

THE EFFECTS OF SYMBOLIC DRAMATIC PLAY
ON THE SOCIAL BEHAVIOR OF
NONHANDICAPPED PRESCHOOLERS
TOWARDS THEIR HANDICAPPED PEERS
IN A MAINSTREAMED SETTING

by Bonnie E. Thiessen

A thesis
submitted in partial fulfillment
of the requirements for the degree of
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ABSTRACT

This study investigated the effects of play with handicapped and nonhandicapped puppets and dolls on the interaction between nonhandicapped preschoolers and their handicapped peers. The effects of the dramatic play experiences were assessed by observing the social behaviors that eight nonhandicapped subjects emitted towards two handicapped children in an integrated preschool. The study took into account the effects of differing initial behaviors, and varied the lengths of time spent in the training condition.

The preschool in which the study was conducted was supervised by an early childhood education professor, and jointly taught by three fourth-year early childhood education students.

Observed social interactions were recorded on a specially adapted observation form according to levels of interaction, type of social behavior, direction of the interaction, type of communication, and level of play. Data was supplemented to some extent with anecdotal incidents.

Although general response to the intervention procedures was weak, there were some positive signs. In particular, symbolic dramatic play experience may increase interactions with handicapped peers for preschoolers who demonstrate an initial acceptance of the handicapped. This study also suggested that the effects of training may be maintained in the natural environment following termination of the intervention.

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CHAPTER 1

INTRODUCTION

Overview

Mainstreaming applies the normalization principle to educational settings. It means, "making available to the mentally retarded, patterns and conditions of everyday life which are as close as possible to the norms and patterns of the mainstream of society" (Nirje, 1969). Including the handicapped child in regular educational settings has been defended primarily on an ethical basis, as the human concern for human beings (Martin, 1974).

The benefits of mainstreaming have been seen mainly as non-academic considerations such as improved social opportunities and competencies for the handicapped children, (Carlson, 1979; Shepherd, 1979) and changed attitudes of the nonhandicapped toward the handicapped (Bricker, 1978; Shepherd, 1979). This change in attitude of the nonhandicapped individual is theoretically the expected result of exposure to the handicapped (Tawney, 1981). In addition, the availability of better models is anticipated to influence the handicapped person's social behavior.

Using the school system to accomplish these social goals is based on the premise that "education is one of the primary mechanisms for the transfer of social values from generation to generation" (Bricker, 1978). What is being suggested, however, by the proponents of mainstreaming is not simply the transfer of general social values, but rather, adjusting specific behaviors to be consistent with society's expressed values. It has been found, however, that simple exposure to

a handicapped individual will not necessarily result in any positive benefits (Guralnick, 1976; Gottlieb, Semmel, Veldman, 1978). It may, in fact, have adverse results (The Phoenix Conference, 1980).

Evaluating the potential acceptance of the handicapped child is a key factor in mainstreaming. Unless he is accepted, the mainstreaming experience could in reality be the "most restrictive environment" for a handicapped child (Barclay & Kehle, 1979). Very often the handicapped student is avoided by his nonhandicapped peers in a mainstreamed setting. This avoidance is manifest by shorter interactions with the handicapped, greater interpersonal distance, excessive helpfulness, as well as labelling or name calling (Thompson, 1980; McKalip, 1979).

There is a distinct tendency for the initial attitude of the nonhandicapped child to be negative. Surprisingly, this tendency seems to be most pronounced in young children. First grade children have the highest percentage of negative responses to the handicapped initially, (Cronk, 1979) and even preschool children respond negatively to the handicapped children in their class (Snyder, Apolloni, Cooke, 1977; Cooke, Apolloni, Cooke, 1977). Rejection or avoidance of their handicapped peers by young children has been explained, at least in part, by their tendency at a young age to respond warily to incongruence (Thurman, 1979). Contradictory or ambivalent feelings toward the handicapped are modeled by society in general and parents in particular, and these are likely to reinforce children's initial wariness (Cohen, 1977).

Definition of the Problem

Since the mere introduction of the handicapped into the school is not guaranteed to result in positive interactions between the handicapped

and the nonhandicapped, it appears that some method of intervention is necessary if the goals of social opportunity and competency for the handicapped and positive attitudinal/behavioral changes for the nonhandicapped are to be achieved. This intervention can be conceived of along two converging continua: preparing the handicapped child for the mainstreamed environment; and, preparing the environment for the child.

Considerable work has been done in both areas. Many studies have concentrated their efforts on the handicapped child. They have attempted to instruct him in a wide range of social behaviors so that he will be able to behave and perform in a manner that will be less different and more similar to his nonhandicapped peers in the mainstreamed setting. Most of these programs have used behavior modification techniques and have demonstrated considerable success (Cooke & Apolloni, 1976; Strain, Shores, Kerr, 1976; Strain & Timm, 1974). Other studies have focused their attention on the various aspects of the environment that facilitate the mainstreaming process.

Of particular relevance to this study are interventions that have considered the nonhandicapped peers as important environmental factors in mainstreaming. Some studies have used nonhandicapped peers as tutors to teach the handicapped child behaviors or skills (Guralnick, 1976; Devoney, Guralnick, Rubin, 1975). These peer-tutors typically model and reinforce appropriate behaviors in the handicapped child. Relatively few children, however, are likely to feel sufficiently comfortable with the handicapped to act in such a capacity. Since these children are likely to be a minority of the total peer environment, it seems appropriate that attention be directed to the children in the mainstreamed environment who tend to avoid the handicapped child. By helping these children to accept the handicapped child and to relate

to him with greater ease, reciprocal interactions with the handicapped child would be facilitated (Kohn, 1966; Wahler, 1967).

Contact or exposure, information or persuasion, and disability simulations are the three major approaches that have been used to help the nonhandicapped student experience a positive shift in his attitude towards the handicapped (Donaldson, 1980; Jones, Sowell, Jones & Butler, 1981; Steer, 1979; Zelinger, 1980). Successful contact or exposure approaches must be quite carefully structured and involve a cooperative effort between the handicapped and nonhandicapped student (Ballard, Corman, Gottlieb & Kaufman, 1977; Friedman, 1975). Simple exposure without these qualifications is ineffective.

Information and persuasion although frequently advocated have not been demonstrated to be effective in changing attitudes or behaviors towards the handicapped. Active learning, including simulations and role playing, has been shown, on the other hand, to be very effective (Clore & Jeffery, 1971; Orlansky, 1979). Although the subjects of these studies were university students, it is possible that younger students could also be approached in a similar manner. Since early childhood is the most efficacious time to influence human social development, this possibility should be explored (Apolloni & Cooke, 1975).

In preschool children general withdrawn behavior has been modified dramatically through symbolic modeling (O'Connor, 1969; O'Connor, 1972). It has been further demonstrated that avoidance responses can be extinguished on a vicarious basis (Bandura, Grusec & Menlove, 1969). Studies such as these see the avoidance response as an expression of fear, and employ graduated exposure to the feared object to facilitate maximal fear reduction (Ollendick, 1979). The tendency

for young children to avoid or withdraw from a handicapped child could similarly be understood as a fear response.

Therefore, an approach that combines the feature of symbolic modeling and role play or simulation may be able to effect positive changes in the nonhandicapped preschool child's attitude and behavior toward his handicapped peer. Expressions of a more accepting attitude through social approach rather than avoidance would provide the handicapped the opportunity to reciprocate with appropriate social behaviors (Strain, 1977; Strain, Shores & Timm, 1977).

Furthermore, since play is a natural activity of the young, and dramatic play is of paramount importance in the preschool years, ages three through six, (Smilansky, 1968) it seems possible that the dramatic play of early childhood could be combined with graduated simulation and role playing of a handicap. The use of dramatic play, or informal learning techniques, to help him learn how to relate to a child with a handicap, gains further credence from the fact that informal learning is a method by which the young child uses the familiar to explore and adapt to social reality (Sutton-Smith, 1976; Feitelson & Ross, 1973). To the young child the "symbol-object is a substitute for the reality it signifies" (Piaget, 1962). In play, the child uses his own resources to solve his problems satisfactorily. Because his solution is based on his own understanding and abilities it may have more lasting value to the child than an externally imposed solution. A facilitator needs only to provide such limitations as are necessary to anchor the play session in reality (Axline, 1947).

Statement of Purpose

This study investigated the effects of play with handicapped and nonhandicapped puppets and dolls on the interactions between non-handicapped preschoolers and their handicapped peers. The effects of the dramatic play experiences were assessed by observing social behaviors that the nonhandicapped subjects emitted towards specific handicapped children in an integrated preschool. The study took into account the effects of differing initial behaviors, and varied the lengths of time spent in the training condition. Maintenance of social behaviors by natural contingencies in the classroom was also investigated.

Hypotheses Tested

Following this line of reasoning several hypotheses were tested in an experimental preschool setting.

1. Symbolic dramatic play of nonhandicapped preschool children involving "handicapped" dolls or puppets positively affects the interactions that the nonhandicapped child, who previously did not interact appropriately, has with his handicapped peer.
2. Symbolic dramatic play of nonhandicapped preschool children involving "handicapped" dolls or puppets positively affects the interactions that the nonhandicapped child, who previously interacted well, has with his handicapped peer.
3. Training groups consisting of a pro-social and a non-pro-social preschooler have a greater effect on the interactions of the non-pro-social child with the handicapped child than training groups consisting of two non-pro-social children.
4. Newly acquired patterns of interaction are maintained when training sessions are terminated.

