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An exploration of peer modeling on behavior, language, and cognition of autistic children in early childhood education

Diana Pritts
University of Northern Iowa

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Abstract

Autism is a developmental disability that for years was closeted as a mysterious ailment that was not often researched, understood or even discussed. When the federal Education for All Handicapped Children Act of 1975 (Public Law 94-142) was passed, parents, professionals, and even the public started to look for answers to questions about autism that had been left unanswered for years. This law stated that all handicapped children were to be placed in the least restrictive environment.

An Exploration of Peer Modeling on Behavior, Language, and Cognition of Autistic Children in Early Childhood Education

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Charles R. May

May 24, 1993 — Director of Research Paper

Date Approved

Charles R. May

May 24 1993 — Graduate Faculty Adviser

Date Approved

Marvin Heller

June 1, 1993 — Graduate Faculty Reader

Date Approved

Peggy Ishler

June 1, 1993 — Head, Department of Curriculum and Instruction

Date Approved

TABLE OF CONTENTS

CHAPTER I INTRODUCTION 1

Background of the Study. 3

Purpose of the Study 4

Need for the Study 5

Limitations of the Study 5

Definition of Terms. 6

CHAPTER II LITERATURE REVIEW 8

Rationale for Peer Modeling. 8

Peer Modeling and Behavior 13

Peer Modeling and Language 21

Peer Modeling and Cognition. 31

Peer Model Attitudes 40

CHAPTER III SUMMARY AND CONCLUSIONS. 44

REFERENCES. 49

CHAPTER I

INTRODUCTION

Autism is a developmental disability that for years was closeted as a mysterious ailment that was not often researched, understood or even discussed. When the federal Education for All Handicapped Children Act of 1975 (Public Law 94-142) was passed, parents, professionals, and even the public started to look for answers to questions about autism that had been left unanswered for years. This law stated that all handicapped children were to be placed in the least restrictive environment.

The release of the Academy Award-winning movie Rain Man and many television network news stories about autism have been instrumental in educating the public. Much as been written about this disability that impairs a person's ability to adapt to surroundings and to relate to people, yet so little has been done to teach early childhood educators how to work with autistic children who are now being mainstreamed or fully included in early childhood education programs.

The Autism Society of Iowa (1987) wrote that autism is a brain disorder that severely hinders the way information is gathered and processed, causing

problems in communication, learning and social behaviors.

> Autistic children cannot understand or create language as normal children do. Verbal and non-verbal communication is difficult and speech tends to be irrelevant. They tend to talk at rather than to people. Their thought processes are very narrow, literal and logical. They do not understand sarcasm or subtle verbal humor. They can be hypersensitive to criticism and may easily misinterpret a word or gesture they do not understand. Their relationships with other people are impaired because of their inability to understand others' feelings. They can be very upset by changes in routine and they may react strangely to light, sound, scents, flavors, and the "feel" of things (Coppola, 1987, p. 40).

Autism occurs in roughly 15 of every 10,000 births and is four times as common in males as in females (Autism Society of Iowa, 1987). Approximately 20% of autistic children are considered high-functioning. High-functioning autistic children are defined as being diagnosed as having autism with an I.Q. above 70 and having some ability to speak and understand what is said (Beisler & Quinn, 1988). The range of autism can extend from severely retarded children to extremely gifted children, and the extent of autism can be classified as severely autistic to mildly autistic. These ranges in disability make autism educational planning extremely difficult.

Background of the Study

Autism was first defined in 1942 by Leo Kanner, an American physician who noticed that there was a group of children that had similar symptoms of extreme aloofness, had communication problems, had unusual motor movements, and insisted on preserving the sameness in their surroundings. He classified these characteristics as infantile autism (Kanner, 1943). As a result, many erroneous explanations of the disorder became common. Children were believed to develop the disorder as a result of a confusing living environment or a cold, uncaring mother (Volkmar, 1987). Early reports were based on clinical work and attached heavy emphasis to the child's behavior. They concluded that poor performance on cognitive tasks was viewed as "negativism" rather than as a function of developmental disability, and echolalic (repetitive) responses were interpreted as attempts by the child to avoid interaction (Volkmar, 1987).

As children were observed over time, it became evident that the parents and environments of autistic children did not cause the deficits in the children, so researchers started to focus on all aspects of children's development. Recent research has attempted

to view behavior within the context of children's development and the observational situation (Volkmar, 1987).

Educational placement of autistic children has been as varied as the definition of autism. Many children over the years have been put in special education classrooms. Recently, it has been discovered that some autistic children have normal I.Q.s, but are impaired by deficits in behavior, language, or socialization. Some young children have been misdiagnosed as mentally retarded because of these deficits and after being placed in an early childhood program, many of these children improve tremendously in language, behavior, socialization, and cognitive skills. These improvements have been attributed to various reasons, the most popular being early intervention, teacher intrusion and peer modeling.

Purpose of the Study

The purpose of this study is to explore the effects of peer modeling on behavior, language, and cognition of autistic children in early childhood education. The following questions will be answered:

1. What effect does peer modeling have on autistic children's behavior?

2. Does peer modeling increase language development in autistic children?

3. Can peer modeling increase the cognition level of autistic children?

4. How does peer modeling affect nonhandicapped children's attitudes toward autistic children?

Need for the Study

The four major problems that autistic children have are deficits in language, behavior, socialization, and cognitive skills. There have been many studies conducted to determine if peer modeling can be used to develop new skills and to increase cognitive skills in autistic children. Although many studies show various results of peer modeling, they fail to put into perspective how peer modeling affects all areas of deficits in the autistic child. This study will review the results of many studies that have been conducted in the past years and attempt to provide an overall broad spectrum of how peer modeling fits into the whole development of the autistic child.

