners should consider the length and intensity of intervention in order to obtain

generalization since in this study, the procedures were only in effect during 15 minutes per day.

2.3.6 Comparison of Peer-Mediated Interventions and Teacher-Antecedent Interventions

In a second study by Odom and Strain (1986), the authors conducted a comparison of two interventions designed to increase the reciprocity of peer social interactions by autistic children. Teacher-antecedent procedures included prompts to cue autistic children to initiate interaction with their peers who had been trained to reciprocate. Peer-initiation procedures included training, prompting, and reinforcement of peer agents for initiations toward the children with autism. All subjects were males who were four years of age, diagnosed as autistic, and attended a preschool center for emotionally disturbed children. The peer agents (confederates) also were enrolled in the center, and had been referred to the preschool center because of behavior problems in other placements. Percentile rankings for the four subjects on the California Preschool Social Competency Scale were 88, 61, 42, and 48. The study occurred in a classroom during freeplay sessions in which specific play activities were

randomly assigned and distributed (i.e., McDonald's, "doctor", cars and trucks, block building).

Baseline and intervention conditions were evaluated using an alternating treatments design. During baseline, subjects and peer agents were brought to the play area and told to play without direct intervention. During intervention, two treatments were used, with treatments randomly distributed. Training occurred in 20-minute sessions before the intervention play sessions. During the peer initiation training, sessions consisted of training peer agents to direct social initiations, whereas teacher-antecedent training sessions taught peer agents to respond to the autistic child's initiations and to extend the interaction.

A nine-category, continuous event recording system was used to code peer behaviors directed to autistic children and the behaviors that the autistic children directed to other children. These detailed categories represented a further refinement of operationally defined social behaviors which were targeted in earlier studies by Strain et al (1974; 1976) and Odom and Strain (1985). The mean length of social interaction (MLI) between the peer agent and target child was

computed, along with coding and tabulating the frequencies of the behaviors mentioned above. In addition, a teacher questionnaire (5-point, Likert rating scale) was completed at the end of the study to assess the quality of the peer agent's participation in the intervention.

The results indicated that the peer initiation and teacher-prompted treatments "differentially affected the types of social behavior and lengths of social interactions of three autistic children and their peers" (p. 68). First, the peer-initiation treatment supported the social responding of the autistic children. Second, when the teacher prompted the subject's social initiations in a situation where the peer agent had been taught to respond, the subject's social initiations increased. Also, when the autistic children initiated the interaction with trained peer agents, the social interactions between the subjects and peer agents were longer than those in the peer-initiation intervention. The authors explained this finding as a measure of the importance of social reciprocity and continuity of the social interaction. It was suggested that teacher-antecedent intervention

fostered a greater degree of social reciprocity between the target child and peer agent. A final recommendation presented was that future research should develop an approach for transferring stimulus control from the teacher to natural elements in the environment.

2.3.7 Peer-Mediated Interventions for Children with Multiple Handicaps

In a study conducted by Sisson, Van Hasselt, Hersen, and Strain (1985), the efficacy of peer-mediated interventions for increasing social behaviors in blind, multihandicapped children was examined in a multiple-baseline design. This investigation was unique in that subjects with multiple handicaps had never been included in previous research on peer-mediated interventions. Furthermore, prior to this investigation there had been no studies that addressed the efficacy of social skills training approaches with young, visually handicapped children. The target subjects included four legally blind, multihandicapped children who attended a private school for children with visual impairments. These authors presented extensive demographic information as to the visual and

educational ability of the participants. The peer agents selected were two nonhandicapped children, randomly chosen from a pool of six volunteers from a nearby elementary school. All children ranged in ages from 9-11.

The primary research problems highlighted were that (a) children with visual impairment typically have difficulty in acquiring an adequate social skills repertoire due to an inability to detect important social cues, (b) inaccurate or distorted feedback concerning social performance is common, (c) there is limited social exposure of children with vision loss to sighted peers, (d) nonhandicapped individuals tend to have negative attitudes toward the others with visual impairments, and (e) there are functional limitations inherent in the visual handicap (i.e., play that a child can't fully participate in due to the visual qualities of a particular toy). Furthermore, existing social skill interventions rely heavily on visual cues (i.e., modeling), which are inappropriate for individuals with severely limited vision.

During training sessions, the trainer carried out individual demonstrations, in which occluders and

earmuffs were used to simulate blindness and distorted auditory input. Over a six-week period, the peer agents visited the target children's classroom for one hour and 15 minutes per week. These weekly sessions included a 15 minute orientation time, and 3-4 minute play sessions, followed by 5 minute break periods. During each session, all the children were instructed to play as they wished, and at the conclusion of a session the trainer summoned the companions to meet in a corner of the room to obtain feedback on their performance. An important feature of this study was the emphasis on specific procedures to teach companions how to gain attention of the child with multiple disabilities (e.g., tapping the target child on the arm and waiting for him/her to redirect gaze).

The results demonstrated that training facilitated the social behavior of peer agents toward the children with handicaps and that increases in social behaviors of peers affected the behavior of the handicapped children. Specifically, the peer-mediated intervention increased the multihandicapped children's social responses to social behavior in 3 out of 4 cases. Most importantly, during generalization probes there was an

increase in social initiations relative to total social behaviors. The authors suggested that this increase in all subjects during generalization probes and intervention may indicate the extent to which they imitated their companions social behaviors. However, it is unclear whether specific adaptations were made for social initiation and responding behaviors relative to the subject's visual impairments. If so, this information would be critical for replication with a similar population. It also would be informative to know whether verbal social initiations by the participants were more prevalent in contrast to other studies conducted with sighted subjects.

The data on the efficacy of peer-mediated interventions demonstrates that positive results can be obtained in increasing the social responding of children with disabilities and social initiation of nonhandicapped or less handicapped children. It also is clear that for some children, vicarious learning may occur following reinforcement of desired behavior in nontargeted children. What is not clear is whether children with limited language and/or imitative abilities can benefit from social skills programming

that utilizes peer-mediated interventions without providing for adaptations to particular skill deficit areas. In fact, the literature suggests that these children will evince limited or modest gains in social responding unless intensive efforts are made to transfer stimulus control from the teacher or trained peer to natural elements in the environment. Therefore, as was mentioned in all of the studies presented, it is not enough to provide socially integrated play and expect vicarious learning to occur for all children. Further research must evaluate prompting and prompt fading procedures to improve the efficacy of peer-mediated intervention with children who have severe learning deficits.

In their review of social skill interventions for young children with handicaps, Strain and Kohler (1988) contend that the logic and procedures inherent in the multiple baseline design are the best approach for utilizing numerous data sources to directly test the interdependence, or lack thereof, between target children's behavior change, peer corollary responses to target children, and adult satisfaction. By using this type of experimental design, issues related to the

covariation and functional analysis of social behavior can be addressed in a more empirical manner.

Related to the notion of functional analysis is the need for researchers to conduct reinforcer assessments prior to employing reinforcement programs with children with disabilities. A reinforcer assessment seeks to identify empirically a child's stimulus preferences. Such assessments were not conducted in any of the studies reviewed, and in the study conducted by Odom et al (1985) it was found that the token reinforcement program did not maintain responding over time. While reinforcer assessments may be time-consuming, research conducted by Pace, Ivancic, Edwards, Iwata, & Page (1989) indicates that an empirical assessment may produce more rapid results during treatment. Analysis of the effects of materials and the likelihood of novel materials possibly increasing interactions between young children also should be addressed in future studies.

Finally, a major obstacle in transferring the research technology on peer-mediated intervention to actual practice within classrooms is the inordinate amount of resources required to conduct such

interventions (i.e., teacher-to-child ratios, individualized training sessions, reinforcer assessment, delivery of reinforcement and implementation of prompting procedures). Therefore, it is critical that special educators assess various classroom management procedures for use with peer-mediated interventions. For instance, can effective training of peer agents be conducted during naturally occurring free play periods rather than during individual training sessions outside of the free play environment? Will visual cues for reinforcement be as salient as close teacher proximity and verbal praise? And, can peer agents be taught to reinforce each other for social initiations toward target children? Obviously, solutions for practical application of peer-mediated interventions must be addressed if widespread use of this technology is to occur in integrated preschool settings.

CHAPTER 3

METHODOLOGY

3.1 Introduction

Research studies involving the analysis of social interactions in young children with disabilities have typically utilized behavioral measures that require normal visual functioning. Although some researchers have noted social skill deficits in young children with multiple and visual handicaps (Fewell, 1983; Sisson et al, 1985), there exists a paucity of empirical research highlighting social behaviors that may require remediation, and procedures for appropriate programming. In light of the recent expansions in early childhood and integrated services, this lack of information suggests a need for effective teaching procedures in the education of young children with vision loss. Therefore, the purpose of this study was to evaluate three different treatment approaches to determine which intervention might improve the social functioning of children with visual and additional handicaps. This study focused on three methods that stemmed from an examination of the current literature: (1) the arrangement of ecological variables (in this

case, child-selected play materials); (2) the employment of peer-mediated procedures that were designed specifically for use with children with limited/no vision, and (3) the introduction of teacher-directed prompting strategies to promote and reinforce both peer and subject social behaviors.

These three treatment methods were sequenced along a dimension of "least to most", relative to the amount and degree of intervention effort that was required. It was assumed that the arrangement of child-selected play materials could be conducted by classroom personnel with minimal time investment, whereas, the training and reinforcement of peers and the use of direct teacher interventions would require greater effort and resources such as more one-to-one teacher instruction, increased monitoring, greater staff training, and expanded financial resources. Attention to the amount of teacher intervention and program complexity was thought to be particularly important in light of the fact that many teachers involved in unsuccessful integration projects have expressed the

view that intervention methods require too much of their time or are too cumbersome (Fuchs, Fuchs, & Bahr, 1990).

3.2 Description of Participants and Settings

Two different preschool programs (Playgroup 1 and Playgroup 2) were utilized during this study, and involved two handicapped children from each program. The information presented in Table 1 is a description of the functioning levels of each of the children with handicaps in the areas of functional vision, communication, physical ability, cognition, and social competence. This information was obtained using the following assessment tools: Peabody Functional Vision Inventory; Hawaii Early Learning Profile; Oregon Project for Visually Impaired Children; McCarthy Scales; Callier-Azuza Scales; The Assessment of Social Competence (ASC). All experimental sessions in both playgroup settings were conducted during free-play periods.

3.2.1 Playgroup 1

The two children with handicapping conditions who participated in Playgroup 1 were selected by their teacher as being most able to benefit from interaction

with nonhandicapped peers since inappropriate or interfering behaviors were minimal. For example, these participants did not demonstrate repeated aggression toward peers, or engage in self-injury or high rates of self-stimulatory behaviors as did the other children in the program.