The generalizability of the effects of training were not tested as the generalization phase had to be deleted from the study. Also, because of the failure to establish a stable level of interaction during the baseline period, the investigator did not proceed with comparing the level of individual children's intervention behavior with their initial baseline behavior.

Limitations of the Study

This study was much too short to assess the merits of this type of intervention adequately. As indicated previously, the time allotted to the initial baseline period was too short to establish a steady baseline level of interaction. Because of the overall limited time frame of the study, adjustments in the length of the baseline period were not possible. In addition, the intervention periods were probably too short to allow the behavior change and required cognitive and social development to occur. One authority (Gottlieb, 1981) questions whether studies of even a year's duration are adequate to allow a fair evaluation of a mainstreaming program.

Possible Implications

This project explored the use of readily available play material in an attempt to promote positive changes in the attitudes and behaviors of nonhandicapped preschoolers toward their handicapped peers. As significant persons in the human environment of the mainstreamed preschool classroom, their more positive behaviors are likely to have a facilitating effect on the handicapped children involved.

These nonhandicapped children may then be encouraged to act as peer-tutors or models. Furthermore, any social interaction skills that the handicapped child initiates will be more likely to be recognized,

accepted, and reinforced naturally by his peers. This recognition, acceptance, and reinforcement of the social behavior of the retarded child may also facilitate the transition of behaviors that are being trained to the natural environment. Mainstreaming in the preschool setting may thus result in true integration.

CHAPTER 2

A REVIEW OF THE LITERATURE

Mainstreaming is the inclusion of handicapped children in schools and classes together with their nonhandicapped peers. Recently this concept has become increasingly popular. The practice is supported by an underlying ethical concern for human welfare. Because of this concern, as one educator put it, "we must attempt to have handicapped children in sight, in mind, and in settings where they will receive the fullest measure of our educational resources" (Martin, 1974).

The Benefits of Mainstreaming

Parents of handicapped children believe that mainstreaming offers several benefits (Shepherd, 1973). They hope, for example, to develop more normal mannerisms and behavior patterns in the handicapped and a greater acceptance of the handicapped by his nonhandicapped peers. It is anticipated that the handicapped children will develop more appropriate behaviors as the nonhandicapped children model and reinforce socially acceptable behaviors. In a segregated setting such peer models would not be available; the only models would be other handicapped children. At the same time, exposing the nonhandicapped to their handicapped peers is expected to help them to be less fearful and more accepting of the handicapped. Efforts to mainstream and to improve the learning environment for the handicapped must recognize several barriers which must be overcome (Martin, 1974).

Toward Effective Mainstreaming

Of initial concern is establishing the best age of mainstreaming. One study (Apolloni & Cooke, 1975) suggested that infants who are familiar with one another may stimulate one another's development. This implies that early childhood is the most effective time to influence human social development. In discussing this idea Bricker (1978) concluded that providing mainstreamed "opportunities at the preschool level would seem appropriate".

Studies have demonstrated, however, that nonhandicapped children tend to avoid their handicapped peers. This tendency may even be more pronounced in young children. In a study in which nonhandicapped children in grades 1, 3 and 6 were integrated into a special school for retarded children (Cronk, 1979), the initial attitudes of the grade one children were the most negative. This trend has been noted in several studies at the preschool level as well (Cooke, Apolloni & Cooke, 1977; Devoney, Guralnick & Rubin, 1975; Guralnick, 1976; Snyder, Apolloni & Cooke, 1977).

A review of these studies (Thurman & Lewis, 1979) suggested that early rejection of the handicapped results from the young child's ability to discriminate differences and respond differentially to them. Later prejudice and rejection of handicapped children may be a reflection of this tendency. Mainstreaming the handicapped into preschool settings could, therefore, help the nonhandicapped to become accustomed to the handicapped children and to see them as less different. This in turn would reduce prejudice and rejection. The study by Cronk supports this theory; 50% of the initial negative attitudes of the grade one children in her study were changed to positive ones by the

end of the program. This significant shift ($p < .05$) occurred after working with the retarded children in a variety of cognitive, motor and affective domain activities. Although the study did not specify the duration of the program, it did indicate that young children can, in some mainstreamed environments, drastically improve their attitude toward the handicapped.

Several other studies have demonstrated significant levels of integration when handicapped children have been mainstreamed. All of them, however, involve populations that are not typical of most preschool classrooms. One study (Dunlop, Stoneman & Cantrell, 1980) assessed the social interactions in a preschool designed to serve children from poverty level homes. Interactions between the handicapped and non-handicapped children were indeed quite similar at the end of the program, but the study did not observe initial interactions as a comparison. The children identified as handicapped and nonhandicapped were chosen from a single class. Although one Down's Syndrome child was included among the six handicapped children, the group had a mean I.Q. of 77.3. This group as a whole, would not likely be seen as handicapped by the nonhandicapped group.

Other studies that have demonstrated positive effects of exposure to the handicapped have used a reverse-mainstreaming approach. Instead of introducing several handicapped children into an existing group of nonhandicapped children, they have introduced a few nonhandicapped children into the handicapped children's environment. One such study (Peterson & Havalick, 1977) involved eight handicapped children and five nonhandicapped children. This study measured the type and frequency of play with various playmates. Under these conditions the nonhandicapped subjects still chose another nonhandicapped peer 19%

more frequently than a handicapped peer. Furthermore, play with a handicapped peer was more likely to be isolated or parallel rather than cooperative.

Another study that involved twelve nonhandicapped and 25 handicapped children in play activities demonstrated similar effects (Guralnick, 1980). The nonhandicapped children and nine mildly handicapped children communicated, both motorically and verbally, at a high level, but the moderately and severely retarded children did not integrate effectively. Furthermore, exposure, tended to increase the comparative advantage of the mildly handicapped over the moderate-severe group.

While demonstrating positive effects of reverse-mainstreaming, the Guralnick study also points out that exposure may polarize attitudes and behaviors towards the handicapped. Simple exposure of grade five children and their teachers to mildly retarded children did little to create positive attitudes towards handicapped children (Gottlieb, Semmel & Veldman, 1978). Hours of integration and social acceptance were correlated .008 (Pearson r). This indicates that the amount of exposure to the handicapped has virtually no effect on social acceptance of the handicapped.

Guralnick (1976) writes that "it is not the simple presence of nonhandicapped children in the class but the way in which interactions among the children are systematically guided or encouraged" that is important. A similar conclusion is reached by Allen (1980) in a review of studies of interactions among handicapped and nonhandicapped children. She concluded that interaction does not evolve spontaneously, and that children do not necessarily imitate nonhandicapped models. Specific programming is necessary. A subsequent review (Tawney, 1981)

concludes that teachers must be trained to bring about this social change.

These findings suggest that the preschool is quite likely a very appropriate area in which to begin mainstreaming efforts. Young children seem to be more likely to make positive shifts in attitude than older children. In order to maximize all possible opportunities to develop positive attitudes the mainstreaming experience should be systematically structured.

Preparing the Handicapped

One method of structuring the environment has been suggested (Guralnick, 1981) in a review of research implications. This article suggests that a minimal level of social interaction among handicapped and nonhandicapped children is necessary before any positive beneficial effects of mainstreaming can be realized. A study by Barclay & Kehle (1979) indicates that before a handicapped child is placed in a mainstreamed setting the child's potential for acceptance must be considered. This conclusion was reached after reviewing three studies that assessed the social-affective impact of mainstreaming on a total of 240 mildly retarded children. The authors cautioned that unless his potential acceptance is considered the mainstream could be the most restrictive environment for a handicapped child.

This becomes an even greater consideration in view of a study (Kohn, 1966) that assessed children's interactions throughout their first year of school. This study recorded positive and negative behaviors that the children initiated and received. Results of this study indicate that "both with respect to quantity and quality, the child gets what he puts out; in other words, the child creates his

own environment". A similar result was also reported by Hartup, Glazer & Charlesworth (1967). They found that acceptance was consistently predicted by the frequency of giving positive reinforcers to peers. Although these studies did not involve handicapped children they appear to have implications for structuring of the social environment in order to foster social acceptance of the handicapped. It appears that the handicapped child must be able or be trained to reinforce his peers to some extent if social acceptance and integration are to occur. This training should likely be done before introducing the child to the mainstreamed setting. The previously mentioned study by Gottlieb et al. concludes that once the handicapped are "perceived to manifest inappropriate behavior, improving their social status may be a very formidable task".

Many studies have attempted to teach the handicapped child socially appropriate behaviors. Most of these studies use behavior modification principles to affect the changes. In one such study (Whitman, Mercurio & Caponigri, 1970) two severely retarded children were reinforced for appropriate toy play. Each session lasted 30 minutes and consisted of ball rolling and block passing. Both children showed an increase in the amount of time they engaged in social interaction outside of the training session. This interaction included play with other toys as well as the ball and blocks. Two weeks after the intervention was terminated the amount of time each child spent in social interaction appeared to be declining rapidly. Although the authors do not discuss this decline, it appears that it could revert to baseline levels in another week or two. This tendency of a trained social interaction to decline to pre-intervention levels when the intervention is terminated was also observed in a study of a

behaviorally disordered and language delayed preschool girl (Strain & Timm, 1974). The interventions consisted of; a) contingent adult attention to the girl's peers who were also language delayed and had a range of other behavior problems, and b) contingent adult attention to the target subject. Adult attention in both cases was contingent on appropriate interactions involving the target child. Although the intervention was dramatically effective, it did not have significant lasting effects. The final baseline was quite similar to the initial baseline. In a subsequent study (Strain, Shores & Kerr, 1976) three behaviorally handicapped children were prompted and reinforced to emit positive social behaviors. The tendency to revert to baseline performance levels was observed once more. This time, however, the investigators identified what they call a "spillover" effect. They observed that children in the room other than the ones specifically receiving intervention demonstrated increased frequencies of positive social behavior during the intervention phases. This effect was more pronounced when two children were receiving intervention than when only one was. This effect was seen as a result of vicarious reinforcement. The authors conclude that some children do not have to receive intervention directly; they will be affected by the interventions carried out on other children in the class.