Limitations of the Study

The major limitation of the review of the literature was a lack of early research material on autism for reasons unknown. Although autism was

identified 50 years ago, much of the research has been conducted in the last 20 years on various aspects of autism, and most of the research on peer modeling has been in the last 15 years, due to the implementation of Public Law 94-142.

Definition of Terms

autism--a brain disorder that severely hinders the way information is gathered and processed.

peer modeling--using handicapped or nonhandicapped mix-aged or same-aged children to direct or initiate certain behaviors or skills to be imitated by handicapped children.

behavior modification--systematic efforts to change an individual's behavior using carefully planned consequences for specific behaviors.

prompting--giving cues to assist a child in learning a new skill or a new way of behaving.

reinforcement--an event or a consequence that increases the possibility of a behavior being repeated.

generalization--the ability to transfer the learning of a new skill to different settings.

intervention--method of engaging others into interaction.

teacher-prompted intervention--the delivery of

reinforcement such as attention or praise to a child engaged in positive interaction.

peer-mediated intervention--a peer initiating interaction with a child.

sensorimotor development--development of the ability to perceive and manipulate objects in time and space with some understanding of cause and effect, and the ability to relate to these objects.

practice play--exploration and repetition involved in mastering an activity.

symbolic play--using one object to represent or symbolize another.

games with rules--rule-oriented play using communication and cooperation.

developmentally appropriate practice--a program that is designed for the age group served and implemented with attention to the needs and differences of the individual children enrolled.

CHAPTER II

LITERATURE REVIEW

Rationale for Peer Modeling

Peer modeling can be traced back to the infant developmental stage. Apolloni and Cooke (1975) hypothesized that interaction between infants structured their total behavioral development, especially if the environment was structured to enhance the quality of their interaction. The two most important social variables that have been researched to affect child development--caretaker behavior and peer behavior--were proved to be prominent. Child development theorists and investigators believed peer behavior was crucial to the development of early peer interaction (Apolloni & Cooke, 1975) especially since this interaction would provide children with an environment for practicing motor, language, cognitive, and social skills. Apolloni & Cooke (1975) developed a hypothesis which stated that infants who interacted with each other would stimulate each other's development in a supporting environment. In their review of research literature, they found that infants were capable of imitating their peers, which could provide opportunities for imitation training for

infants with developmental delays. No research was found to prove or disprove this theory because most of the infant research has focused on caretaker/infant interactions (Apolloni & Cooke, 1975).

Current research evidence has shown that when children have not had experiences interacting with other children, they have experienced difficulty in learning effective communication skills, channeling aggressive feelings, exhibiting appropriate sexual behavior, and developing moral values (Hartup, 1978). This evidence proved that peer relations were necessary in human development. Adequate peer relations developed basic social and communicative skills that adults could not produce. Some events occurred in peer interactions that would not have occurred in adult-child interaction. Hartup's (1978) review of research showed that when parents played with their children, it was only for short periods of time. Parents acted as supervisors instead of participants, which was quite different from peer interaction.

Existing evidence has also shown that peer modeling is a form of peer interaction that has held great potential in affecting the child's development. Changes in social and emotional behavior, problem

solving behaviors, and cognitive style have been the results of peer modeling (Hartup, 1978). Research has shown that young children can be effectively used as peer models; teaching appropriate behavior, language skills, and cognitive skills for children who have learning or behavior problems (Hartup, 1978; McHale, 1983).

During the past ten years, peer research has started focusing on autistic children. These children have displayed a variety of disorders in cognitive and social functioning and are starting to receive attention from researchers who have studied peer influence on behavior change (McHale, 1983). The range of severity of autistic children's disorders has prevented some of these children opportunities to interact with nonhandicapped children in an integrated classroom setting. Nonhandicapped children's success at encouraging social behavior in autistic children has shown that these children can promote behavioral change in autistic children (McHale, 1983). A study by McHale (1983) demonstrated that nonhandicapped children were able to engage in social play and interact with autistic children who had a wide range of social deficits. Not only were the nonhandicapped children

able to initiate play with the autistic children, they were also able to maintain social interactions with them for an extended period of time.

Recently Edwards (1991), a principal in McGaheysville, Virginia, mainstreamed autistic students from a regional, self-contained, autistic class in her building into the regular educational setting. She found that the positive role models from the regular education classrooms had a tremendous effect on the behavior of the autistic children. She maintained that "...kids learn to be 'normal' by being with normal kids" (Edwards, 1991, p. 33). She stated that because these autistic children had been in a self-contained classroom for autistic children during most of the day, they often duplicated each other's deviant behavior. Her school implemented a successful structured mainstreaming program with the help of the special education teacher.

Gresham (1982) cautioned against mainstreaming unless provisions were made to teach handicapped children the skills necessary for positive interactions and social acceptance. In his review of research, he found that modeling effects did not materialize by just putting handicapped children and nonhandicapped peers

in integrated classrooms. Research evidence suggested that peer modeling was increased through systematic programming (Cooke, Apolloni, & Cooke, 1977; Guralnick, 1976; Snyder, Apolloni, & Cooke, 1977). Bandura's social learning theory outlined criteria needed for modeling effects to occur: the observer must focus on relevant modeling information, be able to remember the information which was modeled, have the processes necessary to duplicate the modeled behavior, and have some incentive for performing the observed behavior (Bandura cited in Gresham, 1982).