In Playgroup I, Target Child A (Carmen) was a five year old female with the following primary diagnoses: Muscular Dystrophy Fukuyama Syndrome and partial agenesis of the corpus callosum; complete retinal detachment of the left eye and distance acuity of 20/180 (myopia) in the right eye (contact lens worn in the right eye); and speech articulation disorder. Carmen was nonambulatory and had no functional use of her arms, hands or legs. Psychoeducational assessments using the McCarthy Scales and Stanford-Binet indicated that Carmen was functioning at a preoperational level (2.5 - 3.5 years). She enjoyed engaging in imaginary play, could recreate familiar activities, verbally identified familiar pictures, and had emerging number and classification skills. Although her speech was sometimes difficult to understand, Carmen was able to

verbally label and request most objects, and to make verbal choices regarding preferred play activities.

Target Child B in Playgroup I (Lucie) was a 5.1 year old female with the following diagnoses: Leber's Congenital Amaurosis; Coates Disease; cerebellar hypoplasia; ataxia (tremors); degenerative eye condition (due to Leber's), fatty deposits on the retinas that may eventually cause retinal detachment, and limited peripheral vision with greater responses to her right visual field and central field. Lucie's ataxic movements usually made it difficult for her to ambulate independently, although she was able to pull to stand and use a walker for short distances. Oral-motor apraxia affected Lucie's speech intelligibility, yet she was able to verbally imitate, label, and request preferred activities and simple objects. Psychoeducational testing using the Help, Michigan and Reynell-Zinkin Developmental Scales for Young Children With Visual Impairments indicated that Lucie's expressive language was at the 2.5 year level. Receptive language abilities were scattered up to the 3.5 year level. Similarly, cognitive skills ranged

from the 2.5 to 3 year level, and were based on the Oregon Project Skill Inventory and the Reynell-Zinkin Developmental Scales.

The three nonhandicapped children participating in Playgroup I ranged in age from 3.5 to 5 years of age, and also were the children of parents who worked at the school. One child was the sibling of a child in the program who was not involved in the study.

The actual setting for Playgroup I was at a preschool program for young children with visual and multiple impairments within a private residential school. Free-play sessions occurred on Mondays from 12:30 to 1:00 and on Tuesdays from 1:00 to 1:30. During this thirty minute period, each handicapped child was observed for 12 minutes, two days per week. At least two adults (classroom teacher or aides) were also present. The room size was 12 x 14 feet, and the room contained the following materials, preschool toys on shelves (puzzles, stacking rings, books), a small table with four chairs, computer, doll house, and a sensory table that contained either sand, water, or corn meal and small manipulative toys.

3.2.2 Playgroup 2

Target Child A in Playgroup 2 (Emily) was a 3.5 year old female with the following diagnoses: prematurity (birth at 25 weeks gestation); retinopathy of prematurity resulting in bilateral retinal detachments; severe visual impairment with light perception only; and low muscle tone. Educational assessment using the Oregon Project indicated normal functioning in all areas except self-help and motor skills. Expressive language skills were considered at age-level except for incorrect usage of pronouns. Emily occasionally engaged in self-stimulatory behaviors such as head weaving and eye pressing.

Target Child B in Playgroup 2 (Adam) was a 3.8 year old male with the following diagnoses: visual impairment secondary to marked rotary nystagmus, hyperopia, poor ocular motor control; asthma; recurrent otitis media; diffuse hypotonia; and pervasive developmental delays particularly in the area of speech. Adam was able to independently ambulate about familiar environments but he had marked limitations in

depth perception and stumbling was frequent. His speech often was slow with low volume, and difficult to understand.

Playgroup II occurred on Wednesday, Thursday, and Friday afternoons from 2:00 to 2:45 at a preschool program within a public elementary school that adjoined a day care program. The nonhandicapped children participating in Playgroup 2 were enrolled in the day care program. The playgroup was conducted in a 14 X 25 foot classroom, with areas designated for instruction, lunch/snack, play (dramatic play, block area, fine motor play (rice/pebble table), and arts and crafts (painting).

3.3 Description of Interventions

3.3.1 Baseline

The initial phase of this investigation involved the implementation of a baseline protocol. It should be noted that this phase involved the consistent introduction of child-selected play materials into the playgroup settings, which had not been conducted during pre-baseline conditions. Preceding each observational session, the target child was asked to choose play materials/activity from a group of three to four

choices (the play activity choices varied from one day to the next). The main objective in using these child-selected materials/activities was to promote the target child's engagement with the environment and thus set the occasion for social interaction between the target child and his/her peers.

While certain types of play materials have been shown to increase social responding and/or engagement in young children with limited response repertoires (Brady, McEvoy, Gunter, Shores, & Fox, 1984; Kohl & Beckman, 1984; Kohl, Beckman, & Swenson-Pierce, 1984; Pace, Ivancic, Edwards, Iwata, & Page, 1985), the procedures for determining play preferences have been based on studies of young children with intact visual systems (e.g., those with autism). Play and toy preferences have been evaluated based upon their reactive versus nonreactive effects, social versus isolate characteristics, and functional versus nonfunctional qualities. Validated procedures for use with young children with vision loss have not been conducted. Therefore, for the purposes of this investigation, it was thought that these participants with visual disability should be offered a role in

selecting free-play materials spanning an array of sensory-stimulating properties. The types of play materials provided in this research were typical of preschool play materials yet included small and brightly colored manipulatives, dramatic play materials such as plastic food and dishes, fluorescent Play-Dough, repetitive auditory games or dramatic sequences (e.g., washing babies, doll house, bus ride, gas station, shopping, hairdresser).

At the beginning of each play session, the target child was asked to select an activity that he/she wished to play with. All of the children in the study were able to verbally indicate their selections. It was anticipated that by providing the target child with a preferred activity at the onset of the free-play session, the likelihood of object engagement by the child would set the occasion for or increase either proximate play or direct initiation by a nonhandicapped peer who might demonstrate interest in the activity.

Following the target children's selection of preferred toys, the nonhandicapped peers were given the instruction, "It's freeplay time", and directed to stay in the designated play area(s). The classroom teacher

or aides were instructed to provide direction as they normally would do during a typical play session. Their interactions and responsibilities included organizing activities, assisting physical movement within the play area, following through with toileting needs, and other similar functions.

3.3.2 Intervention I

The first teaching method consisted of a peer-mediated intervention. The nonhandicapped peers were instructed in ways to elicit social responses from their play partners (target children). This intervention required a trainer (the investigator) to conduct instruction in the nature of visual/multiple disabilities, and role-play sessions, just prior to the daily free-play session. The training procedures employed with nonhandicapped peers were identical to those presented by Sisson, Van Hasselt, Hersen, and Strain (1985) and are summarized in the Peer Training Protocol in Table 2.

Four topics were presented during training. The first topic, Introduction to Handicapping Conditions had the trainer explain the specific handicapping conditions of the target children (i.e., type of visual

and physical handicap, communication abilities). The trainer also facilitated the peers' use of vision simulator's (goggles that approximated the target children's specific visual disability), and then demonstrated the use of related equipment such as an electronic wheelchair, walker, brailler, or orthopedic equipment.

There were two primary goals addressed in this training topic. First, it was anticipated that the nonhandicapped peers would play with the equipment and learn some basic operating procedures such as moving a wheelchair forward while their legs were secured at the knees, or negotiating the playroom while wearing a vision simulator. Second, it was thought that by providing the nonhandicapped peers with a greater understanding of their playmates abilities, they might be more eager to approach the target children.

The second training topic, Play Facilitation, consisted of the trainer explaining specific strategies the nonhandicapped children might use to get the target children to play with them. The actual play behaviors that were discussed included the following: Suggest Play, Show Children How To Play, Sharing Toys, and

Offering Assistance. First, the trainer explained and modeled the play behaviors. Then, the nonhandicapped peers were encouraged to practice the four play behaviors while the trainer pretended to be the target child. Verbal coaching was provided throughout the training session. Successful completion of this topic occurred when the peer had demonstrated each of the four play behaviors at least two times during the role play session.

Specific explanations of the target children's atypical behaviors were provided during Topic 3, Understanding Inappropriate Behavior and Nonresponse. Relative to self-stimulatory behaviors, peers were instructed in how to distract the target child by initiating play, and if appropriate, gently interrupting the target child's movements. Description and demonstration also was provided on what to do if the target child did not respond to a play initiation or continued to engage in an inappropriate behavior, such as refusing to share toys. There were two major skills to be learned in this training topic. The first skill was to Secure Target's Attention, whereby the peer was to say the target child's name, tap the target

child on the arm and wait for the target child to verbally respond, or physically orient toward the peer. The second skill was to Keep Trying, so that the peer was to repeat his/her initiation and either tap on the target's arm or position themselves where the target child could view them more clearly (generally in a midline position). During role play, acquisition of this topic's skills required that the peer demonstrate at least three play initiations, while the trainer responded in a random manner to some of the initiations and did not respond to others.

The final topic of the protocol focused on Review, during which the trainer reviewed the play facilitation strategies and methods for dealing with inappropriate behaviors and nonresponding. It was anticipated that upon completion of the training protocol, the nonhandicapped peers would possess the skills needed to initiate social interactions with their designated play partner(s) (target children) during free-play. Following at least two, thirty minute training sessions in the use of peer-mediation procedures and at the beginning of each play session, the nonhandicapped child was prompted to "Try real hard to get __(name of

target) to play with you". A description of the reinforcer program also was presented, indicating that each time they made an initiation toward one of the target children the teacher or aide would place a chip in her apron that the peer could then trade in at the "Play Store" at the end of the session. Therefore, at the conclusion of each session, the nonhandicapped peers were given individualized feedback (verbal and tangible reinforcement) relative to their demonstration of a mediation procedure. It should be noted that the teacher and aides wore aprons containing pockets labeled with the first initial letter of the peers' names. When the nonhandicapped peers demonstrated a physical or verbal initiation toward a target child, the teacher or aide would then place a chip into the appropriate child's pocket. These procedures were instituted so that the peers received a visual reminder of the on-going system and an immediate visual cue that signalled when they had just demonstrated a targeted social skill.

Reinforcement criteria began with one initiation per session, and was increased each day but did not exceed three initiations per session. The actual

reinforcer exchange was provided to the peers as a group and took place outside the classroom. Examples of the types of reinforcers were "You did a super job asking Carmen to play with you. Here's your chip. What would you like from the store?". The peers were given an opportunity to select their reinforcers from an assortment of items (colored paper clips, stickers, stars, plastic rings, plastic toys, gummy bears, jacks).