Several studies involving segregated groups of handicapped children did show some maintenance of the intervention effect in the final baseline period. One of these involved six severely retarded children (Wiesen, Hartley, Richardson & Raske, 1967). These children were trained to give primary reinforcement to each other. Availability of the reinforcer was contingent on social interaction. Appropriate social attempts resulted in the target child receiving an "M&M" to give

to his partner and then one for himself. The rate of interaction increased dramatically and was maintained without reinforcement for a period of five days. Whether this rate would be maintained over an extended period without reinforcement was not explored. There is also a possibility that the experimenter who was present during the baseline observations as well as the intervention had become a secondary reinforcer for the interaction and was maintaining the behavior simply by his presence.

A second study (Cooke & Apolloni, 1976) that more clearly demonstrated the maintenance of social behaviors after termination of intervention involved four trained subjects and three untrained subjects. Unlike the previous interventions designed to improve the handicapped child's social play behaviors, this study trained the four subjects in four positive social-emotional behaviors: sharing, smiling, positive physical contacting, and verbal complimenting. With the exception of verbal complimenting, these behaviors were maintained after intervention was terminated, and the effects of the intervention were observed in the three untrained subjects. Their rates of smiling, sharing and physical contacting had increased when the intervention was conducted on those behaviors with their peers. While verbal complimenting did not generalize and was not maintained after training was concluded the other three social-emotional behaviors were. The authors conclude that these behaviors, once taught, are often maintained by natural communities of reinforcement. Social behaviors such as these that are naturally maintained once they are taught may be one avenue that should be explored in preparing the handicapped for the mainstream. These behaviors would enable the handicapped child to express his friendliness and his desire for friendship in a socially appropriate manner. Preparing

the handicapped child for the environment is important, but it must be considered together with an analysis of the social environment he will enter.

The Role of the Nonhandicapped Peers

Of particular concern is the preparation of the nonhandicapped peers. In a study of five preschool children (Wahler, 1976) it was found that the behavior of a young child's peers can act as a set of reinforcers to control his social behavior. Several investigators, recognizing the reinforcing possibilities of peer behavior and attention, have trained nonhandicapped preschoolers to act as tutors with their handicapped peers. One of these studies involving peer tutors was conducted in a segregated setting by having five nonhandicapped preschoolers from another class join seven handicapped children during free play (Devoney, Guralnick & Rubin, 1975). The simple introduction of the nonhandicapped children into the special class had no effect on the percentage of associative and cooperative play engaged in by the handicapped children. When the teachers structured the play for the combined group, however, a significant increase in the play behavior of the handicapped occurred. Teacher structuring without the nonhandicapped children present had a negligible effect on play behavior. This study used the nonhandicapped preschoolers but depended on the teacher's participation to effect any significant changes.

Other studies have trained the preschool peer-tutors prior to beginning the intervention. In these studies the teachers' behavior has not been as crucial a variable. Two studies that used trained peers as reinforcing agents were quite successful. One involved peers

who were trained to initiate play behaviors with withdrawn behaviorally handicapped children (Strain, Shores & Timm, 1977). The other trained the nonhandicapped peers to initiate and encourage play behavior as well as prompt and reinforce playing with a toy (Strain, Kerr & Ragland, 1979). In this study the target children were four low functioning autistic children. Both intervention techniques produced immediate and dramatic increases in the handicapped children's positive social behavior.

One further study of this nature (Guralnick & Paul-Brown, 1980) discovered that preschool peer-tutors appropriately adapt their verbal communications to the developmental level of the handicapped child. Each peer-tutor was given the task of teaching the handicapped children how to play with a toy. The twelve handicapped children were classified as mildly, moderately, or severely retarded. The peer-tutor also taught a nonhandicapped child how to play with the toy to provide a comparison group. The peer-tutor used more repetition and behavior requests with the more retarded subjects. The less handicapped the subject was, the more informational statements and complex utterances (measured by MLU) were used by the peer-tutors. It appears, in consideration of these studies, that the nonhandicapped peers in a mainstreamed setting are not merely a capable source of influence over the social behavior of the handicapped child, but that this influence can be directed. Nonhandicapped peers appear to be a resource that the teacher of a mainstreamed classroom would be wise to consider in planning intervention strategies.

This consideration must, however, also include the recognition that the models of appropriate social behavior in a mainstreamed classroom are not sufficient on their own. To effect positive changes

in the behavior of the handicapped, systematic training of the nonhandicapped peers is necessary (Guralnick, 1976). A further consideration may be that all nonhandicapped children do not adapt to the role of peer-tutor equally well. In the study by Strain, Shores & Timm (1977), for instance, some characteristics of the two children chosen as peer-tutors is provided. These were the most socially active children in the classroom and had I.Q.s of 128 and 130. Obviously children with such ability are the exception rather than the norm. In another study involving the effect of peer social initiations on the behavior of withdrawn preschool children Strain (1977) concluded that "the minimal social responsiveness of (the) non-trained peers" probably depressed the effect on the handicapped subjects' positive social behaviors.

Fostering Acceptance of the Handicapped

In her paper on attitudes toward the handicapped, Cohen (1977) states that "very little attention has been given to the question of how to develop receptivity in the mainstream toward handicapped children". To develop this receptivity we must consider the behaviors that the nonhandicapped preschooler often demonstrates when a handicapped child is introduced into the classroom.

As discussed earlier this response is usually one of avoidance. Avoidance or withdrawal may be due to "respondent fear of social contact or underdeveloped social skills" (Greenwood, Walker & Hops, 1977). In their interactions with the handicapped, the nonhandicapped could be seen as both fearful and lacking in skills. The fear could be related to the dissonance he experiences between his expectations regarding the appearance and behavior of his peers and the actual

appearance and behavior of the handicapped peer. He may possess the social skills necessary for social interactions with nonhandicapped children, but may not be able to generalize these skills to his interactions with the handicapped peer.

One technique that has proved very successful in reducing fear and avoidance responses is vicarious extinction. This technique was demonstrated (Bandura, Grusec & Menlove, 1967) to be effective in extinguishing avoidance responses of children to a dog. This involved presenting the children with gradually more fearful modeled situations and modeling the desired behavior in a positive context.

A similar technique was used by O'Connor in several studies designed to modify the social withdrawal of nursery school children. Using symbolic modeling a 23 minute film depicting eleven nursery school scenes was shown to the withdrawn children. The scenes were graduated on a dimension of threat that included the vigor of the social activity and the size of the group. In each of the episodes the children in the film experienced reinforcing consequences. In his first such study (1969) O'Connor demonstrated that one viewing of the film had dramatic immediate effects on the number of social interactions the subjects engaged in when they returned to the classroom. In addition, these positive effects were shown to be maintained in a follow-up survey.

In a second study, (O'Connor, 1972) the effect of the symbolic modeling film procedure was found to be more effective than shaping and modeling procedures in promoting the social interaction of withdrawn children. O'Connor concludes that attempting to enhance social interaction of peers by adult reinforcement and shaping "may be

somewhat contradictory, since each delivery of praise and attention requires the child to withdraw from peer interaction to some extent".

This suggestion was further researched by Evers & Schwartz (1973) who used the same film and basic procedures. However, since they felt that O'Connor's findings might have been contaminated by using unfamiliar adults, they used familiar teachers as reinforcing agents. These teachers were instructed to reinforce the entire play group to avoid directing the isolates attention away from his peers. The results, however, confirmed O'Connor's findings. If the initial interaction attempts of a withdrawn child are favorably received by his peers, adult attention is not necessary and may even serve to distract the child from the response of his peers.

Using a similar symbolic modeling procedure and a series of four treatment films, this research was further extended (Keller & Carlson, 1974). Each film was of five minutes duration and was presented on consecutive days. The films emphasized the following social behaviors: imitation, smiling and laughing, token giving and physical contact signifying affection. The withdrawn preschoolers were observed during free play after viewing the films and their rates of giving and receiving social reinforcement and engaging in social interaction were recorded. The social behaviors exhibited by these children increased dramatically in comparison to a control group of isolates. The researchers conclude that symbolic modeling increases the probability that behaviors already in the child's repertoire will occur. It does this by increasing the expectancy that behaviors depicted as rewarding in the film will be rewarded in the classroom. Modeled novel behaviors that have not been previously learned will not occur.

These studies of symbolic modeling may have some implications for increasing the social integration of nonhandicapped children with their handicapped peers. Most nonhandicapped preschoolers who avoid their handicapped peers are able to interact well with nonhandicapped children. Thus, they have demonstrated their ability to engage in appropriate social interactions. If symbolic modeling or some similar technique can indicate to them that such behaviors will be reinforced by the handicapped as well, their rate of interacting with the handicapped is likely to increase. If school personnel have ensured that the handicapped child has a minimum level of reinforcing social skills, this interaction is likely to be maintained and develop naturally.