Guralnick (1976) listed several factors that facilitate peer modeling:

> 1. Chronological age of the peer group. ...It is difficult to engage the cooperation of very young children (say, three-year olds) in some of the more structured activities....other types of peer interaction activities of very young children may be of value to handicapped children....the use of more advanced handicapped children as models for those less skillful may be useful, but one would need to define carefully their developmental skills.
> 2. Level of observational skills. Some handicapped children may simply not benefit from certain forms of modeling if their observational skills are not sufficiently well developed....
> 3. Type of behavior. It is quite possible that certain classes of behavior will be more susceptible to change through peer modeling and reinforcement than others....
> 4. Structure of the modeling context. [There should be varying degrees] of structure needed to produce behavioral changes through modeling.

> 5. Grouping. The characteristics of handicapped children, the severity of their handicaps, and the proportions of these children integrated with their nonhandicapped peers are likely to be significant variables [when considering a grouping procedure].
> 6. Characteristics of the models. [The degree of competence], the history of peer interactions, their frequency of occurrence, and the rewarding aspects of the interactions govern the effectiveness of modeling.... (pp. 243-244)

These factors reinforced the few studies on integrating handicapped preschool children which stated that the critical issue was not the simple presence of nonhandicapped children in the class, but the way in which peer interactions among these children were systematically guided (Cooke et al., 1977; Guralnick, 1976).

Peer Modeling and Behavior

Since autism is a behavioral syndrome, the most noticeable traits of autistic children are a wide repertoire of behavioral disturbances that are distinguished in three broad categories: disturbances of relating to people and objects, communication and language, and sensory modulation and motility (Ornitz, 1987). Some of the behavioral traits observed in these children are poor eye contact, delayed or absence of a smile, aversion of or compulsion to physical contact, lack of social contact, delayed or lack of speech or

repetitiveness of speech (echolalia), monotone speech quality, peculiar mannerisms, atypical movements, and a heightened awareness or lack of awareness to sensory stimuli which include taste, touch, smell, sight, and sound (Ornitz & Ritvo, 1976).

These disturbances have affected the behavior of autistic children in varying degrees of intensity, and much research has been conducted on all of these disturbances (Ornitz & Ritvo, 1976). These disturbances have been an obstacle to autistic children's ability to socialize effectively with their peers. When Public Law 94-142 was passed, educators became aware of research issues dealing with these specific behaviors of autistic children (Dunlap, Koegel, & Egel, 1979). Teachers were trained to use behavior modification techniques which focused on presenting instructions, prompts, and consequences to teach autistic children a variety of adaptive behaviors (Dunlap et al., 1979). Russo and Koegel (1977) conducted a study which showed that using a therapist and a one-to-one teaching method to teach a high functioning autistic child appropriate verbal and social behaviors in a normal public school class could increase a child's appropriate behaviors and reduce

autistic mannerisms. This study maintained that training teachers in behavioral techniques was sufficient to maintain the child's appropriate school behaviors with little disruption to classroom routine. This study also suggested that lower functioning autistic children who have been trained to achieve an appropriate behavioral repertoire in a class of autistic children, could be placed in a normal classroom among children who would provide more appropriate role models (Russo & Koegel, 1977).

As more autistic children were being mainstreamed into regular education, more research determined whether or not nonhandicapped peers in the classroom could actually serve as models for appropriate behavior (Egel, Richman, & Koegel, 1981). Several research studies explored observational learning through peer models, which was the easiest type of peer modeling technique to establish with children (Beckman & Kohl, 1987; Charlop, Schreibman, & Tryon, 1983; Guralnick, 1980; Lord & Hopkins, 1986; Odom & Strain, 1984; Schleien, Mustonen, Rynders, & Fox, 1990; Strain, Shores, & Timm, 1977). Nonhandicapped children were placed with autistic children and were instructed to play with them, get the autistic children to play with

them, or teach the autistic children to play with them (Odom & Strain, 1984; Strain et al., 1977). Charlop et al. (1983) conducted a study to determine whether low-functioning autistic children could learn new behaviors through observation by the use of a peer modeling procedure. All four children learned through observing their peer model, and their generalization and maintenance of correct responses was superior to a trial and error method. Lord and Hopkin's (1986) research uncovered evidence that autistic children could interact with their nonhandicapped peers and could spend a consistently high proportion of time observing and responding to their partners' initiations. Decreases in interfering behaviors occurred after only a few sessions. A study by Schleien et al. (1990) explored the frequency of appropriate play behavior of 17 autistic children when integrated with 21 nonhandicapped children in a leisure education/adapted physical education program. The results showed that team, group, and paired play activities all showed a higher rate of appropriate play behaviors in autistic children than was shown in isolate play activities.