3.3.3 Intervention II

The second and final intervention phase involved the use of teacher-prompting procedures. The teacher or aide prompted the handicapped student to either initiate interaction with a peer or respond to a peer's initiation. What was perhaps unique to this approach was that teacher-directed training typically has been conducted under analogue conditions and whereby the child is then expected to generalize the learned skills to the free-play setting. In this study, teacher-directed procedures were conducted within the naturalistic free-play setting. Naturalistic teaching approaches incorporate many of the generalization strategies first introduced by Stokes and Baer (1977)

that utilized prompting and shaping procedures within natural settings during child-selected or child-preferred activities (Paget, 1989). The specific teacher-directed procedures that were used in this study involved systematic cueing of the teacher or aide to prompt social interaction. The cueing of the teacher or aide was performed by the investigator once per minute during each observation session, and by the investigator holding up her finger to the right side of her head for 1-3 seconds. This visual cue signalled that the teacher or aide should prompt the target child to initiate interaction or respond to a peer's overture (i.e., "Carmen, ask Sarah if she wants a baby doll."). Prior to each session, staff also were reminded that if the target child were already engaged in interaction they were to ignore that cue and continue until the next cue occurred.

3.4 Experimental Design

The investigation employed an A-B-A-C reversal-type design (Hersen & Barlow, 1984), and involved repeated measure of each target child's social behavior during four phases of the experiment: (1) an initial or baseline phase **(A)** with environmental arrangements

(child-selected activities/materials); (2) a second phase **(B)** in which peer-mediated training procedures were introduced; (3) a third phase **(A)** that involved a return to baseline conditions by withdrawal of peer-mediated intervention, and (4) a second intervention phase **(C)** that introduced teacher-prompting procedures.

3.5 Observational Procedures and Scoring

3.5.1 Dependent Measures

The dependent measures comprised three categories of social behavior: (a) Isolate, (b) Proximate, and (c) Proximate Interactive. Within these categories, sub-category measures also were included: (1) **Isolate**: Engaged, Not Engaged, Inappropriate/Negative, (2) **Proximate**: Proximate Engaged, Proximate Nonengaged, Inappropriate/Negative, and (3) **Proximate Interactive**: Physical Interactive, Verbal Interactive, Inappropriate/Negative. Additional behaviors that were recorded involved (a) peer initiations, and (b) teacher prompts or praise (verbal or tactual). All of these categories and specific operational definitions are presented in Table 3.

3.5.2 System and Schedule of Observations

In Playgroup 1, each child was observed two days per week (Monday and Tuesday). Therefore, the playgroup was not in effect on Wednesday, Thursday, and Friday. Whereas, in Playgroup 2, each child was observed three days per week (Wednesday, Thursday, and Friday), and playgroup conditions were not in effect on Monday and Tuesday. The daily observational sessions for all participants were 12 minutes in duration. The order of child observation in each playgroup was determined randomly.

Scoring procedures involved a partial-interval recording system to document occurrences of each target child's social behaviors, initiations from peers, and teacher prompts. During each 12-minute observation session, the presence and absence of target behaviors were scored on a ten-second observe, five second record format. Observation and recording intervals were announced via an audio-tape and headphones. Data were scored on a data collection sheet shown in Appendix D. Because a partial-interval recording system was used, any occurrence of a target behavior (regardless of duration) within intervals was scored.

3.6 Observer Training and Reliability Procedures

Observer training was conducted for a two and a half month duration, five days per week, with particular attention given to refinement of the behavioral codes. The author and a graduate student observed all the participants in their natural play settings and reviewed the behavioral codes both before and after each observation session. Interrater agreement was conducted by a second observer (graduate student) who recorded data with the investigator in a simultaneous but independent manner. Interrater agreement was calculated by dividing the total number of agreements per behavior by the total intervals scored (agreements plus disagreements) and multiplying by 100. Interobserver agreement checks were performed during 95% of sessions for Carmen, 92% sessions for Lucie, 77% sessions for Adam, and 79% sessions for Emily. Table 1 presents the average interobserver agreement scores for participants in Playgroup 1, relative to occurrence reliability. Table 2 presents the average interobserver agreement scores for participants in Playgroup 2, relative to occurrence reliability. Whereas, Table 3 presents the average

interobserver agreement scores for participants in Playgroup 1, relative to nonoccurrence reliability. Lastly, Table 4 presented the average interobserver agreement scores for participants in Playgroup 2.

Table 1
Occurrence Reliability for Playgroup 1

PLAYGROUP 1	BASELINE	PEER-MED	BASELINE	TEACHER	MEAN
CARMEN PHYSICAL-I	69(28-100)	65(37-89)	77(60-100)	91(80-97)	73
VERBAL-I	65(0-100)	74(42-100)	90(71-100)	74(59-84)	79
PROXIMATE	86(73-90)	79(50-95)	89(89-90)	81(75-86)	83
ISOLATE	- - - -	- - - -	83(83)	- - - -	83
PEER-MED	79(70-89)	72(56-83)	80(67-100)	64(50-90)	74
TEACHER	88(57-100)	62(0-100)	89(67-100)	76(54-95)	70
LUCIE PHYSICAL-I	80(60-100)	83(50-100)	100(100)	49(37-78)	70.5
VERBAL-I	75(27-100)	78(50-100)	67(67)	58(50-74)	70
PROXIMATE	92(65-100)	92(86-95)	97(90-100)	79(68-86)	89.54
ISOLATE	- - - -	16(0-31)	100(100)	90(90)	74
PEER-MED	56(0-100)	83(57-100)	80(60-100)	52(0-100)	75
TEACHER	11(0-33)	56(33-100)	0	71(60-86)	48

Table 2
Occurrence Reliability for Playgroup 2

PLAYGROUP 2	BASELINE	PEER-MED	BASELINE	TEACHER	MEAN
EMILY PHYSICAL-I	58(0-100)	93(86-100)	50(0-100)	68(25-80)	65
VERBAL-I	47(0-100)	50(50)	- - - -	69(50-82)	60
PROXIMATE	90(77-100)	90(83-96)	95(93-98)	79(57-92)	81
ISOLATE	57(25-83)	50(50)	85(69-100)	40(40)	62
PEER	57(25-100)	75(50-100)	100(100)	62(33-100)	65
TEACHER	64(20-75)	83(65-100)	37(0-75)	75(57-90)	62
ADAM PHYSICAL-I	45(0-67)	25(0-50)	0	76(37-100)	49
VERBAL-I	63(43-100)	44(16-67)	33(33)	56(28-100)	58
PROXIMATE	82(51-100)	86(78-90)	90(90)	85(74(95)	84.5
ISOLATE	83(50-100)	100(100)	100(100)	83(60-100)	86.5
PEER	67(33-100)	75(50-100)	0	60(0-75)	50
TEACHER	88(50-100)	75(75)	33(33)	60(50-71)	63.5

Table 3
Nonoccurrence Reliability for Playgroup 1

PLAYGROUP 1	BASELINE	PEER-MED	BASELINE	TEACHER	MEAN
CARMEN					
PHYSICAL-I	97(87-100)	89(69-98)	90(75-98)	96(93-98)	83
VERBAL-I	98(95-100)	94(86-100)	98(95-100)	88(81-92)	95
PROXIMATE	65(12-95)	72(54-89)	74(69-80)	68(40-90)	70
ISOLATE	100(100)	100(100)	100(100)	100(100)	100
PEER	98(92-100)	81(64-100)	87(82-93)	88(74-100)	88
TEACHER	98(93-100)	95(87-100)	97(90-100)	85(79-92)	95
LUCIE					
PHYSICAL-I	98(93-100)	99((96-100)	100(100)	92(86-100)	93
VERBAL-I	91(55-100)	98(89-100)	99(98-100)	9185-98)	95
PROXIMATE	64(0-100)	69(40-100)	93(70-100)	53(33-67)	66
ISOLATE	100(100)	100(100)	100(100)	100(100)	100
PEER	99(98-100)	97(93-100)	98(93-100)	93(86-100)	97
TEACHER	98(93-100)	96(91-100)	96(88-100)	76(53-92)	93

Table 4
Nonoccurrence Reliability for Playgroup 2

PLAYGROUP 2	BASELINE	PEER-MED	BASELINE	TEACHER	MEAN
EMILY					
PHYSICAL-I	98(95-100)	97(91-100)	99(98-100)	97(86-98)	98
VERBAL-I	93(84-100)	97(96-100)	99(97-100)	87(68-100)	93
PROXIMATE	70(22-100)	83(67-92)	86(78-100)	70(56-92)	77
ISOLATE	100(90-100)	100(95-100)	100(100)	97(82-100)	99
PEER	100(90-100)	99(96-100)	98(95-100)	93(86-98)	97
TEACHER	88(60-100)	88(67-100)	73(93-100)	89(77-97)	85
ADAM					
PHYSICAL-I	98(97-100)	75(0-100)	87(87)	96(84-100)	89
VERBAL-I	94(80-100)	97(91-100)	100(100)	87(71-100)	95
PROXIMATE	61(33-92)	65(27-100)	86(86)	57(46-88)	68
ISOLATE	100(98-100)	100(100)	100(100)	97(88-100)	99
PEER	100(100)	92(67-100)	87(87)	99(91-100)	97
TEACHER	88(50-100)	100(100)	73(73)	89(81-100)	90

3.7 Social Validity Measures

3.7.1 Teacher Preferences for Interventions

At the conclusion of the study, teachers in both settings were asked to identify which of the interventions were easiest to implement, and to provide comment on problems/issues with any of the other approaches. This information was obtained via verbal report from teachers and aides who were directly responsible for implementation of the intervention procedures and those who were directly involved in the organization of each setting. In Playgroup 1, two staff members participated, and in Playgroup 2 four staff members participated.

3.7.2 Peer Sociometric Ratings

Sociometric measures were obtained by questioning the peers in both playgroups about who they wanted to play with during the upcoming play sessions during each condition of the study. The question was posed at least once during each condition to each of the peers involved in both playgroup settings.

CHAPTER 4

RESULTS OF STUDY

4.1 Introduction

Data are presented in two formats. Individual target child social performance is represented in figure graphs and in summary table format that contains percentage averages for all dependent measures. Since this study focused on social interactive behavior, the primary measures included verbal and physical interactive behaviors. Tables 5-6 present the percentage of physical and verbal interactive behaviors for each child, per daily session, for all experimental conditions. These figures also present the percentage of peer initiation and teacher prompts. Table 3 presents the average percentages of social behaviors and respective ranges of responding, for participants in Playgroup 1 and for all experimental conditions. Whereas, Table 4 presents the average percentages of social behaviors and respective ranges of responding for participants in Playgroup 2, and for all experimental conditions.