Developing Necessary Attitudes and Behaviors

Some of the behaviors that a nonhandicapped child requires if he is to interact appropriately with handicapped children may not, however, be behaviors that are already in his repertoire. For instance, he may not know how to interact with a peer who fails to attend to his initial advances, or has limited verbal or motor skills. One possible method of teaching these behaviors to nonhandicapped preschoolers has been demonstrated in several of the previously mentioned studies (Strain, Shores & Timm, 1977; Strain, 1977; Strain, Kerr & Ragland, 1979). These studies used role playing techniques to develop the desired behaviors.

Some combination of the techniques of symbolic modeling and role playing may possibly be effective in encouraging nonhandicapped preschool children to interact appropriately with their handicapped peers.

Role playing or dramatic play is one of the most prevalent play behaviors of preschool children, ages three to six (Smilansky, 1968). Recent studies (Feitelson & Ross, 1973; Saltz, Dixon & Johnson, 1977; Ghiaci & Richardson, 1980) have demonstrated that dramatic play experiences have a significant effect on the cognitive development of preschool children. Other studies assessing the effects of play tutoring on preschool children (Rosen, 1974; Fink, 1976; Strain & Wiegerink, 1976; Smith & Syddall, 1978) have extended this to show that increases in quantity and quality of social play as well as improved social skills are similarly enhanced. Improvements in role taking ability, role conservation, and social perspectivism were demonstrated.

Since cognitive development, understanding the handicapped children, and social development, knowing how to relate to the handicapped, appear to be important areas to be developed when helping children interact with their handicapped peers, dramatic play training is a promising avenue to pursue.

Modeling social behavior in dramatic play has been reported to serve a socializing function for children. By creating his own play reality, a child learns how to relate to reality (Sutton-Smith, 1976). Play may be used by the child to explore the unfamiliar and adapt to it. The possibility of using young children's modeling and role playing behaviors to help them make social adjustments was investigated by Chittenden (1942). The general aim of her study was to teach children to respond appropriately to social situations. The children observed short skits using dolls that depicted areas of social interaction that each child found problematic. Training included instruction, modeling, role playing and problem solving techniques. In a more recent study (Day, Powell, Dy-lin & Stowischek, 1982) a puppet, manipulated by the

teacher, served as a surrogate withdrawn handicapped child to facilitate role playing activity and training of other handicapped children as peer helpers. These procedures were found to be effective in teaching the desired social behaviors.

Such an approach to fostering improved social interactions between the nonhandicapped and handicapped preschoolers would be similar to the methods that have been found effective with older subjects. Approaches that have involved active learning such as role playing or simulation of a handicap and problem solving activities have been successful. Other approaches, such as non-guided exposure or information sessions, have had little effect.

Two studies exploring the effects of active learning on attitudes toward the handicapped have been conducted with university students. One study compared the effects of role playing a handicap with a control group (Clore & Jeffery, 1971). The second study (Orlansky, 1979) compared the effects of role playing, simulations of handicapping conditions, problem solving activities and open-ended discussions with a lecture based information approach. In both instances, the active learning approach exerted a more positive effect on attitudes.

It has been suggested (Zelinger, 1980) that this "hands on" approach would be effective with young children as well. A study by Jones, Sowell, Jones & Butler, 1981) has, in fact demonstrated that this type of approach did, for 74 children ages 7 to 9, actually result in a positive attitude shift toward the handicapped.

The reported shifts in the above studies were measured by various attitude scales. A follow up study by Clore et al., however, reported that attitude shifts were not reflected in actual behavior changes one month later. It appears that either the attitude shifts were not

maintained or else that the positive attitudes did not result in positive behavior changes in regards to the handicapped. In a review and analysis of research concerned with attitudes toward the handicapped (Donaldson, 1980) this problem is addressed. "Whether or not eliciting responses indicating more positive attitudes toward handicapped persons results in subsequent behavior change or has long term effects needs further exploration."

It may be that the actual behaviors and interactions that take place between the nonhandicapped and handicapped must be observed directly to make conclusive statements regarding the actual effectiveness of an intervention. Role playing and modeling with preschoolers may be found to foster more positive social interactions between the nonhandicapped children and their handicapped peers. If so, this relatively simple technique would enable teachers in a mainstreamed setting to prepare the social environment of the class to receive the handicapped child. Such a social environment would be better able to accept and adjust to the handicapped child. The children in such a class would be more receptive and reinforcing of the handicapped child's social behaviors. If, in addition, the handicapped child has been trained to emit a minimum level of positive social behaviors the stage will be set for a mutually reinforcing atmosphere. Such a situation would likely promote the continued social development of both the handicapped and nonhandicapped children.

CHAPTER 3

METHOD

Setting

The preschool in which the study was conducted was supervised by an early childhood education professor, and jointly taught by three fourth-year early childhood education students. The class had been in operation for three months before this study was conducted. Parental permission was gained for all experimental Ss. This form appears in Appendix I.

No handicapped children had attended the class until the beginning of this study. The effect of the intervention was assessed in terms of quality and quantity of social interaction that the nonhandicapped Ss directed towards the two handicapped Ss after they were introduced.

Subjects

Nonhandicapped Subjects:

Eight nonhandicapped children from the morning preschool class at the University of Manitoba were used in this study. Since only eight children attended on both Tuesday and Thursday mornings, the days on which the study was conducted, these eight children were chosen as subjects. Prior to introducing the handicapped children into the classroom, observations were conducted to confirm that these eight children did interact with other nonhandicapped children in the preschool and were not generally social isolates. The children ranged in age from three and one-half years (3 1/2) to four and one-half years (4 1/2). There were three girls and five boys.

<u>Girls</u>	<u>Boys</u>
A - 4 1/2	G - 3 1/2
S - 4	D - 4
K - 3	F - 3 1/2
	B - 3 1/2
	W - 3 1/2

Table 1
Subjects (sex & age)

Following the introduction of the initial handicapped child the number of positive interactions that occurred between each of the nonhandicapped children and the handicapped child were recorded for two days. The two children that interacted most frequently with the handicapped child were defined as the prosocial (PS) subjects in the study and the remaining six children became the non-prosocial (NPS) subjects. The PS children were assigned to group 1 and group 3, and the NPS children were randomly assigned to the four groups so that each group contained two Ss.

Group 1	Group 2	Group 3	Group 4
G (PS)	S (NPS)	A (PS)	W (NPS)
D (NPS)	F (NPS)	B (NPS)	K (NPS)

Table 2
Assignment of Subjects to Groups

Handicapped Subjects:

The two handicapped children in this study were recommended by 'Parent to Parent', a local support group for parents of handicapped children. They were children who were available on Tuesday and Thursday mornings and whose parents were interested in exposing them to an integrated play experience. P was a four year old Down's Syndrome girl. She was attending a non-integrated preschool program in the afternoons. She had good motor, and self-help skills, but had difficulty

relating to other children. Her articulation was also quite poor; most adults and children had difficulty understanding her speech. Although she came Tuesday and Thursday mornings for two weeks, she attended only Thursdays for most of the term as she became overtired from the two mornings a week.

M was a tiny seven year old boy who displayed autistic-like behavior, rocking, flapping and echolalia. He had attended a non-integrated Day Care Program for three years and had difficulty relating to other children. M began attending Tuesday and Thursday mornings when P had to drop out of the Tuesday class.

Procedures

Materials

The materials used in the symbolic dramatic play were mostly homemade. McCall's pattern number 7809 was used as a pattern to construct the dolls. The one small doll conformed exactly to the pattern whereas, for the other dolls, the arms and legs were lengthened and had seams stitched across them to simulate shoulder, elbow, hip and knee joints (See Fig. 1).

The puppet pattern was adapted from this doll pattern. The adapted puppet pattern is included in Appendix II.

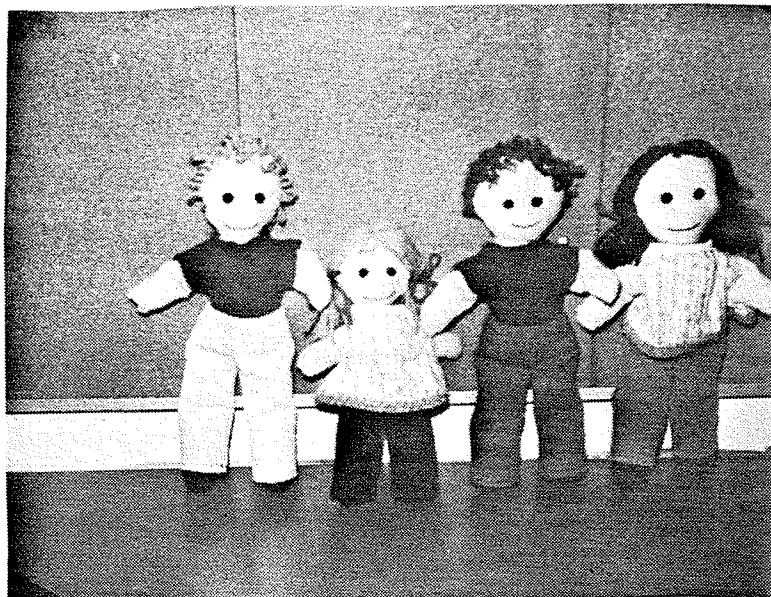


Figure 1 Dolls Used in Study

The prosthetic devices used in the study were made out of various materials. The arm cast was a covered cardboard tube that fit over one of the puppets' arms. The glasses were made from black wire with clear mac-tac for the lenses. To make a helmet elastic straps were attached to the end from a ribbon tube. An empty sample dental floss case attached to a button with a piece of wire became the hearing aid and ear mold. The leg brace was made by covering two popsicle sticks with material and fastening them together with velcro. A ready-made doll scooter board was used, but the wheel chair and the table and chairs had to be constructed out of scraps of wood and dowling. The specially designed patterns for the wheelchair, and table and chairs are included in Appendix II.