Although observational learning was successful in

improving the social play of autistic and nonhandicapped children, the change was not very substantial. Several research studies explored another type of peer modeling using peers to prompt and reinforce the social behavior of autistic children (Devoney, Guralnick, & Rubin, 1974; Furman, Rahe, & Hartup, 1979; Guralnick, 1974; Odom & Strain, 1984). This procedure involved giving an instruction to engage in an activity and reinforcing the interaction with a positive statement, which would maintain or increase the frequency of the desired behaviors (Odom & Strain, 1984). A study by Devoney et al. (1974) was conducted to see if the social play of handicapped children would increase by delivering social reinforcement in the form of adult attention and praise. No changes were detected, so several nonhandicapped children from a preschool class were integrated into free play sessions. This procedure improved the social play of the handicapped children, but the change was not significant. However, when the teacher systematically structured the situation, using the nonhandicapped children to promote various interactions and to use reinforcements, a substantial increase in the quality of play occurred. This study was instrumental in

portraying the importance of the roles peers played in modeling and reinforcing appropriate behavioral patterns (Guralnick, 1976).

Although early efforts to facilitate social behavior in handicapped children were in the form of adult interventions (Strain, Shores, & Kerr, 1976), later research showed that peers did equally well or even better as peer models when they prompted and reinforced their handicapped peers (Carr & Carcy, 1990; Cooke et al., 1977; Odom & Watts, 1991; Ragland, Kerr, & Strain, 1978; Shafer, Egel, & Neef, 1984; Strain, Kerr, & Ragland, 1979). Ragland et al. (1978) trained a nonhandicapped peer to model social behaviors for three autistic children. The results showed that peer trainer initiations increased positive social behavior in autistic children. Strain et al. (1979) added to this research by comparing peer initiation training to peer prompting and reinforcement training in modeling social behavior for four autistic children. The results showed that both interventions were equally as effective. Carr and Darcy (1990) took their research one step farther. They trained a 5-year-old boy to model and, if necessary, prompt and reinforce four autistic boys when helping them acquire a new skill.

Afterwards the autistic children were able to transfer their new skills to another setting and to produce a generalization, which very few research studies had been able to accomplish. Shafer, Egel, and Neef (1984) even used trained mildly handicapped peers to model appropriate skills for autistic children using a direct prompting procedure which would increase generalized social interactions. The study demonstrated increased social interactions and generalization of behavior across settings after using specific programming. Interactions decreased after training, which was attributed to the fact that the peer model was handicapped and required additional training.

A few research studies have explored the value of teacher-prompted interventions on interactions between autistic children and their nonhandicapped peers (Meyer, Fox, Schermer, Ketelsen, Montan, Maley, & Cole, 1987; Odom & Strain, 1986; Odom & Watts, 1991). Odom and Strain (1986) found that teacher interventions increased the initiations and responses of autistic children, whereas Meyer et al. (1987) discovered that teacher interventions had little impact on the behaviors exhibited in play interactions and even interfered with some interactions. One conclusion was

drawn from both studies: after some training, children with autism and nonhandicapped peers were able to interact positively with one another with minimal adult supervision, and a universal procedure for teacher intervention did not seem to be effective for all peer interactions. One of the most recent research studies examined an intervention package designed to support the transfer of a peer-mediated intervention for young autistic children to a setting in which teacher prompts were not provided (Odom & Watts, 1991). This was an important factor to be considered, especially when preschool children participated as peer models and needed more intensive training to support their social interactions and to know when to withdraw support to generate maintenance.

The implications of the research on the effects of peer modeling on behavior of autistic children showed that the positive behavior change of autistic children associated with systematic peer modeling procedures stimulated a more naturalistic form of social behavior intervention than was normally used with autistic children (Charlop et al., 1983; Guralnick, 1976; Hartup, 1978; McHale, 1983; Ragland et al., 1978; Strain et al., 1979). Peer modeling represented the

kind of behavioral interaction that resembled children's naturally occurring interaction patterns and offered teachers an effective alternative to behavior modification or individualized programming by adults (Strain et al., 1979).

Peer Modeling and Language

The nonhandicapped child's verbal behavior in social and cognitive interactions has been greater than the autistic child's, so it has been possible to influence certain language skills through peer models or reinforcement (Guralnick, 1976). The research literature on social interaction provided procedures for developing peer modeling and intervention for communication skills (Goldstein & Strain, 1988).

A study by Guralnick (1976) was conducted to see if it was possible to influence certain language skills through peer modeling and reinforcement. The purpose was to identify the conditions in which peer modeling would change the verbal behavior of a mildly handicapped preschool child who used very brief language describing common events. During baseline, the handicapped child was tested having 20% target speech form. A nonhandicapped preschool child was trained to use the appropriate form of speech and was

introduced to a modeling session with the handicapped child. During the modeling sessions, the children alternated responses to the pictures. Encouragement was given to both of them, and verbal reinforcement was given only to the nonhandicapped child. However, after the handicapped child had produced six appropriate responses, verbal reinforcement was given to both children. Results showed that by reinforcing verbalizations of the more advanced peers, an increase of verbalizations emerged from the handicapped child. This study showed that peer interactions at different developmental levels may have a significant impact on the development of the language-learning child (Guralnick & Paul-Brown, 1977).

Guralnick and Paul-Brown (1977) implemented a study to determine if certain levels of language development varied when nonhandicapped preschool children communicated with children with various levels of handicaps ranging from no handicaps to severe handicaps. The results indicated that speech of all children tended to be more complex and more frequent when communicating with developmentally more advanced children. The speech of the nonhandicapped children as delivered to their handicapped peers was different.

The difference varied with the developmental delay, but their speech was not a reduction to the level and form of the handicapped child's speech. It was altered to assist in helping the handicapped child understand information and instructions, yet was still good linguistic form. The results of this experiment showed that nonhandicapped children had the ability to adjust appropriately their speech to the developmental level of similar age peers. This suggested that handicapped children were provided with an opportunity to hear advanced and diverse language, yet in proportion to their developmental levels.