Table 5
Average Percentages of Recording Intervals in Which Social Behaviors Were Scored Per Condition for Playgroup 1 (Numbers in Parentheses Indicate Ranges of Recordings)

CARMEN	BASELINE	PEER-MED	BASELINE	TEACHER
PHYSICAL	7.29(0-20.83)	21.14(6.25-38.46)	9.72(8.33-12.5)	25.14(12.5-50)
VERBAL	9.85(0-30)	16.89(10.42-22.92)	10.54(2.78-14.58)	31.95(10.47-50)
PROXIMATE	80.20(56.25-93.7)	60.35(43.75-79.16)	69.11(64.28-72.22)	47.91(35.42-62.50)
ISOLATE	0	0	4.63(0-13.89)	.35(0-2.08)
PEER	18.05(8.3-31.25	43.21(31.25-57.69)	28.24(18.75-43.75)	26.7(12.50-50)
TEACHER	4.51(0-14.58)	6.90(2.08)	4.86(2.08-8.33)	31.74(18.75-43.75

LUCIE	BASELINE	PEER-MED	BASELINE	TEACHER
PHYSICAL	1.87(0-4.76)	1.55(0-4.17)	1.55(0-4.65)	25.14(12.5-50)
VERBAL	6.68(0-16.67)	4.94(0-25)	6.96(0-2.32)	31.95(10.47-50)
PROXIMATE	91.26(68.75-100)	88.65(70.83-94.44)	70.83(42.42-100)	47.91(35.42-62.5)
ISOLATE	0	3.21(0-12.16)	18.33(0-55)	.35(0-2.08)
PEER	6.24(0-4.17)	9.20(3.44-18.75	2.32(0-6.97)	26.74(12.5-50)
TEACHER	2.06(0-4.17)	10.42(0-16.67)	3.11(0-9.30)	31.74(18.75-43.75)

Table 6
Average Percentages of Recording Intervals in Which Social Behaviors Were Scored Per Condition for Playgroup 2 (Numbers in Parentheses Indicate Ranges of Recordings)

EMILY	BASELINE	PEER-MED	BASELINE	TEACHER
PHYSICAL	2.86(0-6.25)	14.78(0-27.08)	1.70(0-4.16)	21.19(8.33-34.48)
VERBAL	4.16(0-12.5)	8.23(0-22.91)	1.25(0-2.08)	15.92(8.33-24.32)
PROXIMATE	76.82(60.42-93.75)	65.30(45.83-85.47)	75.94(61.78-90.91)	65.30(45.83-85.47)
ISOLATE	5.13(0-22.92)	5.95(0-29.17)	13.75(0-31.25)	1.85(0-8.33)
PEER	7.04(0-16.67)	12.62(3.45-31.25)	2.50(0-6.25)	13.31(6.25-32.43)
TEACHER	20.57(12.5-39.58)	17.27(4.17-41.67)	5.87(0-22.92)	26.74(18.75-41.46)

ADAM	BASELINE	PEER-MED	BASELINE	TEACHER
PHYSICAL	1.27(0-6.0)	2.46(0-6.25)	5.55(0-8.33)	7.46(0-22.92)
VERBAL	8.96(2.08-16.67)	10.86(2.08-31.25)	4.16(0-.33)	10.47(1.0-37.50)
PROXIMATE	67.60(43.75-95.83)	78.50 (62.5-91.67)	55.55(8.33-83.33)	67.38(52.08-85.47)
ISOLATE	5.06(0-12.50)	2.42(0-10.42)	32.64(8,33-75.00)	8.21(0-27.88)
PEER	.52(0-2.08)	4.41(0-10.47)	2.78(0-8.33)	9.91(0-22.92)
TEACHER	1.7(0-6.25)	4.02(0-9.38)	8.33(0-25.00)	22.27(0-25.00)

4.2 Participant Data and Analysis

4.2.1 Playgroup 1

Figure I shows the percentage of verbal and physical interactive behavior for Carmen. During baseline, peer-mediated procedures and return to baseline conditions, there was a noticeable difference in the average percent of targeted social behaviors. However, there was a more pronounced increase in social responding under the teacher-prompting condition for both physical and verbal interactive behavior. Analysis of the average percentage rates of social behaviors as seen in Table 3 indicates that when teacher prompting procedures were in effect, responding for both target behaviors increased relative to preceding conditions. These data are as follows: (1) Baseline (Physical Interactive = 7.29 and Verbal Interactive = 9.85), (2) Peer- Mediated Training (Physical Interactive = 21.44 and Verbal Interactive = 16.89), (3) Return to Baseline (Physical Interactive = 9.72 and Verbal Interactive = 10.64), and (4) Teacher Prompting Procedures (Physical Interactive = 25.14 and Verbal Interactive = 31.95).

Figure II depicts the percentage of verbal and physical interactive behaviors for Lucie. Her responding during baseline, peer-mediated procedures, and return to baseline conditions was similar. However, the rates for both physical and verbal interactive behaviors increased when teacher prompting procedures were in effect. The mean percentages of Lucie's responding are as follows: (1) Baseline (Physical Interactive = 1.79 and Verbal Interactive = 6.68), (2) Peer-Mediated Training (Physical Interactive = 1.55 and Verbal Interactive = 4.93), (3) Return to Baseline (Physical Interactive = 1.55 and Verbal Interactive = .77), and (4) Teacher Prompting Procedures (Physical Interactive = 12.15 and Verbal Interactive = 17.01).

4.2.2 Playgroup 2

Figure III presents the frequency of verbal and physical interactive behaviors for Adam. Percentages of responding during baseline, peer mediated training, and return-to-baseline conditions were similar. An increase in physical and verbal interactive behaviors seems to have been associated with the introduction of the teacher prompting condition. The mean percentages

for Adam's social responding within each condition are as follows: (1) Baseline (Physical Interactive = 1.27 and Verbal Interactive = 7.92), (2) Peer-Mediated Training (Physical Interactive = 2.46 and Verbal Interactive = 10.86), and Return to Baseline (Physical Interactive = 5.55 and Verbal Interactive = 4.16), and (4) Teacher Prompting Procedures (Physical Interactive = 7.46 and Verbal Interactive = 10.47).

Data which represent Emily's verbal and physical interactions are presented in Figure IV. Increases in her responding were noted for both verbal and physical interactive categories under both peer-mediated and teacher prompting conditions. A return to low levels of responding was evident when baseline conditions were reinstated following peer-mediated training. Mean percentages for each condition are as follows: (1) Baseline (Physical Interactive = 2.86 and Verbal Interactive = 4.16), (2) Peer-Mediated Training (Physical Interactive = 14.78 and Verbal Interactive = 8.23), (3) Return to Baseline (Physical Interactive = 1.70 and Verbal Interactive = 1.25), and (4) Teacher Prompting Procedures (Physical Interactive = 21.19 and Verbal Interactive = 15.92).

4.3 Sociometric Assessment

4.3.1 Teacher Preferences for Interventions

The two teachers in both play settings indicated that the baseline procedures of providing choices in play materials/activities were the easiest to implement. The next intervention selected by the teachers and aides was peer-initiation training. Teacher prompting was selected as the most difficult to implement.

4.3.2 Peer Sociometric Ratings

In Playgroup 1, all three of the nonhandicapped peers verbally indicated their desires to play with Carmen. Their responses were consistent across both peer-training and teacher prompting conditions. When asked who they wanted to play with prior to the play session, they never selected Lucie as a preferred playmate. On several occasions, two of the peers stated that they did not want to play with Lucie and would make comments like " . . . she won't share" and "she keeps leaning on me".

The nonhandicapped peers in Playgroup 2 preferred Emily as a playmate. Adam was never selected when they were asked who they wanted to play with prior to the

play session. However, these peers did not make any negative comments or verbally indicate why they might prefer to play with Emily rather than Adam or another child in the classroom.

Figure 1. Percent Occurrence of Verbal Interactive, Physical Interactive, Peer Initiation, and Teacher Prompting Behaviors Recorded during Daily Sessions for Carmen

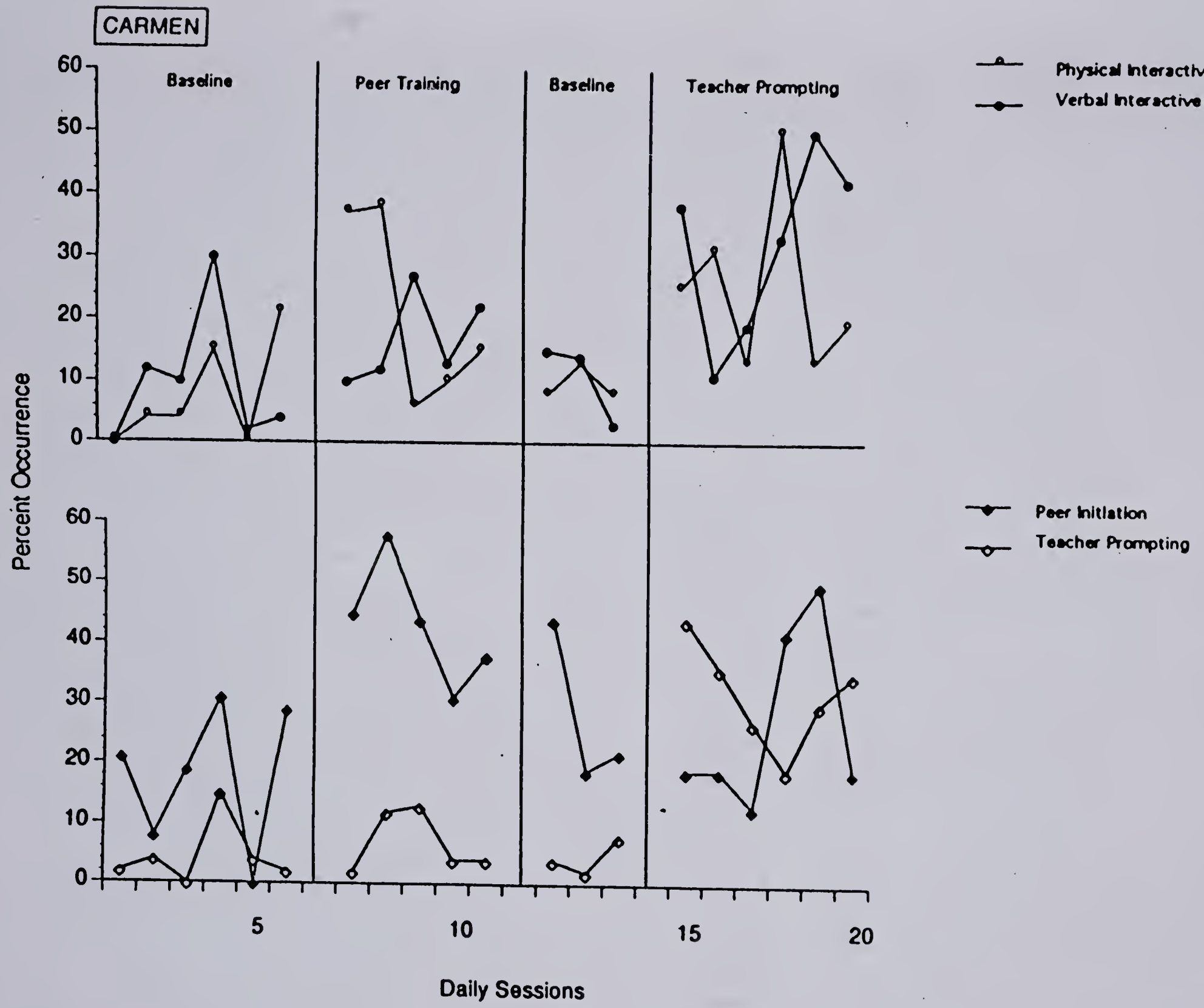
CARMEN
Baseline
Peer Training
Baseline
Teacher Prompting
Physical Interactive
Verbal Interactive
Peer Initiation
Teacher Prompting
Percent Occurrence
60
50
40
30
20
10
0
5
10
15
20
Daily Sessions