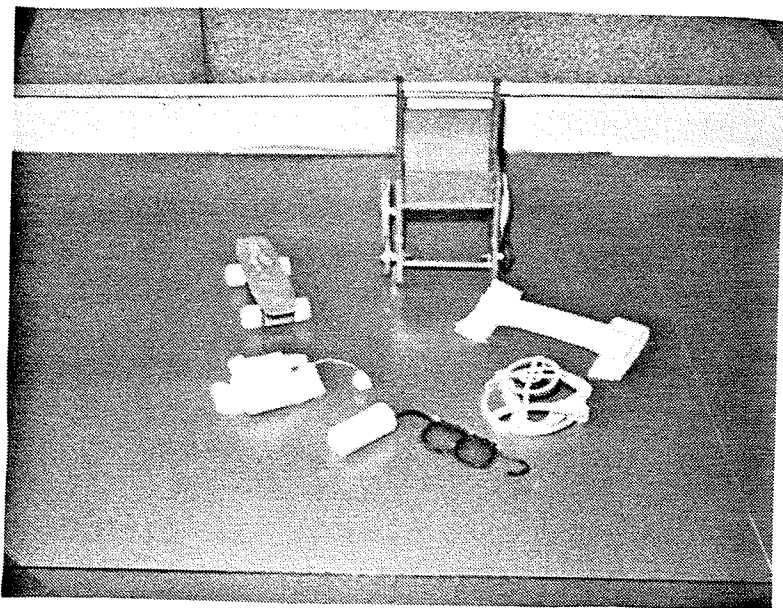


Figure 2 Prosthetic Devices

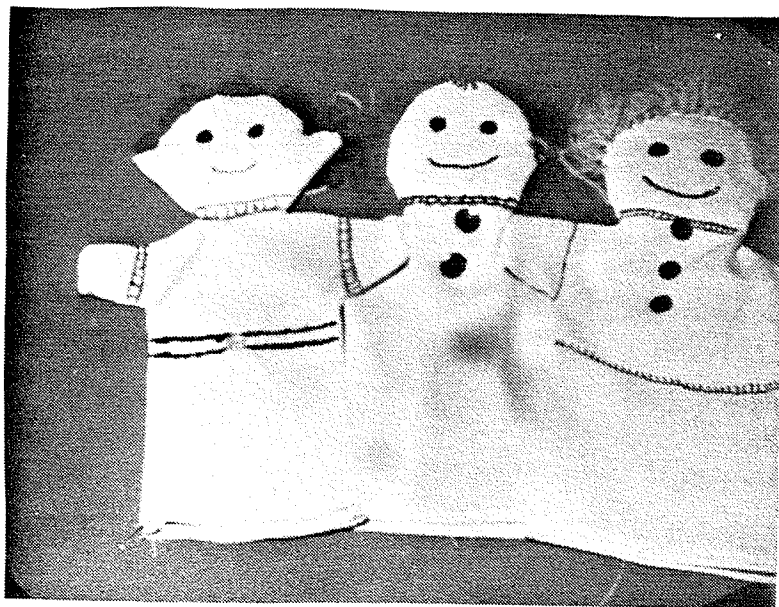


Figure 3 Puppets Used in Study

The simulated playroom was designated by a piece of carpeting approximately 3 1/2' x 4'. Other playroom furnishings included short pencils, crayons, small 3" x 3" pieces of paper, short paint brushes, an aluminium baking pan containing sand, bottle lids and small spoons, and a set of 1, 2, and 3 cm cuisenaire rods. Snack items included; raisins, peanuts, cheerios and popcorn.



Figure 4 Simulated Playroom

Additional pictures of the puppets and dolls using the prosthetic devices are displayed in Appendix II.

The room used for the symbolic dramatic play sessions was adjacent to the preschool classroom.

The preschool classroom itself was a large double classroom that contained a typical selection of early childhood play equipment. All observations were made during free play periods that usually ran from

9 o'clock, when the children arrived, to around 10 o'clock, when the children were asked to clean up for bathroom and snack time. During free play time the children had the opportunity to interact socially in their play with a minimum of adult intervention. This was deemed to be ideal for the purposes of this study as it would allow the researcher to assess any changes in the nonhandicapped Ss self-directed interactions with the handicapped target children throughout the duration of the study.

Intervention

All interventions consisted of taking children in groups of two to the experimental play setting. Most sessions were introduced with a motivational statement. After approximately 10 minutes each session ended with a snack time which was incorporated into the doll or puppet play.

Each play session began with the children choosing and naming their puppet or doll for the day and the investigator introducing the problem. The problem was introduced by stating the nature of the handicap and its possible implications. Play then began with the invitation, "Let's pretend!"

When the "handicapped" doll or puppet encountered difficulties in the play the investigator pointed this out to the children if they did not notice. If the children suggested ways to help the handicapped doll or puppet, these were followed. The investigator prompted suggestions by asking, "How can we help?". If solutions to problems were effective, the investigator or the puppet or doll said how happy he or she was with it.

If the children did not notice that a solution was not satisfactory, the investigator made a comment such as, "(doll's name) is still having trouble." This technique guided the children to solve all problems themselves.

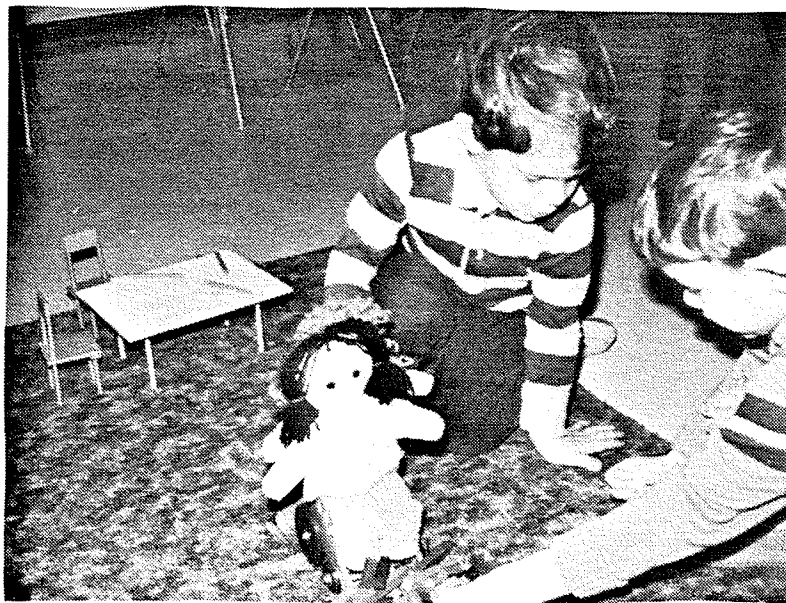


Figure 5 Group of Children Involved in Play Session

Phase I: General Intervention

Phase I consisted of the first four weeks of interventions. During this phase the handicapping conditions depicted in the symbolic dramatic play sessions were general physical handicaps: small size; wearing a cast, a helmet, glasses, a hearing aid, and a leg brace; or being confined to a wheelchair or a scooter board. A detailed account of how these sessions were introduced is given in Appendix III.

Phase II: Specific Intervention

In an attempt to make the handicaps more relevant to the mentally handicapped target children's handicaps, the second phase of the investigation, which consisted of the second four weeks of intervention,

attempted to depict the specific handicaps that our target children displayed. Seven of these conditions were portrayed: letting the tongue hang out of mouth, staring when wanting to join in play, not talking, speech problem, rocking, flapping, and putting fingers in ears. In addition, the dolls or puppets were named after the handicapped target children. The investigator emphasized that these exceptional behaviors were not meant as unfriendly gestures, but as expressions of problems.

Introductions were simplified in this phase because play sessions had become a desired activity. The children named it the "Muppet Show". Specific introductions of the handicapping conditions presented in Phase II are found in Appendix III.

Observational System

Events Recorded:

Pre-experimental Observations

a) General Level of Interaction

Prior to the introduction of the handicapped children into the preschool the general level of each Ss' social interaction was globally assessed. On two separate days each child was observed for a five minute period during free play. Any interactions with a peer in play during a fifteen second interval resulted in a check mark being recorded for that interval. Play behavior included parallel, associative, and cooperative play as defined in the following section dealing with the experimental observations. This general assessment was conducted to ensure that none of the Ss were children whose behavior could be described as withdrawn.

b) General Level of Interaction with the Handicapped

Following the introduction of the handicapped child into the classroom, the behavior of the eight Ss was again monitored. This time, however, it was monitored in reference to their interactions with the handicapped children. This was accomplished by observing the handicapped child throughout the entire free play period for two days. Once again, behavior was recorded in fifteen second intervals, however, now each child who interacted with the handicapped child during an interval in one of the three play behaviors received a tally mark beside his name. The two children who received the highest number of tally marks were identified as the PS Ss and the other six children were the NPS Ss. Choosing the Ss in this manner without reference to the actual behavior observation form used in the study avoided the possible effects of regression to the mean.

Experimental Observations

The University of Manitoba Integrated Pre-School Project Pupil Observation Form (Hughes, 1979) that was used in the integrated afternoon preschool to record the social interactions of the handicapped children was used to record the social interactions of the handicapped target children throughout this study. This same form was adapted for the purposes of this study and used to record the social interactions the nonhandicapped Ss directed towards the two handicapped children. These two observation forms are given in Appendix IV.