Guralnick (1981) later initiated a study to examine the impact of group composition on children's socialization, appropriate play, language usage, and certain teacher behaviors by placing children in relatively homogeneous groups (severely and moderately handicapped children as one group and mildly and nonhandicapped children as another) as compared to combining children from all developmental levels into heterogeneous groups. The results of this study indicated that more advanced children had higher social and constructive play skills. They also communicated more and received more communications from other

children, but received fewer prompts and reinforcements from teachers. However, there was little impact on group composition. The only significant effect of group composition was reduced inappropriate play by severely delayed children while interacting in the heterogeneous groups. The results demonstrated that varying degrees of disabilities did not interfere with developmental growth of all children. Although this study had little impact on language growth, the implications were that language growth in all developmental levels would improve over time and that integrated settings had a positive impact on all developmental levels of children (Guralnick, 1981).

Later studies have focused on increasing verbal interaction between autistic children and their normal peers (Goldstein & Ferrell, 1987; Goldstein & Wickstrom, 1986). Goldstein and Wickstrom (1986) discovered that normally developing children could be taught to facilitate language interaction to increase communication skills in autistic children. They developed specific strategies that could be taught to normally developing children to increase communication in autistic children. Posters representing the strategies were used to help teach the strategies and

to nonintrusively prompt strategy use. Strategy selection was based on skills needed to elicit language interaction: (a) Establishing eye contact; (b) describing play; (c) initiating joint play; (d) repeating, restating, or requesting clarification of verbalizations; (e) establishing joint focus of attention; and (f) prompting requests (Goldstein & Wickstrom, 1986). Specific categories of verbal behavior were monitored to evaluate the effects of the intervention. Results of the study demonstrated improved interaction by the autistic children, the most consistent improvement being the number of responses to peers. The positive impacts of this study were that peer interaction was reinforcing in itself, and that peers who acted as intervention agents in one setting also shared many other activities with the autistic children.

A later study (Goldstein & Ferrell, 1987) replicated this study by extending the earlier research to determine if peer model training can be taught to all normally developing classmates; to examine initiations, responses, and behavior of autistic children, normal peers, and teachers; to determine the effects of teacher reinforcement; and to determine the

effects of generalization of peer interaction skills. This study eliminated the less useful strategies that were used in Goldstein and Wickstrom's (1986) study: establishing joint focus of attention and prompting requests. These strategies were found to be ineffective and time consuming to teach (Goldstein & Ferrell, 1987). The study found that all normally developing peers could be taught intervention strategies, but they were not all equally effective in using these strategies with autistic children. The peers who learned the strategies quickly were not necessarily the best strategy users. It was difficult to predict the children who were to be the best peer models, although teaching strategies to all the peers showed that normally developing preschoolers could learn to use strategies, and that a classroom-wide intervention could be implemented. Results showed an increase in responses by autistic children, with the biggest improvement in the verbal response category. As the interactions between autistic children and peers increased, less desirable behaviors decreased (Goldstein & Ferrell, 1987).

Implications of these two research studies (Goldstein & Ferrell, 1987; Goldstein & Wickstrom,

1986) showed that maintenance and generalization occurred more in these studies on communication than in past studies on social interaction, which indicated that modeling and reinforcing language skills could have great potential for more natural interactions (Charlop et al., 1983; Devoney et al., 1974; Goldstein & Strain, 1988; Guralnick, 1976; Guralnick, 1980; Odom & Strain, 1984). Increased teacher prompting resulted in improved initiation rates, although peer strategy use was maintained when teacher prompting decreased. Autistic preschoolers were equally responsive to teacher-prompted and unprompted strategy use by their peers. Implications of this finding showed that peers could have more responsibility by initiating peer modeling, leaving the teachers free for other instructional duties (Goldstein & Strain, 1988).

The opening of two preschool classes for children with autism at the Douglass Developmental Disabilities Center of Rutgers University in 1987, one integrated and one segregated, gave researchers an opportunity to study the effects peer modeling on language in autistic children (Handelman, Harris, Kristoff, Fuentes, & Alessandri, 1991; Handelman, Harris, Tomchek, & Kristoff, 1990; Harris, Handelman, Kristoff, Bass, &

Gordon, 1990). Autistic children placed in the segregated class demonstrated social and language deficits, had difficulty staying on task, and required assistance in developing academic readiness skills. Children in the integrated class possessed attention, readiness, and pre-academic skills, and were integrated with normal peers who were recruited through word of mouth and a newspaper ad. None of these children had learning or behavior problems, and they were selected because of their positive responsiveness to peers and adults. They all came from middle class homes. The study conducted by Harris et al., (1990), explored how the language development of young autistic children might be influenced by being in a segregated versus integrated classroom and examined the benefits to language development for a group of normal peers in an integrated class. The curriculum used was developmentally organized and language oriented. A daily language group focused on developmentally appropriate language and classroom readiness skills. The daily schedule was consistent with that of a typical preschool and used incidental learning experiences as well as more structured teaching. All of the children were exposed to formal, structured

group language instruction including a weekly group taught by the speech and language specialist. The results of the study showed vastly significant changes in language abilities of autistic preschool children who were exposed to an extensive language stimulation program. The study also discovered that normal peers made significant gains in language development. There were no significant differences in the rate of development between the autistic children in segregated and integrated groups, but the study proved that autistic children could be placed in integrated preschool settings which are more normalized and less expensive, although autistic children with substantial management problems could prove to be disruptive and should be considered for a segregated setting (Harris et al., 1990).