FIGURE 1

Figure 2. Percent Occurrence of Verbal Interactive, Physical Interactive, Peer Initiation, and Teacher Prompting Behaviors Recorded during Daily Sessions for Lucie

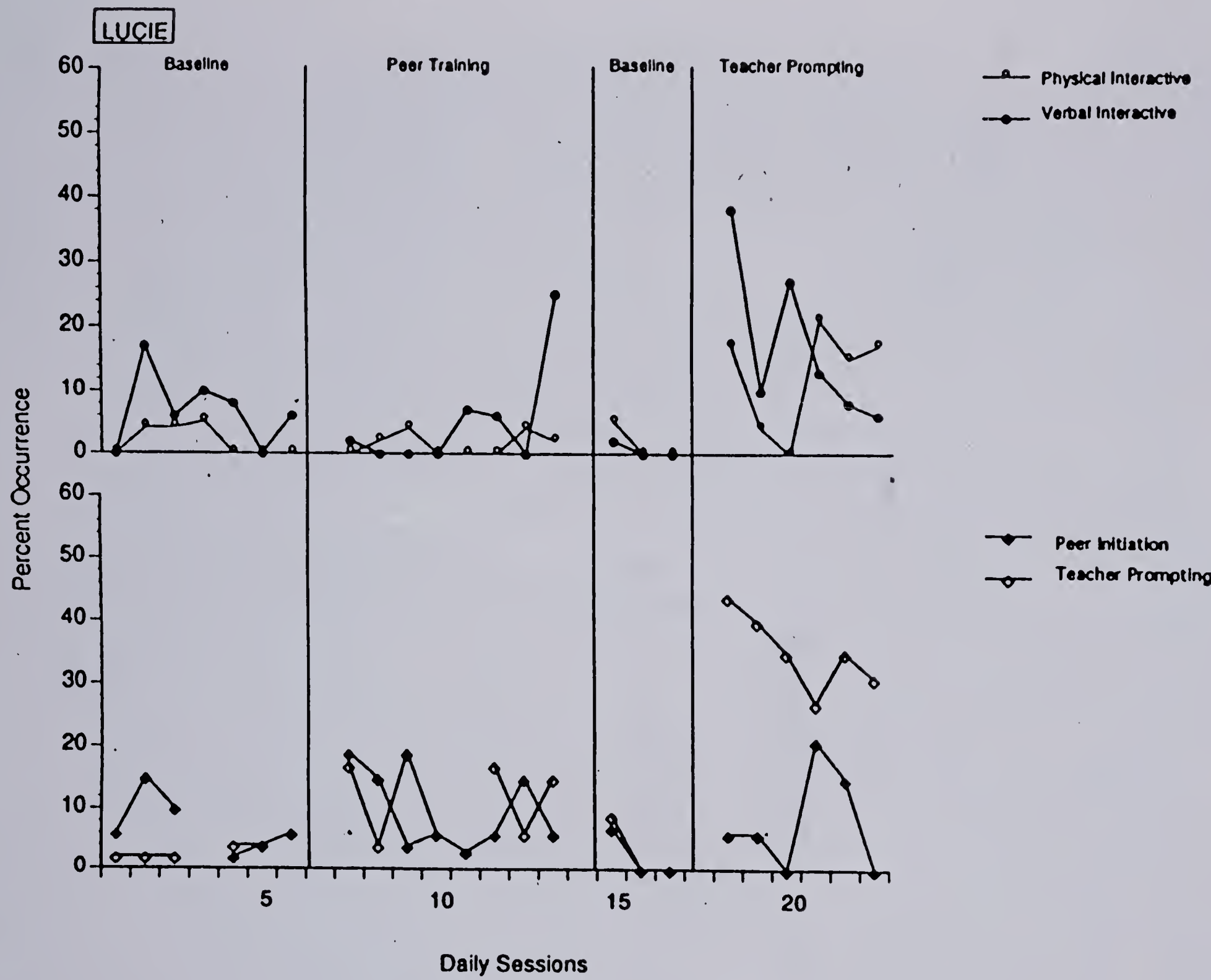
LUCIE
Baseline
Peer Training
Baseline
Teacher Prompting
Physical Interactive
Verbal Interactive
Peer Initiation
Teacher Prompting
Percent Occurrence
60
50
40
30
20
10
0
5
10
15
20
Daily Sessions

FIGURE 2

Figure 3. Percent Occurrence of Verbal Interactive, Physical Interactive, Peer Initiation, and Teacher Prompting Behaviors Recorded during Daily Sessions for Emily

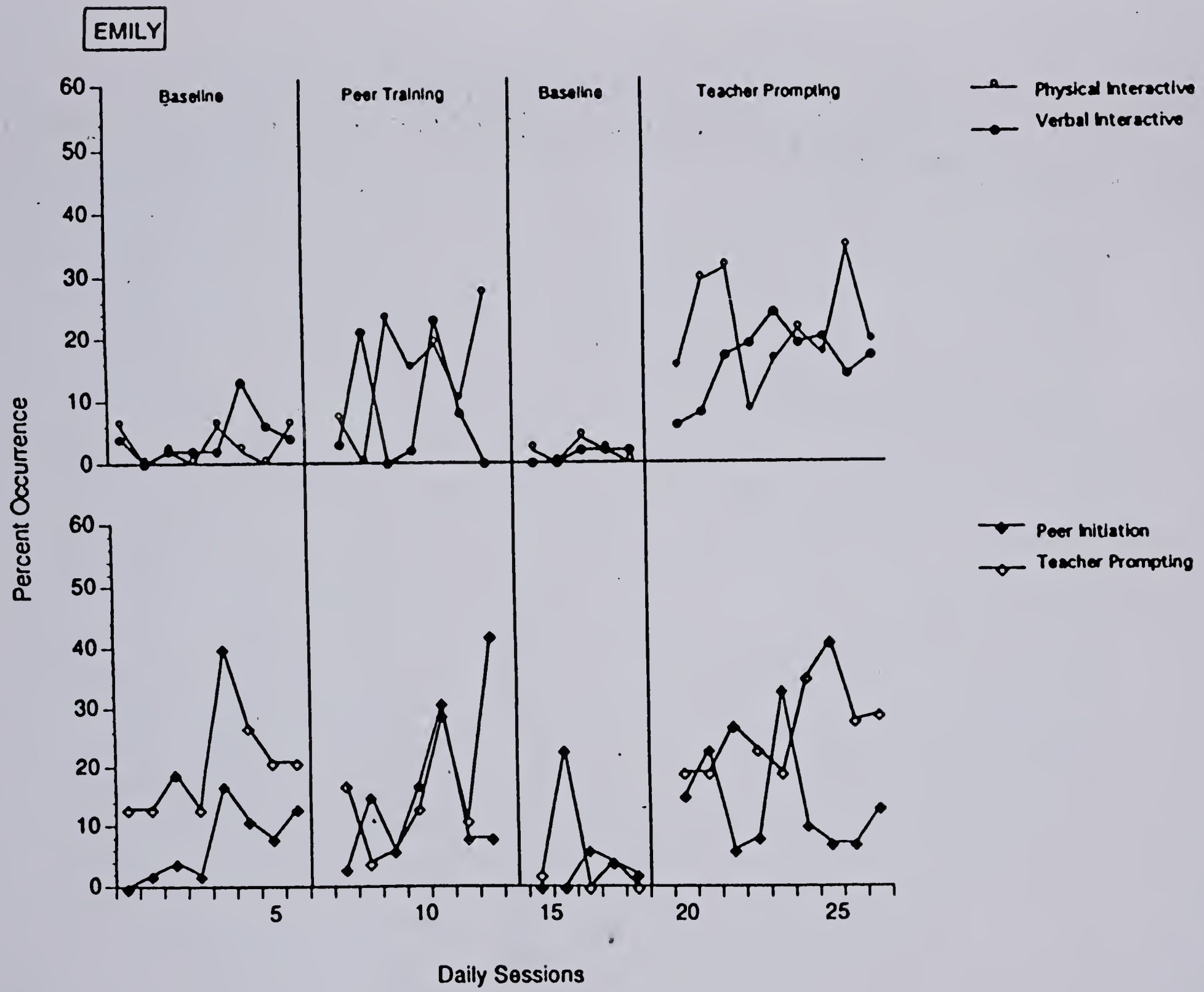
EMILY
Baseline
Peer Training
Baseline
Teacher Prompting
Physical Interactive
Verbal Interactive
Peer Initiation
Teacher Prompting
Percent Occurrence
Daily Sessions
0
10
20
30
40
50
60
5
10
15
20
25

FIGURE 3

Figure 4. Percent Occurrence of Verbal Interactive, Physical Interactive, Peer Initiation, and Teacher Prompting Behaviors Recorded during Daily Sessions for Adam