There were four main levels of interactions. They were defined as follows:

Speech Attempts to Peers (code 1) included all vocalizations while a child was directly facing a target child within a radius of 0.9 m or all

vocalizations that by virtue of content (e.g. proper name, "hey you", etc.) and/or accompanying non-verbal motions clearly indicated that the child was directing the utterance to a target handicapped child.

Non-verbal attempts to Peers (code 3) included all movements emitted by a child that caused his head, arms, or feet to come into direct contact with the body of a handicapped child; that involved waving or extending arms directly toward a target child; or that involved placing of hands directly upon a material, toy, or other movable apparatus that was being touched or manipulated by a handicapped child.

Interaction with Peer in Play (code 5) included the following three forms of play behavior.

Parallel Activity The child plays independently, but the activity he chooses naturally brings him among other children. He plays with toys that are like those which the children around him are using, but he plays with the toys as he sees fit, and does not try to influence or modify the activity of the children near him. He plays beside rather than with the other children. There is no attempt to control the coming or going of children in the group.

Associative Play The child plays with other children. The conversation concerns the common activity; there is a borrowing and loaning of play material; following one another with trains or wagons; mild attempts to control which children may or may not play in the group. All the members engage in similar if not identical activity; there is no division of labor, and no organization of the activity of several individuals around any material goal or product. The children do not subordinate their individual interests to that of the group; instead each child acts as he wishes. By his conversation with the other children one can tell that his interest is primarily in his associations, not in his activity.

Cooperative Play The child plays in a group that is organized for the purpose of making some material product, or of striving to attain some competitive goal, or of dramatizing situations of adult and group life, or of playing formal games. There is a marked sense of belonging or of not belonging to the group. The control of the group situation is in the hands of one or two of the members who direct the activity of the others. The goal as well as the method of attaining it necessitates a division of labor, taking of different roles by the various group members and the organization of activity so that the efforts of one child are supplemented by those of another.

Interaction with Peer as Onlooker (code 6) included all obvious visual inspections of a handicapped child or his/her behavior made by the subject. This visual inspection must not be fleeting.

The play behavior was coded as either "/" - parallel; "=" - associative; or "X" - cooperative.

Non-verbal and Speech attempts were also coded as either Pro-social (P) or Anti-social (A). Pro-social verbal attempts included all vocalizations directed to the target child excluding screams, shouts, cries, whines, and not accompanied by gestures that indicate rejecting oppositional behavior. Pro-Social non-verbal attempts included a touch with a hand or hands; hug; holding hands; kiss; wave and all cooperative responses involved in sharing a toy or material. Anti-social verbal attempts included screams, shouts, cries, whines, or other utterances that were accompanied by gestures that indicated rejecting, oppositional behavior. Anti-social non-verbal attempts included a hit; pinch; kick; butt with head; "non-playing" push or pull; grabbing object from another child; or destroying construction of another child.

In addition, non-verbal and speech attempts were also coded as either initiated (i) or responded (r). Initiated behaviors were those that were emitted by the subject at least three seconds before or after another child's behavior. Responded behaviors were those that were emitted by subjects within three seconds following another child's behavior. Speech attempts were also coded as either a sentence (S), word (W), or vocalization (V). A sentence included both complete sentences and phrases. A word included discrete identifiable words, and a vocalization included all other utterances. Studies by Strain et al (1974, 1976, 1977 & 1977) and Parton (1932) were used to construct these definitions.

In the event that two behaviors occurred during one observation interval, the behavior with the highest rating was recorded. (e.g. If "1", speech attempt, and "5", play, both occurred during one interval, "1" would be recorded.) In addition to these specified observations, the observers were encouraged to make anecdotal notes.

Data Collection

All data was collected using a fifteen second time sampling technique. This fifteen second interval consisted of twelve seconds of observation and three seconds for recording those observations. This was monitored initially by a taperecorder with audible sound, and later by the visual display provided by a large wall clock.

All data was collected during the free play period in the preschool. After the first two observation days, when only half of the Ss were observed each day, an attempt was made to observe each Ss for ten minutes each day he was in attendance. These observations were randomly assigned to the observers each day so as to avoid any systematic observer or scheduling biases.

Reliability

A total of five graduate students, including the investigator, were observers for this study. They began observing by collecting initial baseline data and continued to the conclusion of the study. All six observers had experience with the original integrated preschool observation form and had developed a degree of reliability with it. Reliability using the adapted observation form was checked before the study began. Throughout the study reliability checks were made at least weekly, usually twice weekly.

Observer reliability was monitored by calculating the percentage of agreement of all possible observer pairs on a rotating basis. The formula used was as follows:

$$\frac{\text{agreements}}{\text{agreements} + \text{disagreements}} \times 100.$$
 Overall reliability was found to be 98.2. It was consistently 95 or higher.

Scheduling of Interventions

An initial three week baseline period was followed by two, four week intervention periods and a two and one-half week final baseline period. Groups 1 and 2 were involved in the symbolic dramatic play during the first intervention period while groups 3 and 4 had an extended initial baseline period. During the second intervention period groups 3 and 4 were involved in the symbolic dramatic play. Groups 1 and 2 returned to baseline conditions for two weeks and then had an additional two weeks of the symbolic dramatic play.

Groups	Baseline ₁ 3 wks	Intervention ₁ 4 wks	B ₂ 2wks	I ₂ 2wks	Baseline ₃ 2 1/2wks
1 NPS-PS		XXXXXXXXXXXXX XXXXXXXXXXXXX		XXXXXX XXXXXX	
2 NPS-NPS		XXXXXXXXXXXXX XXXXXXXXXXXXX		XXXXXX XXXXXX	
3 NPS-PS			XXXXXXXXXXXXX XXXXXXXXXXXXX		
4 NPS-NPS			XXXXXXXXXXXXX XXXXXXXXXXXXX		
	Baseline ₁ 6 wks		Intervention ₁ 4 wks		Baseline ₃ 2 1/2 wks

Figure 6 Graphic Time Line of Study.

Data Analysis

Pre-experimental observations were analyzed simply in terms of the relative frequency of the behavior in question.

Results of the free play observations were tabulated and graphed according to the levels of interaction, type of social behavior, direction of the interaction, type of communication and level of play across all phases of the study. They were analyzed according to possible differential effects that were reflected in the slopes of the lines in the graphs in question. Each hypothesis was considered separately as follows:

1. To discover if the symbolic role play had an effect on the interaction between the NPS child and his handicapped peers, any differential effect that occurred during intervention I between the NPS subjects in group 1 and 2 and the NPS subjects in groups 3 and 4 during their concurrent baseline period was compared.
2. Similarly, any differential changes that occurred in this period between the PS children in groups 2 and 4 were compared to discover if the treatment had an effect on their interactions with the handicapped children.
3. The effect that the inclusion of a prosocial child had on the effects of treatment were assessed by considering any differential effects between groups 1 and 3 NPS subjects and groups 2 and 4 NPS subjects during intervention I.
4. To discover if these newly acquired social behaviors were maintained by natural contingencies, the level of behaviors during the final baseline were compared with the level of these behaviors during each group's final intervention period.

In addition any other overall effects were considered and graphs were made to gain a better understanding of general effects of the study.

CHAPTER 4

RESULTS

Pre-experimental Results

Results of the initial observations of the general level of interaction of Ss with their nonhandicapped peers in play is depicted in table 3, column 1. None of the Ss were found to be social isolates; all interacted to a reasonable degree with the nonhandicapped. In fact, with the exception of W, all interacted at a high frequency.

When the handicapped child was first introduced, the level of each Ss' interaction with her was globally assessed during two entire free play periods. These results are also shown in table 3, column 2. Three children interacted positively with the handicapped child (one at a high frequency) and two interacted negatively.

Subject	Interactions with:	
	Nonhandicapped	Handicapped
G	20	2+
D	19	1-
S	13	0
F	14	0
A	13	44+
B	20	1+
K	14	0
W	2	5-

Table 3
Average no. of interactions with nonhandicapped peers
(possible 20), column 1
and
Total no. of interactions with handicapped peer
(+ = positive; - = negative), column 2

Experimental Results

The results of the study have been tabulated according to levels of interaction, type of social behavior, direction of the interaction, type of communication, and level of play, and are presented in Appendix V. Several of these categories provided very little data. An average of only 0.5% Speech Attempts, code 1, and 0.2% Non-verbal Attempts, code 3, occurred each day, whereas Play, code 5 and Onlooker, code 6, averaged 5.3% and 3.4% respectively. Only those categories in which behavior occurred with some regularity: interaction as an onlooker; interaction in play; and overall interaction level were graphed according to the stated hypotheses. Since speech and non-verbal attempts occurred infrequently, descriptive data related to these behaviors was also minimal. Data as to the type of play reveals that almost all play, 98.8% was parallel in nature.

Contrary to expectations, initial interactions occurred at a high frequency. During the baseline period the level of interactions declined rapidly. The baseline period did not continue long enough for a stable pattern of interaction to be established.

In order to control for any variability due to the differing number of handicapped target children available on the two experimental days, the graphed results are averaged for each week. The daily data was represented in weeks in the manner shown in table 4.

DAY	WEEK	
1	1	} B1
2	2	
3 & 4	3	
5 & 6	4	} B1 groups 3 & 4
7 & 8	5	
9 & 10	6	
11 & 12	7	} I1 groups 1 & 2
13 & 14	8	
15 & 16	9	
17 & 18	10	} I1 (cont's) groups 3 & 4
19	11	
20 & 21	12	} I2 groups 1 & 2
22 & 23	13	
24	14	

Table 4 Compression of Days Into Weeks

The following section will discuss the results in relation to the hypotheses stated in Chapter 1.