Another study conducted at the Douglass Developmental Disabilities Center added support of a systematic program used to teach peers to act as socialization agents through structured interactions and modeling (Handleman et al., 1991). In this 2-year investigation, the developmental language progress of 15 autistic preschool children and 15 normally developing children was assessed at the beginning and

end of the year. Both groups of children made substantial progress over time. The children with autism had been developing at a significantly slower rate before training. After training, their rate of development was not significantly different from their normal peers, although their level of functioning was lower. The results of this study added further support to the advantages of integrated programming for both autistic preschool children and normally developing peers and supported the value of a group-focused instruction for young autistic children (Handleman et al., 1991; Hoyson, Jamieson, & Strain, 1984; Odom & Strain, 1986; Strain, Hoyson, & Jamieson, 1985).

These studies at the Douglass Developmental Disabilities Center provided strong support for the value of early, intensive language intervention for increasing the developmental pace of high-functioning autistic preschool children and their normally developing peers (Harris et al., 1990) but emphasized that much planning was involved in setting up an integrated program using normal peer models. Handleman et al. (1990) concluded that "simply putting autistic and normally functioning young children [together]...without an expert staff runs the risk of

being detrimental to both groups. One does not simply add children and stir!" (p. 53). Creating a quality educational experience for preschool children with autism within an integrated group setting was very demanding for these teachers. Developing an appropriate curriculum for each child commanded much planning on the part of the teachers and speech-language pathologists (Handleman et al. 1991).

Peer Modeling and Cognition

Imitation, or modeling, has been one of the most common courses for learning in normal children. Autistic children have shown difficulty imitating spontaneously (Sigman, Ungerer, Mundy, & Sherman, 1987). "Autistic children appear to show varying degrees of capability in immediate and deferred imitation [and]...appear able to form images (representation) but show more difficulty than retarded and normal children in manipulating these images in a purposeful, meaningful manner and engaging in functional, symbolic play" (Morgan, 1986, p. 447). In regard to Piaget's three kinds of play in the stages of cognitive development (practice play, symbolic play, and play with rules), many autistic children have found difficulty progressing past practice play to symbolic

play. For most children, symbolic play has aided in the development of personal expression, the concept of self, and ways of interacting with others. Consequently, symbolic play has been difficult for autistic children to achieve because of their social deficits (Morgan, 1986). In a research study on cognitive skills in autistic children, Sigman and Ungerer (1984) found that autistic children had no deficits in sensorimotor development, which involved the ability to recall information, a prerequisite to problem solving. It was the ability to form and manipulate symbols which led to a major impairment in autistic children. All the areas of specific cognitive deficits in these children depended on social interaction for their development. Sigman and Ungerer (1984) stated that functional object use in play was learned from others, and generalization of functional object use involved additional social skills. The development of imitation and language required the responsive interaction of others, whereas sensorimotor object knowledge could develop without social interaction. In retrospect, social facilitation of sensorimotor learning has often occurred in normal development. The results of Sigman and Ungerer's

(1984) study showed that although autistic children showed a deficit in forming and manipulating symbols, they were able to increase their functional play following verbal cuing and modeling in a structured play task.

In a later study, Sigman et al. (1987) grouped play behaviors into four main categories of play:

1. Stereotypic play - manipulating an object by mouthing, waving, banging, or fingering it.
2. Relational play - manipulating two or more objects in a nonfunctional manner.
3. Functional play - using a realistic toy in a functional or routine manner.
4. Symbolic play - (a) using one object to represent another different object, (b) using actions to indicate that a doll is an agent of action, and (c) using actions to indicate the presence of imaginary objects.

Sigman et al. (1987) found that autistic children distributed their play time in equal amounts of time in simple manipulation of objects, relational play, and functional play. The researchers discovered that functional play among autistic children was qualitatively different from normal children. The

number of functional acts were lower among autistic children, and they produced fewer series of three or more related functional acts than normal children. The lack of symbolic play in the autistic child was viewed as an inability to abstract concepts and to store these abstractions symbolically. These deficits were most striking in forms of pretend play that usually developed early in childhood. The kinds of intelligence that were affected in autistic children were those mostly tied to social influences and those that required symbolic representation. The social deficits of autistic children were most profound in those areas that required knowledge of other people (Sigman et al., 1987).

The fact that autistic children have a deficit in symbolic play could generate a conclusion that play would be prerequisite in teaching cognitive skills to autistic children. Thurman and Widerstrom (1985) stated that play was essential in facilitating a child's development, play was important training for problem-solving, and that there appeared to be a strong link between symbolic play and the development of cognitive abilities. They concluded that play activity with peers facilitated many kinds of learning: social,

cognitive, moral, language, and motor.