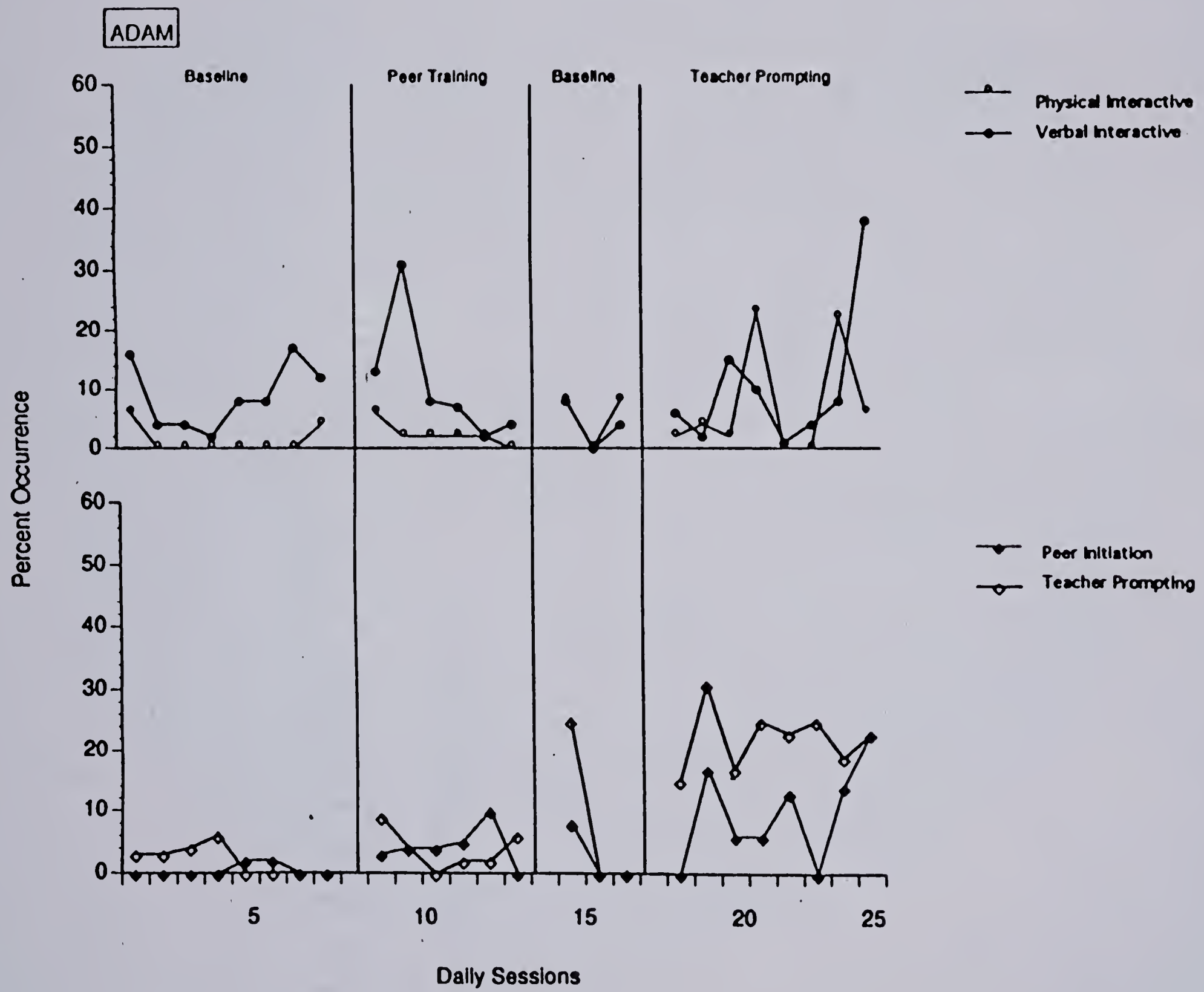
ADAM
Baseline
Peer Training
Baseline
Teacher Prompting
Physical Interactive
Verbal Interactive
Peer Initiation
Teacher Prompting
Percent Occurrence
60
50
40
30
20
10
0
5
10
15
20
25
Daily Sessions

FIGURE 4

CHAPTER 5

DISCUSSION

5.1 Introduction

The outcome of this research may be summarized as follows. First, of the four children studied, two failed to show changes in verbal and physical interactive behaviors across baseline and peer-mediated conditions (Lucie and Adam). However, these same two students demonstrated increases albeit highly variable, during the teacher-prompting phase. For the two other students (Carmen and Emily), physical and verbal interactive behaviors increased during **both** peer and teacher prompting conditions when contrasted to baseline phases.

There are several considerations to discuss which include individual aspects of the children studied, variations in the play settings, implementation of the interventions (treatment integrity), and recommendations for future study.

5.2 Individual Child Effects

5.2.1 Playgroup 1

While increases in both physical and verbal interactive behaviors were noted for Carmen during

peer-mediated and teacher prompting interventions, her levels of social functioning were probably most influenced by her motor disability and related fatigue level. It appeared that she often was quite fatigued in the afternoons during the playgroup, at which time she would frequently hold her head forward or downward and her speech would become less intelligible. Without the functional use of her arms or legs, she generally was unable to initiate physical interaction with a peer, unless she verbally requested peer or teacher assistance to manipulate a toy. Interestingly, of the four participants, Carmen had the highest rates of physical interaction yet she was the most physically challenged of the four target children studied. It also is likely that Carmen's physical disability functioned as a visual cue for her peers to assist her in play. Initially, there was some concern that Carmen was being played with very much like a "doll", as her compliance and willingness to play was atypical of a child with normal physical functioning. In fact, teachers periodically directed the nonhandicapped peers to ask Carmen what she wanted to do, before they

directed her physically. This aspect also was included during the peer-mediated training procedures prior to play under those conditions.

Another aspect of Carmen's physical disability that may have affected her interactions with peers, is that Carmen required assistance by a teacher to move from one activity to the next and to initiate engagement with play materials (e.g., during peer-mediated conditions, the teacher would place a toy in her hand following Carmen's request "Put the doll in my hand"). Therefore, teacher modeling may have occurred more frequently across conditions than with the other three children. Relative to the sex of the three nonhandicapped peers in Playgroup I (all were female), there is some evidence to suggest that girls are more apt to model caretaking behaviors than boys (Evans, 1993). Lastly, it should be noted that Carmen's speech was much more intelligible than Lucie's, so that given a choice, peers seemed to chose play with Carmen. The sociometric measures also support this supposition, in that, when asked whom they wanted to play with prior to the playgroup sessions, all three nonhandicapped peers indicated Carmen as a playmate.

Analysis of Lucie's rates of social interaction show a decrease in both verbal and physical interactive behaviors during peer-mediated training as contrasted to the initial baseline phase. An issue that became clear during this baseline was that Lucie's peers viewed her physical and verbal behaviors negatively. For example, on several occasions during the peer-mediated training phase involving role-play sequences about how peers might interact with Lucie, two of the three peers verbally indicated that they did not like to play with Lucie. Statements such as "Lucie won't share her toys with me", and "Lucie keeps leaning on me" were typical. Even following role-play suggestions of how they might respond to Lucie's undesired behaviors (e.g., suggestions such as tell Lucie "stop leaning on me", or seeking out adult assistance "Susan I need help playing with Lucie") similar comments were encountered. Lucie's ataxic motor movements often affected her stability so that she would typically lean on peers during play activities. She also engaged in inappropriate play behaviors such as taking another's toys without permission and refusing to share toys following peer request.

Periodically, Lucie was observed to become highly agitated when she visually detected a peer's hand touching materials near her. These materials may not have been objects that she was playing with originally, but she appeared to be somewhat "territorial", and sensitive to whether someone was taking an item away. Without normal peripheral vision, it obviously was difficult for her to know when a peer's hand movements were "benign" or when, in fact, a child was taking her toys. In other words, she generally did not see an approaching hand or individual until it was moved quickly in front of her face or within her central field of vision, possibly causing her to interpret quick movements as a threat. It should be noted that while a subcategory of behaviors referred to as Inappropriate/Negative Behaviors was also recorded in order to measure problem behaviors such as stereotypy, aggression directed toward another child, tantrumming, and destruction of play materials, Lucie's undesirable behaviors did not fall under this category. In fact, none of the children studied exhibited behaviors described in the Inappropriate/Negative category, suggesting that there more be other behaviors that

peers interpret as "undesirable" and which were not measured in this study, such as lack of physical orientation, perseverative statements and vocalizations, and absence of imitation and sharing skills.

Finally, it was felt that the intelligibility of Lucie's speech directly impacted peer initiations toward her as well as their responses to her own initiations. Generally, Lucie's language was comprised of repetitive comment (delayed echolalia) and this type of speech may have been difficult for her peers to interpret. She tended to use 1-2 word labels most frequently which typically were misarticulated. On several occasions it was noted that Lucie would also increase the volume of her toy requests if a peer didn't comply to her direction within a few seconds.

During teacher-mediated procedures with Lucie, there was a notable increase in both physical and verbal behavioral categories, accompanied by a reduction in proximate and isolate categories. Thus, it appears that Lucie required more direct teacher intervention to facilitate social interaction rates.

5.2.2 Playgroup 2

Increased interactive behaviors for Emily were noticed during both peer-mediated and teacher-prompting conditions. Of the four children studied, Emily was the only one with a visual impairment and no other handicapping condition. Her visual functioning also was significantly more limited than the other three children studied. The sociometric assessment indicted that she was a preferred playmate of peers. It is important to note that Emily's rates of responding were the most robust during the teacher prompting intervention, suggesting that she still required teacher direction to appropriately initiate and respond to peer overtures.

A contributing factor that may have influenced Emily's interactive behaviors was that she tended to solicit adult verbal interaction rather than peer interaction. For example, it was typical for Emily to seek out teacher explanations and verbal descriptions of what was happening in her immediate surroundings (e.g., "Susan, who is playing at the water table?"). Emily's requests for adult information regarding her environment is a characteristic of many children with

visual impairment and normal language ability (Kekelis & Anderson, 1984). Since this investigation only measured verbal behavior that was directed **toward a peer**, the dependent measures were not sensitive to instances in which the target children directed interactions **toward an adult/teacher.** The inclusion of such data may provide important information as to the amounts of interaction with a peer versus interaction with an adult, particularly as it relates to individual children and the type and severity of handicapping condition.

Adam's physical and verbal interactions increased marginally during both peer training and teacher prompting conditions. Relative to these findings, an important distinction to be made is that while he generally was proximate to the play of his peers, Adam often would stand nearby and watch play activities rather than engage in play or interaction with another peer. This "watching" behavior may have been directly related to Adam's visual impairment, in that his uncontrolled eye movements (nystagmus) generally worsened when he moved about or shifted his gaze from near to distance viewing. Therefore, his visual

functioning tended to deteriorate with increased motor movement. In addition, he often made requests to play with another child in his classroom who was handicapped rather than the nonhandicapped peers he was less familiar with. Interestingly, Adam appeared to have a stronger friendship with this other child in his classroom. Adam's preference for his classmate underscores the need for analyzing the impact that familiarity has on developing friendships (McElvoy, McConnell, & Odom, 1992).

Interobserver agreement scores also were quite low for Adam and may have been related to the difficulty in determining Adam's deliberate physical interactions due to his ataxic and uncontrolled movements. Similarly, his speech tended to be indistinct due to dysarthria.