Hypothesis One

It was hypothesized that symbolic dramatic play of nonhandicapped preschool children involving "handicapped" dolls or puppets would positively affect the interactions that the nonhandicapped child, who previously did not interact appropriately (NPS), has with his handicapped peer. To discover if this was demonstrated by the results of this study, the effect of the intervention on the three NPS Ss in groups 1 and 2 was compared with the concurrent baseline of the three NPS Ss in groups 3 and 4 during Phase I of the experiment. Graphs depicting these results are given in figures 7, 8, and 9.

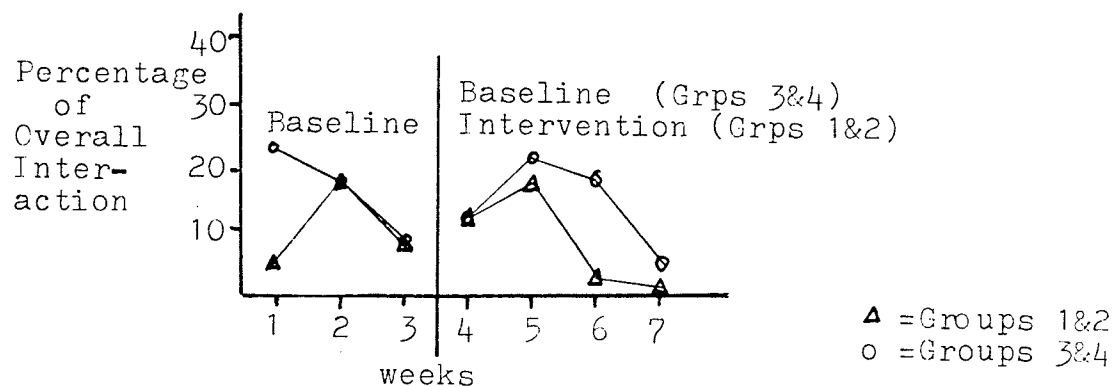


Figure 7 Overall Interaction with Handicapped Peer, NPS Ss

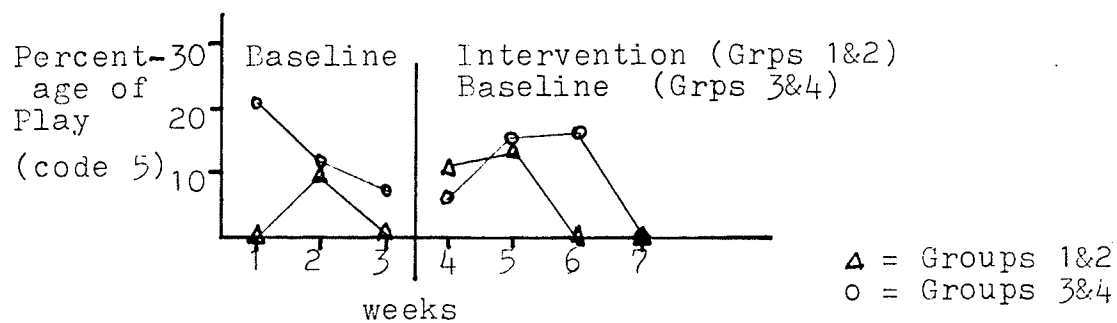


Figure 8 Play with Handicapped Peer, NPS Ss

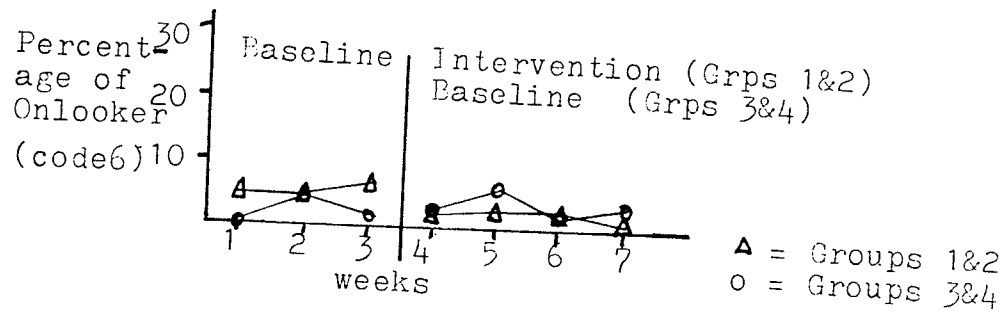


Figure 9 Interaction with Handicapped Peer, as Onlooker, NPS Ss

Figure 7 shows the overall percentage of interaction of the NPS Ss with their handicapped peers during baseline and intervention for groups 1 and 2 (indicated by the triangular points on the graph) and the concurrent period of extended baseline for groups 3 and 4 (indicated by the circular points on the graph). The slopes of the lines for each condition is almost parallel. Both groups decreased in the percentage on interaction with their handicapped peers. The groups receiving intervention exhibited this decrease slightly prior to the groups that remained in baseline conditions.

Figure 8 shows the percentage of interaction in play of the NPS Ss with their handicapped peers. An effect similar to the one observed in figure 7 is also seen here. The level of play with the handicapped peer decreases over the duration of the intervention. Once again, this occurs earlier for the Ss receiving intervention.

Figure 9 shows the percentage of interaction of the NPS Ss with their handicapped peers as onlookers. This time the graph shows little

difference between the Ss receiving intervention and those in baseline. The lines are almost identical.

This data demonstrates that the intervention had no discernible effect on the level of interaction of the NPS Ss with their handicapped peers. Children in both conditions behaved in a similar fashion as demonstrated by the parallel lines on the graphs. Hypothesis one was, therefore, rejected. Symbolic dramatic play was not found to have a positive effect on the NPS Ss interactions with their handicapped peers.

Hypothesis Two

It was hypothesized that symbolic dramatic play of nonhandicapped preschool children involving "handicapped" dolls or puppets would positively affect the interactions that the nonhandicapped child, who previously interacted well (PS), has with his handicapped peers. To discover if this was demonstrated by the results of this study, the effect of the initial intervention period on the PS subject in group 1 was compared to the concurrent baseline of the PS subject in group 3. Graphs depicting these results are given in figures 10, 11, and 12.