When examining play as a tool for cognitive development, several researchers have explored the issue of peer modeling and play as a means of increasing behavioral and social skills (Carr & Darcy, 1990; Charlop et al., 1983; Egel et al., 1981; Guralnick, 1976; Hartup, 1978; Lord & Hopkin, 1986; McHale, 1983; Odom & Strain, 1984; Odom & Watts, 1991; Ragland et al., 1978; Shafer et al., 1984; Snyder et al., 1977; Strain et al., 1979), and language skills (Devoney et al., 1974; Goldstein & Ferrell, 1987; Goldstein & Strain, 1988; Goldstein & Wickstrom, 1986; Guralnick, 1976; Handleman et al., 1990; Handleman et al., 1991; Harris et al., 1990). These studies have been reviewed in this paper and could be instrumental in determining the effects that peer models would have on autistic children's cognition, using language and social skills as a basis for developing cognitive skills in autistic children.

One of the most recent successful curriculum models that has surfaced to help autistic children and their normal peers learn cognitive skills through the help of parents, teachers, and peers is the LEAP (Learning Experiences...An Alternate Program for Preschoolers and

Parents) service system (Hoyson et al., 1984), a method of individualized group instruction systematically designed for instructing children who functioned at different developmental levels. This program was designed to meet the needs of preschool children preparing to go into a kindergarten classroom which would require students to perform independently in a large group. During the instructional sessions of the LEAP system, each period of instruction was systematically planned so that irregular responding could be identified and altered. Handicapped and nonhandicapped children were given the opportunity to improve in academics, improve in group behavior, and improve in peer interaction (Hoyson et al., 1984).

Hoyson et al. (1984) conducted an evaluative study of LEAP using 13 nonhandicapped preschool children and 6 autistic preschool children enrolled in an 11-month preschool program. The results of the LEAP model evaluation showed that both normally developing children and autistic children doubled their rate of development during program participation and autistic children's intervention rate of performance was above the rate of performance for normally developing children at the beginning of the program study. The

outcome of the results provided solid evidence that both autistic children and nonhandicapped children made overwhelming gains on their development.

To determine the effect of the LEAP program as a peer-based model in a total preschool program, normally developing preschool children were systematically trained to aide in the instruction of their autistic classmates (Strain et al., 1985). Peers were trained to be indirect mediators of behavioral change, to be behavioral models, and to be direct agents of training. The results found positive peer interaction in both the autistic children and their nonhandicapped classmates.

Although the LEAP model has proven to be successful, the program has required highly instructional teacher-directed format, with some emphasis on peer modeling. Another curriculum, the High Scope Cognitively Oriented Preschool Curriculum, has been in existence for several years and could be considered a direct contrast of the LEAP curriculum model (Ipsa & Matz, 1978). The High Scope Curriculum Model was the result of fifteen years of educational work by David P. Weikart and his associates. The curriculum structure has been an open framework of general principles and strategies allowing teachers to

set up their own programs to meet the needs of handicapped and nonhandicapped children in their communities. The teachers were encouraged to teach children cognitive skills through experiences using active learning. Children were not expected to focus primarily on teachers, so they were free to interact with peers for most of the day. Positive experiences between handicapped and nonhandicapped children during group time helped facilitate positive feelings that were reflected in peer interactions during the rest of the day. No structured attempts were made to train nonhandicapped children to model behaviors or to relate positively to handicapped children. The expectation was to provide a naturalistic environment that would automatically encourage positive interactions (Ipsa & Matz, 1978). A study was conducted to examine classroom interactions between ten handicapped and eighteen nonhandicapped preschool children (Ipsa & Matz, 1978). The study was based on systematic but naturalistic observations of the classroom. The results showed that handicapped and nonhandicapped children showed positive interactions with each other and that handicapped children developed more normal behavior interacting with their nonhandicapped peers.

Nonhandicapped children were able to entice handicapped children into participating in activities they may not have attempted on their own, and to encourage them by serving as models and by offering them the opportunities and reinforcement for interactive play (Ipsa & Matz, 1978).

When Rotholz (1987) reviewed research literature on teaching autistic children, he found that learning needed to take place in the presence of peers to help develop social skills in autistic children. He felt that it did not benefit an autistic child to be able to play an age appropriate game if the game was being played with a teacher. He also found that when teachers used one-to-one teaching with autistic children, they had trouble generalizing skills to other settings. His review of literature showed that peer modeling and small group instruction were effective alternatives to one-to-one instruction by the teacher or aide. Peer models were able to teach autistic children additional skills that they may not otherwise have acquired during the year. He recommended that, although one-to-one instruction was effective in establishing basic attending skills, group instruction and peer modeling were more likely to facilitate social

skill development (Rotholz, 1987).

Peer Model Attitudes

Several research studies have not only explored the effects of peer modeling, but have also examined the attitudes of peer models (Csapo, 1972; McHale, 1983; Raab, Nordquist, Cunningham, & Bliem, 1986; Snyder et al., 1977). In his study on the effectiveness of peer influence, Csapo (1972) found that the attitudes of the peer models became extremely positive during the course of his experiment. Their concern for helping their peers to learn more appropriate behaviors replaced some of their own previous negative attitudes towards their peers. They became protective of their charges and stood up for them.

After reviewing research on peer modeling at the preschool level, Snyder et al. (1977) concluded that when nonhandicapped children grew up with the experience of interacting with their handicapped peers, their level of understanding and acceptance of handicapped children would probably increase, while old attitudes of fear and mistrust would diminish because of early interactions with handicapped children. However, Gresham (1982) concluded that mainstreaming did not result in nonhandicapped children accepting

handicapped children. He suggested that integration of handicapped children into regular education classrooms would result in poor peer acceptance, which would bring rejection, ridicule, and failure, unless handicapped children were provided with social skills training before being mainstreamed. Once students were mainstreamed, all students would need to be involved in social skills training to promote peer acceptance and interaction.