5.2.3 Setting Variation

While "naturalistic observations" have reportedly been the main method of assessing social behavior in young children (LaGreca & Stark, 1986), one might argue that many of these environments are in fact not natural. Typically, social skills research using peer-mediated and/or teacher prompting procedures has been conducted by either training peers to direct

initiations towards one child at a time (e.g., setting up child dyads), and/or intervening with individual children at different times. Implementation of these treatment procedures using multiple trainers and including several handicapped children at once as described in this research, is not common in prior studies. However, a major goal of this research was to institute social skills interventions in a typical classroom setting and to explore practical methods for treatment implementation. The use of multiple peer trainers has also been described by Brady et al (1984) and McElvoy et al (1992) as being a more efficient method for using peers as change agents.

The organizational management aspects of this study relate directly to the ability of special education programs in providing integrated settings and their proficiency at implementing a systematic method of social skills intervention. In Playgroup 2, staff were already familiar with a daily integrated playgroup that was considered a primary component of the preschool's curriculum. This factor made it easier to schedule the group three days per week (i.e., scheduling staff, organizing the classroom set-up,

accessing staff to obtain validation information). For Playgroup 1, which ran only two days per week, it was significantly more difficult to access nonhandicapped peers, both from a financial and organizational standpoint. Nonhandicapped peers attended this program only for the duration of this research study. Additional staff also were needed to cover other students with disabilities who were not included in the study and who were located in another classroom in the program.

For Playgroup 1, those parents of nonhandicapped children who demonstrated an initial interest in having their children participate in the study and later chose not to, cited the short play time and infrequency of the playgroup as the major constraints. It was obviously difficult for these families to bring their children to the playgroup for short periods, and two of these children were removed from regular day care programs in order for them to participate in the research. Parents indicated that a more lengthy and frequent playgroup would have been easier for family schedules. This factor would have made it easier to recruit nonhandicapped playmates. Parents in the

Playgroup 2 setting were more familiar with their children being exposed to playmates with handicapping conditions, and short play intervals did not interrupt their family schedules because their children were already involved in the day care program adjoining the program. The impact from these issues is that partial inclusion or integration efforts may, in fact, be more difficult to establish and may also have less of an overall impact on improving social skills for participants with disabilities.

Another issue that made it difficult to schedule an uninterrupted play period for Playgroup 1 was that the target children had individual therapies (physical therapy, occupational therapy, speech therapy) as mandated on their individualized education plans. Therefore, therapy was performed during one-to-one sessions away from other children and staff. Addressing this problem of scheduling integrated play in preschool special education programs, Demchak and Drinkwater (1992) have highlighted the need for services that are "transdisciplinary", where services are provided throughout daily activities. Given the positive aspects of integrated programming already

well-documented in the literature (Guralnick, 1990), early childhood special education programs should focus on the provision of therapeutic services within integrated play groups, using peers for encouragement and modeling of appropriate performance.

The length or degree to which children with handicaps are integrated with their nonhandicapped peers also is an area in need of further investigation. For example, would the children in this study have exhibited higher rates of interactive behaviors if they had been exposed to their nonhandicapped peers for longer periods of time throughout their school day and every day? Recall, there was an interim period each week for both playgroups during which interventions were not in effect. For Playgroup 1, intervention was operative on Monday and Tuesday of each week and, therefore, it was suspended for three consecutive days (Wednesday, Thursday, and Friday). For Playgroup 2, intervention was operative on Wednesday, Thursday, and Friday of each week, resulting in a two-day absence of intervention (Monday and Tuesday). The concern here is whether five consecutive days of intervention would yield a more robust learning effect.

5.2.4 Issues of Treatment Implementation

The data demonstrate that when peer-mediated training procedures were in effect, overall increases in peer initiations were noted. Similarly, when teacher-prompting procedures were in effect increases in the frequency of teacher prompts were recorded. In addition, where proximate measures were higher, isolate measures were lower. Similarly, when proximate measures were higher, interactive measures tended to be lower. These results would substantiate the supposition that when children are more interactive, the rate of proximity to peers would be higher than when they are not playing in close proximity to peers.

In light of the documented concern by researchers regarding "teacher interference" during freeplay situations (McEvoy, Odom, and McConnell, 1992; Strain and Fox, 1981), it is important to note that in this study, there was an increase in peer initiations during teacher-prompting conditions, as compared to baseline performances. The nature of this increase may be interpreted as "modeling effects", whereby the teacher was also modeling ways to interact with the target children. Another explanation might be that teacher

verbal prompts that were directed toward the target child also functioned as a cue for peers to initiate interaction with that target child.

The issue of treatment integrity poses the question of whether the treatment procedures in this study were actually performed as described. During peer-mediated training conditions, the token system may not have been salient enough in that peers frequently appeared to continue with their play and not observe the staff member placing a token into the apron. On some occasions, placement of the token into the apron was not immediate, as several seconds were noted to elapse following placement of the token and the occurrence of the peer's initiation.

During the teacher-prompting condition, staff were occasionally observed to miss the investigator's visual cue to prompt social interaction. In addition, teacher and aide verbal prompts to the target child were not always clear or specific (i.e., Carmen, what do you need to do if you want to play with that?" versus "Carmen, ask Sarah if you can have a turn washing the baby.").

The question of whether specific teacher/staff behaviors actually interfered with social interaction is a valid one. In fact, recent research conducted by Hundert, Mahoney and Hopkins (1993) on the relationship between peer interaction of children with disabilities and teacher behaviors suggests that classroom teacher attention toward children with disabilities is proportionately greater than attention provided to children without disabilities. It also was found that higher rates of teacher attention did not necessarily result in higher rates of social interaction. Therefore, the following staff and peer training components may have helped to alleviate teacher interference in this investigation: (1) instruction of staff to use verbal behavior that involves only brief description about the ongoing activity, (2) direction of staff to avoid their direct participation in play activities, and (3) use of peer training procedures that teach peers how to provide assistance to target children in movement from one activity to the next (e.g., use of sighted guide techniques, moving the child's wheelchair to a different play activity).

5.3 Recommendations

5.3.1 Data Collection and Interobserver Agreement

Even though the data collection protocol was reviewed prior to and following each observation session, problems were encountered in achieving acceptable levels of interobserver agreement. Several factors may have contributed to these findings. Kazdin (1977) and Borg and Gall (1983) have suggested that interobserver agreement can be affected by observer drift, the complexity of the observational coding system, and observer expectancies and feedback. Relative to this study, data collection procedures and interobserver agreement may have been improved if: (1) videotapes were utilized (2) the length of observer training was extended, (3) several observers were employed, (4) daily observations were conducted in both settings, and (5) the behavioral categories of physical and verbal interaction were redefined and specific to each of the children studied. These features were not instituted due to the lack of resources for video equipment and observer training time, constraints in the individual scheduling of participants, and restrictions of access to Playgroup 1. With respect to

reforming the behavioral protocol, the category of physical interaction would be limited to very discrete physical behavior such as handing a toy to another child, holding hands, or hugging. Verbal behavior would also include only verbal statements such as greetings, verbal requests, comments that were intended to organize play, or about the ongoing activity. In regard to Lucie's repetitive comments that were coded, a longer observer training program may have alleviated problems in discriminating her intelligible language. The difficulties encountered during data collection would support the suggestion made by Odom and McConnell (1993), that individual coding of children's social behavior may yield more reliable results, especially for those children with poor speech intelligibility, subtle and low rate communicative behaviors, and uncontrolled or uncoordinated motor behaviors.

Difficulties in achieving higher rates of interobserver agreement appeared to be directly affected by: determining deliberate and discrete movements, the interpretation of verbal behaviors and whether these were directed to peers, and the low rates of responding for all participants. While there are

many possible reasons for the diminished levels of social responding between handicapped and nonhandicapped populations (Odom & Strain, 1984), such as differences in data collection procedures and the target population under study, there is the suggestion that these young children with visual and additional impairments demonstrated verbal and physical social skills at a disparaging rate in comparison to normative data.

5.3.2 Experimental Design and Methodology

Strain and Kohler (1988) suggest that in the study of social skills the use of a multiple baseline design is preferable to others as it allows for the study of covariation and the relationships between various data sources (i.e., target child behavior change, peer's behavior change, and teacher prompts). Perhaps use of a multiple baseline design would have allowed for analysis of peer versus teacher interaction. However, it would be important to simultaneously institute each intervention for all participants in order to reflect the organizational aspects of preschool settings that typically employ group instruction methods. This consideration also is relevant in that integrated

playgroups tend to have more than one child with a disability, and in fact, the recommended ratio is usually fifty percent children without disabilities and no more than 50% children with disabilities (Carta, Sainato, & Greenwood, 1988).

The advantage to using the ABAB design in this investigation was that it allowed for the simultaneous introduction of each intervention phase for all the children involved in each playgroup. Thus, it was possible for staff to introduce specific interventions to the group as a whole. The disadvantage to using this design was that it didn't allow for introduction of the interventions specific to individual rates of responding. For example, even if one child did not respond to treatment immediately the design required that the introduction of the new intervention or baseline phase still be administered to the group as a whole. A limitation of the study was that time constraints did not permit a reintroduction of the teacher prompting intervention. Reintroduction of this intervention may have been helpful in affirming the

effectiveness of this intervention in increasing the percent of social responding in the target children studied.

5.4 Future Research

Future investigation in social skills development for young children with visual and additional handicaps should involve the following: (1) analysis of what target child behaviors seem to set the occasion for a peer to initiate or make the child more appealing to peers without disabilities (i.e., smiling, engagement with toys that make the child "look" more able and less "disabled", physical orientation toward a peer), (2) development of individual child recording protocols with social behaviors that are specific to each child being observed, (3) teacher prompting procedures that require staff wearing headphones and cassette apparatus that provide systematic cuing of when staff should prompt, (4) evaluation of social validity measures that involve parents and their level of satisfaction with outcomes, (5) comparison of child-to-child and child-to-teacher interaction, and (6) analysis of teacher coaching procedures that direct staff to select teaching behaviors specific to social skills

intervention, and provides teaching staff with written and verbal feedback following play sessions.

While this investigation focused on social skills interaction measures, these categories and measures may be appropriate for the study of individual children's participation in inclusive settings. For example, the categories of isolate, proximate, and interactive behavior would apply to the child's actual participation in daily classroom activities. By analyzing these categories, one would be able to obtain descriptive measures on the quality of the child's participation in the inclusive setting. In light of the fact that more children with visual impairment and additional disabilities are being placed in inclusive settings, it is important to evaluate the amount of teacher intervention that should be provided, the degree to which the child is engaged with classroom materials and activities, as well as, the frequency and quality of social behaviors.