Raab et al. (1986) conducted a study to evaluate the ways in which nonhandicapped preschool children regarded an autistic child by initiating pre-enrollment activities that taught nonhandicapped children facts about autism and about similarities and differences in all children. The results in this study showed that nonhandicapped children who participated in the pre-enrollment activities interacted with the autistic child more than the children who did not participate in the activities. These children who participated not only expressed positive attitudes about the autistic child, but they behaved positively toward her as well.

McHale (1983) found in her study assessing nonhandicapped children's ability to encourage autistic children in social interaction, that the nonhandicapped

children's skills in encouraging interactions with autistic children were extraordinary. Although they experienced many rejections by the autistic children, the nonhandicapped children took their roles as teachers' helpers very seriously and persisted in pursuing interactions until they were able to initiate and maintain interactions.

Edwards (1991), an elementary principal, observed that the positive role models found in her school's regular education classrooms had a positive effect on the behavior of autistic children who were mainstreamed at her school. She found that mainstreaming had benefits not only for the autistic students but also for the regular education students. They learned to allow differences in others, to model appropriate behavior, and to show understanding.

> Perhaps the most amazing of all, we have never had regular education students make fun of the autistic children. The kids have built very special relationships and friendships with one another, and the regular education students feel that they have a personal stake in the success of their mainstreamed classmates (Edwards, 1991, p. 33).

Several studies also noted that, not only did peer models have positive attitudes towards handicapped children, they also made significant gains in their own

development (Handleman et al., 1991; Handleman et al., 1990; Harris et al., 1990; Hoyson et al., 1984; Strain et al., 1985) and showed no increased imitation of inappropriate behaviors (Csapo, 1972; Cooke et al., 1977). Hartup (1978) concluded his study by stating that few cultures use peer models even though they would be a great asset as available educational resources that teachers should appreciate and use more extensively.

CHAPTER III

SUMMARY AND CONCLUSIONS

This review of literature indicates overwhelmingly favorable results of the use of peer models with autistic children. The fact that peer relations are necessary for human development enhances and supports the use of peer models not only for autistic children but for all children. Although peer modeling has been around for many years, it has only been used with autistic children in the past ten years. Before that, most training of autistic children was done in a clinical setting using one-to-one behavioral techniques. Even with the passing of Public Law 94-142, many people were skeptical about the effects that handicapped children would have on normally developing children's learning.

Since autism is a behavioral syndrome, all autistic children show deficits in behavior, which affect socialization. Their delays in or lack of socialization skills is the primary deficit which also affects language and learning.

Although observational learning is the easiest technique in changing behaviors or in developing social skills, it is not always effective for autistic

children. Some autistic children may develop new skills by observing their peers, but many autistic children have attention deficit disorders that do not facilitate observational learning.

Many autistic children learn new behaviors when peers model the behaviors for them, then reinforce them for doing the appropriate behaviors by showing their approval. This technique is most effective when teachers train normally developing children to be peer models, then systematically structure the situation to maximize the opportunities for peer interaction in a naturalistic setting. Not only is this method effective for modeling appropriate behavioral and social skills, it is also an ideal method for modeling appropriate language skills and increasing cognitive skills.

Peer models can effectively communicate with autistic children by altering their speech so that they could be understood. One of the most naturalistic ways that peers can model appropriate language skills is by initiating and reinforcing good play strategies during free play periods. The Douglass Developmental Disabilities Center of Rutger University has a very effective language-intensive program for autistic and

normally developing preschool children in an integrated setting. They use a developmentally appropriate language-oriented curriculum for the children with intensive language instruction taught by a speech and language specialist. This type of a program does increase the developmental rate of autistic children and their normal peers but requires much planning to develop an appropriate curriculum for each child. This program has been very successful in demonstrating how peer modeling can increase language development and socialization skills in autistic children.

Since modeling is the most common form of learning, it is necessary to use peer models to facilitate learning in autistic children. Piaget theorized that play was important in developing cognitive skills and found that most autistic children showed a deficit in symbolic play. Realizing that play is one of the processes for developing cognitive skills, we need to use peers who model good language and social skills to help facilitate the development of cognitive skills.

Although the LEAP curriculum model has been successful in developing cognitive skills in autistic children, it is highly structured and teacher-directed,

which is in direct contrast to the developmentally appropriate practices established by the National Association for the Education of Young Children. On the other hand, the High Scope Cognitively Oriented Preschool Curriculum developed by David Weikart and his associates sets the stage for a more developmentally appropriate curriculum, which allows teachers to teach children cognitive skills by using meaningful experiences in a naturalistic integrated environment. This provides the ideal setting in which peers can model play strategies to facilitate learning in autistic children.

The review of literature shows that peer modeling can be effective in increasing the behavioral, language, and cognition levels in autistic children. It also shows that the best setting for peer modeling is in a naturalistic environment using developmentally appropriate strategies. If peers can be taught at an early age to model appropriate skills for autistic children, they will develop positive attitudes that stay with them throughout their lifetime. Peer modeling in a naturalistic setting with guidance and instruction from supporting teachers can only enhance a child's feeling of understanding and acceptance of

handicapped children. Peer modeling offers a developmentally appropriate alternative to the highly structured one-to-one behavioral training that autistic children have received in the past and are still receiving now. Peer modeling can lead to special relationships and new friendships that autistic children so desperately need.

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