APPENDIX A

PARTICIPANT PROFILES

Playgroup 1

Target Child: Carmen, age 5
Primary diagnosis: Muscular Dystrophy Fukuyama Syndrome and partial agenesis of the corpus callosum. **Motor**: nonambulatory, sits on floor independently. **Vision**: left eye (retinal detachment due to congenital cataracts); right eye (distance acuity of 20/180; also wears contact lens in this eye). **Cognition**: preoperational level (engages in imaginary play, recreates familiar activities, identifies simple pictures, emerging number and classification skills). McCarthy Scales (cluster of skills to 2.5, scatter to the 3.5 year level). Comprehension subtest from Stanford-Binet 2.5-3 years. **Language**: labels and requests most objects, articulation problems.

Target Child: Lucie, age 5.1

Primary diagnosis: Leber's Congenital Amaurosis, Coates Disease, cerebellar hypoplasia, ataxia (tremors).

Vision: degenerative eye condition (Lever's); left esotropia (inward turn of the eye); fatty deposits on the retinas that may eventually cause retinal detachment; greater consistency in responding to items in central fields; delayed responding to both right and left peripheral fields.

Motor: ataxic movements, pulls to stand, uses walker to ambulate.

Cognition: cluster of skills from 2.5 to 3 year level, scattering up to 3-3.5 (Reynell-Zinkin Developmental Scales for young Children with Visual Impairments, Oregon Project Skill Inventory).

Language: oral-motor apraxia; receptive language skills scattered up to the 3.5 year age range; expressive language up to the 4.5 year level (HELP, Michigan and subtests of the Reynell-Zinkin).

Playgroup 2

Target Child: Emily, age 4
Primary Diagnosis: Severe prematurity, retinopathy of prematurity with near total retinal detachment in both eyes. **Vision**: Light projection only in both eyes. **Motor**: Low muscle tone in upper body. **Cognition**: cluster of skills from 3.5 to 4 year level, scattering up to 3.5 to 4.5 (Reynell-Zinkin Developmental Scales for Young Children with Visual Impairments, Oregon Project Skill Inventory). **Language**: receptive language skills scattered up to the 4.0 year age range; expressive language up to the 3.5 year level (HELP, Michigan and subtests of the Reynell-Zinkin). Speech articulation normal. Frequent incorrect word usage related to pronoun reversal, and incorrect usage of prepositions.

Target Child: **Adam, age 5**

Primary Diagnosis: global developmental delays; history of familial developmental delays and congenital nystagmus.

Vision: vestibular nystagmus (loss of visual fixation and tracking ability during even slight head movement), acuity measures of 20/200 in both eyes, glasses, no depth perception.

Motor: Hypotonia, obesity, and diminished muscle strength.

Cognition: cluster of skills from 3.5 to 4.5 year level, scattering up to 3.0 to 5.0 (Reynell-Zinkin Developmental Scales for Young Children with Visual Impairments, Oregon Project Skill Inventory).

Language: receptive language skills scattered up to the 5.0 year age range; expressive language up to the 3.5 year level (HELP, Michigan and subtests of the Reynell-Zinkin). Speech articulation significantly affected by dysarthria and questionable oral-motor apraxia.

APPENDIX B
PEER TRAINING PROCEDURES AND TOPICS

Topics	**Peer Training Procedures**	**Desired Peer Behavior**
I. Introduction to Handicapping Condition	Teacher explains specific handicapping condition of target children involved in playgroup (i.e., visual and physical handicaps, communication system). Teacher facilitates peers' use of vision simulators, and related equipment (brailler, walker, wheelchair, braces).	Peers will play with equipment and learn basic operating procedures such as moving wheelchair forward while legs are secured at knees, negotiating room while wearing blindfold or vision simulator.

II. Play Facilitation	Teacher will explain to peers that they are going to learn how to help get the target child to play. The play behaviors that will be facilitated include the following: Suggest Play, Show Children How To Play, Sharing Toys, and Offer Assistance. The teacher will explain and model the play behaviors, then the peer will role play the four play behaviors, as the teacher is pretending to be the target child. The teacher will provide coaching throughout the role play sessions. The peer will have successfully completed this topic upon exhibition of four play behaviors at least two times per session.	The peer will demonstrate the four play behaviors during the role play session. The following are examples: (1) Suggest Play: "Amy, let's play the computer game.", (2) Show children How To Play: "Turn the music on here" (peer provides hand-overhand demonstration), (3) Share toys: "This can be your rabbit, Amy" (peer places toys into target child's hand), and (4) Offer Assistance: "Do you want help?"(peer waits for target child's response.

III. Understanding Inappropriate Behavior and Nonresponse	The teacher will explain and demonstrate target child's atypical behaviors. Peers will be instructed in how to distract the target child by initiating play, and if appropriate, gently interrupting the target child's movements. The teacher will also describe what to do if the target child does not respond to a play initiation or continues to engage in an inappropriate behavior. The two major components of this training topic include: (1) <u>Secure Target's Attention</u> (peer says child's name, taps target child on arm and waits for target to verbally respond, or physically orient toward	During the role play sessions, the peer will demonstrate the desired play behaviors. Examples might include: tapping teacher on the arm, gently touching teacher's head during side to side head movement, placing toys in teacher's lap and bringing teacher's hand down to touch the toy.

	peer), and (2) <u>Keep Trying</u> (peer is encouraged to repeat their initiations during role play with the teacher. The peer will demonstrate at least 10 play initiations, while the teacher will respond in a random manner to some initiations and not to others.	
IV. Review	The teacher reviews the play facilitation strategies and methods for dealing with inappropriate behaviors and nonresponding. the peer demonstrates at least 10 play initiations while the teacher randomly responds to some initiations and not to others.	The peer demonstrates the play behaviors during role play with the teacher, and with the teacher pretending to be the target child.

APPENDIX C
BEHAVIORAL CODES OF SOCIAL INTERACTION
IN YOUNG CHILDREN WITH VISUAL IMPAIRMENT
AND ADDITIONAL DISABILITIES

Category One

ISOLATE: The primary characteristic of this category is that the target child is outside a three foot radius from his/her peers.

(a) **Engaged (E)**: The child is touching materials or manipulating toys in an appropriate manner (i.e., pressing buttons on Casio piano, pulling string or turning knob on See-And-Say). Also includes looking at or listening to toy, whereby the child's face is directed toward the toy or ear is turned toward the toy (i.e., child's face is turned toward screen of Fischer Price musical T.V., or child's ear is turned toward or touching speaker holes on My Little Piano).

(b) **Not Engaged (NE)**: The child is not engaged with toys or materials, is outside a three foot radius from other children, nonverbal or the child is interacting with the teacher.

(c) **Inappropriate/Negative(I/NEG)**: This category is scored when the child is involved in an

following: rocking, eye pressing, waving fingers in front of eye, nonsensical vocalization, striking toy or hand to head, placing fingers into mouth, touching object to mouth or placing object into mouth, deliberate destruction of a toy or classroom materials, projection of toy from hand (throwing), yelling or screaming.

(d) **Teacher Prompt or Praise**: The teacher is directly interacting with the target child by either prompting, correcting or praising the child **relative to social interaction**. If the teacher is playing along with the target child, i.e., pretending to be a play character, then this type of teacher interaction should **not** be scored. *The teacher needs to be directing or reinforcing the target child to engage in social play with a peer or to respond to a peer's initiation. Verbal description of peer play or peer location or physical direction of the target child to within a three foot radius or physical direction to respond or physically participate in a play activity should also be scored (i.e., physically guiding the target child's hand to pour water into the peer's teacup).

Category Two

Proximate: The primary characteristic in this category is that the child is within three feet of peer(s) but is not physically or verbally interacting with other children.

(a) **Engaged (E)**: In this category the child is within three feet of another child **and** he/she is engaged with the same materials (manipulating or touching materials in functional manner, directing face or ear toward toy). ***NOTE**: This category is also used to score nonverbal parallel play. The child would not be engaged in any verbal or physical interaction in order for this category to be scored.

(b) **Nonengaged (NE)**: The child is not playing with the same materials, is not verbally or physically interacting with other children, but is within a three foot radius of other children.

(c) **Inappropriate/Negative (I/NEG)**: This category is scored when the child is involved in an inappropriate or repetitive behavior such as the following: rocking, eye pressing, waving fingers in

front of eye, nonsensical vocalization, striking toy or hand to head, placing fingers into mouth, touching object to mouth or placing object into mouth, deliberate destruction of a toy or classroom materials, projection of toy from hand (throwing), yelling or screaming.

(d) **Teacher**: The teacher is directly interacting with the target child by either prompting, correcting or praising the child **relative to social interaction with a peer.**

Category Three

Proximate Interactive: The primary characteristic of this category is that the child is physically and/or verbally interacting with a peer **and** within a three foot radius.

(a) **Physical Interactive (PH)** : The child is physically interacting with a peer and engaged in a purposeful activity (i.e., physically directing another child to explore or manipulate a toy, physically directing a child toward an activity, displaying physical affection such as hugging or holding hands,

touching a child's shoulder or face). Physical interaction should also be **deliberate** physical contact such as holding a child's hand, tapping a child on the shoulder, or placing a toy in another child's hand or lap. If the children are leaning on one another during parallel play or a child happens to brush another child's arm as she/he is reaching for a toy, this would be nondeliberate physical contact and it should not be scored as physical interactive behavior.

(b) **Verbal Interactive (V):** Verbal interaction with a peer (indicated by a slash mark) would mean that the target child is directing a verbalization toward a peer, such as talking about the activity, verbally directing, or questioning the peer. This category should be scored even for single word utterances or verbal behavior that mimics a peer's verbal behavior.

(c) **Inappropriate/Negative (I/NEG):** This category is scored when the child is involved in an inappropriate or repetitive behavior such as the following: rocking, eye pressing, waving fingers in front of eye, nonsensical vocalization, striking toy or hand to head, placing fingers into mouth, touching object to mouth or placing object into mouth,

deliberate destruction of a toy or classroom materials, projection of toy from hand (throwing), yelling or screaming.

(d) **Teacher**: The teacher is directly interacting with the target child by either prompting, correcting or praising the child **relative to social interaction with a peer.**

Category Four

Peer Initiations: Anytime a nonhandicapped peer directs a verbal and/or physical interaction toward the target child, such as handing the child a toy, asking the child to play, or requesting that the child stop a particular behavior.

APPENDIX D

DATA COLLECTION SHEET

Target Child_____ Date:_____
Observer:_____ Trmt.Condition:_____
Setting:_____ Session#:_____

	ISOLATE	PROXIMATE	INTERACTIVE	P	TEACHER
1	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
2	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
3	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
4	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
5	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
6	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
7	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
8	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
9	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
10	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
11	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
12	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
13	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
14	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
15	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA
16	E NE I/NEG	E NE I/NEG	PH V I/NEG		PR PRA

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