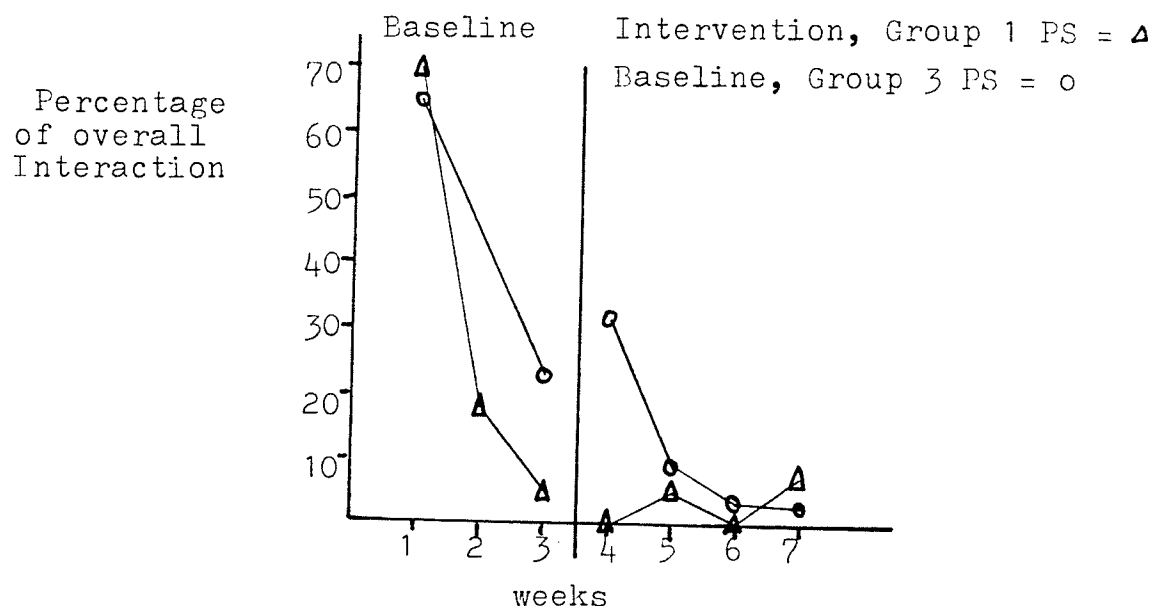


Figure 10 Overall Percentage of Interaction with Handicapped Peer, PS Ss

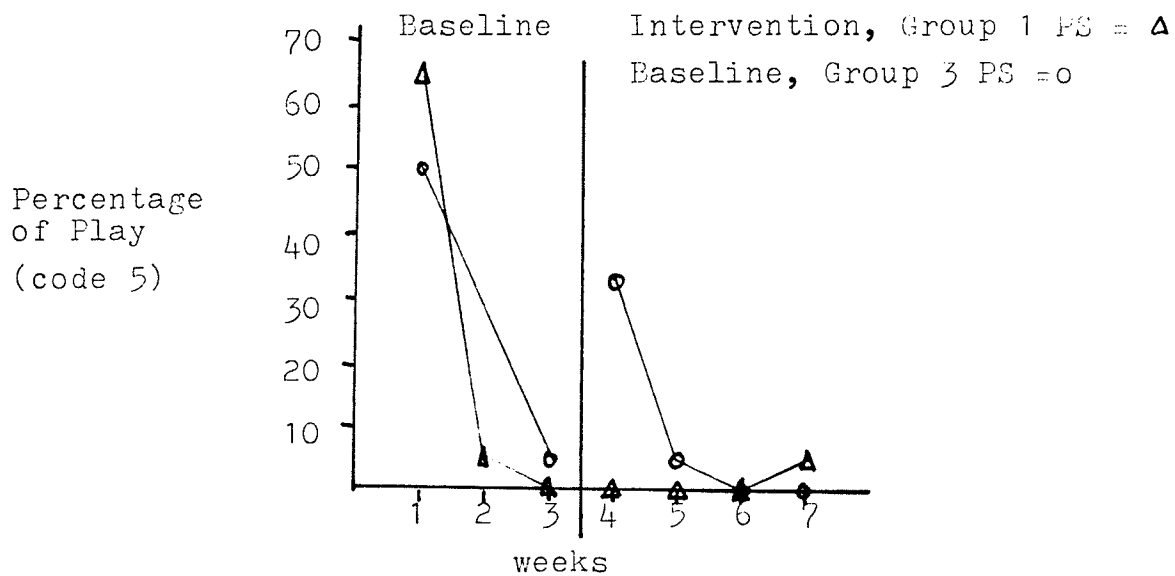


Figure 11 Interaction in Play with Handicapped Peer, PS Ss

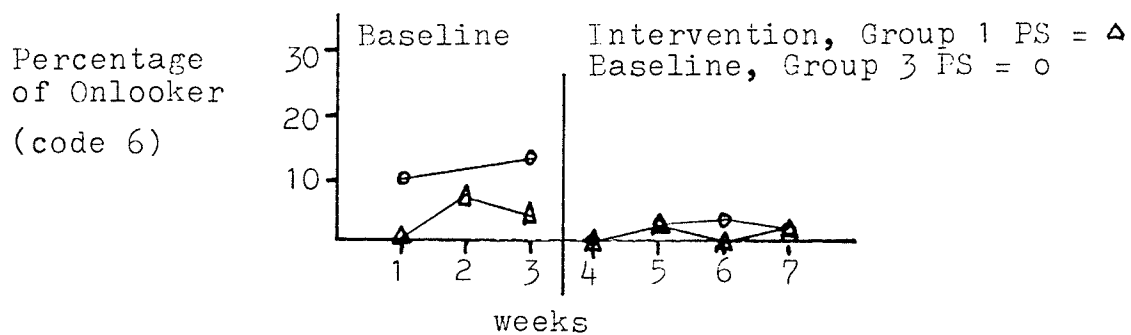


Figure 12 Interaction as Onlooker with Handicapped Peer, PS Ss

These graphs illustrate interactions between the two PS Ss and the handicapped peers in terms of overall interaction, figure 10; interaction in play, figure 11; and interaction as an onlooker, figure 12. The behavior of the subject that was involved in intervention is represented by the triangular shaped points on the graphs, and the behavior of the subject who continued in baseline conditions is represented by the circular points on the graph.

The graph depicting overall interaction, figure 10, shows that the child who was receiving intervention began the intervention by exhibiting no interaction with his handicapped peers. Over the period of the intervention his level of interaction increased slightly. The other child who was in a concurrent baseline period began the period interacting at a higher level, but this level of interaction declined over the four week period. During the final week of this phase the behavior of the child who was in baseline fell below that of the child receiving intervention. This same pattern can be seen in the graph depicting interaction in play, figure 11. These two graphs seem to indicate that there was a positive intervention effect on the PS Ss. If the baseline period had been extended, however, and stabilized at the level shown in week 5, the two PS Ss would have been more equitable. Had this been the case the effect of the intervention would have been less. The PS subject receiving intervention would have increased slightly in his interaction with his handicapped peers in contrast with a slight decrease for the PS subject under baseline conditions.

The graph in figure 12, interaction as an onlooker, did not demonstrate an intervention effect. The slope of the lines for the two PS Ss is nearly identical during the intervention period, weeks 4 to 7.

On the basis of these results, hypothesis two, that the intervention has a positive effect on the interaction of the PS Ss with their handicapped peers, received little support. A slight trend towards an effect was noted, however, in terms of overall interaction and play.

Hypothesis Three

Hypothesis three stated that training groups consisting of a PS and an NPS preschooler would have a greater effect on the interactions of the NPS child with the handicapped child than training groups consisting of two NPS children. The effects that the inclusion of a PS child had on the treatment results was assessed by considering any differential effects between groups 1 and 3 NPS Ss and groups 2 and 4 NPS Ss during each group's first intervention period. Since only 2 NPS Ss were trained with PS children while four NPS Ss were trained with other NPS children, the results for the two groups were averaged to make them comparable. These graphs are presented in figures 13, 14, and 15.

These three graphs indicate that there was no real difference in the effect of the intervention between the NPS Ss who were trained with a PS subject and those that were trained with another NPS Ss. This is shown most notably in the graphs for overall interaction, figure 13 and interaction as an Onlooker, figure 15. In these two graphs the slopes of the lines are virtually parallel. In figure 16, interaction in play, the NPS/PS Ss engaged in no play with the handicapped children throughout the last three weeks of intervention and in only 3.125% during the first week. The NPS/NPS Ss also declined over the course of the intervention from an initial high of 10.8 on week one to 7.1 on week four. It can thus be observed that the two groups experienced a similar

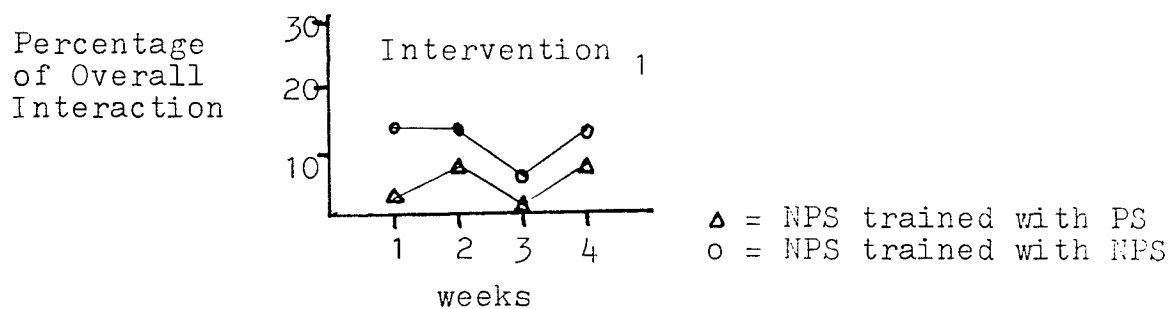


Figure 13 Overall interaction with Handicapped Peer During First Intervention Period

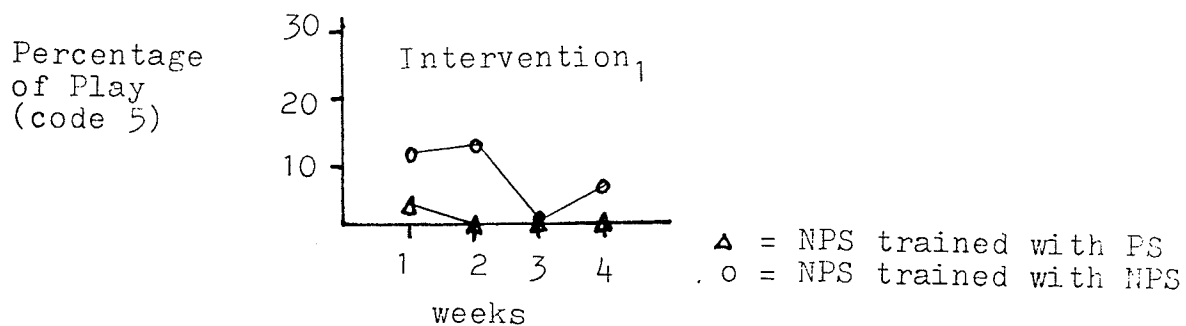


Figure 14 Interaction in Play with Handicapped Peer, First Interaction

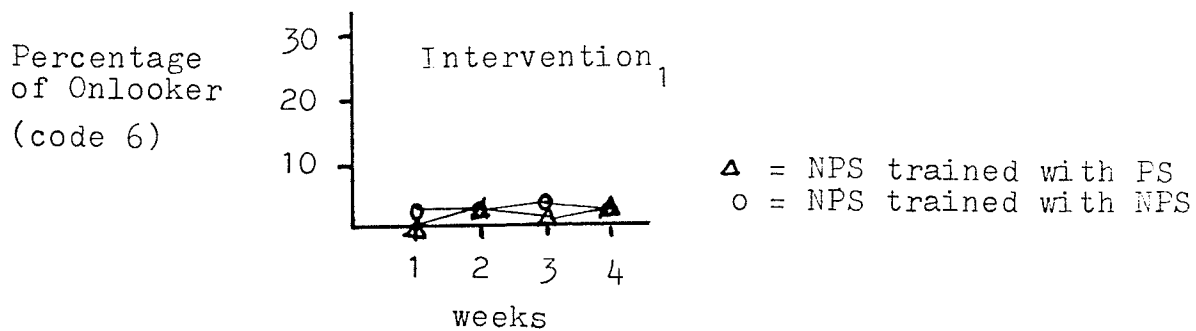


Figure 15 Interaction as Onlooker with Handicapped Peer, First Interaction

decrease in percentage of interactions with handicapped peers in play over the intervention period.

Hypothesis three was therefore rejected. Training groups consisting of an NPS and a PS Ss were not demonstrated to have a greater effect on the interactions of the NPS child with his handicapped peers than groups consisting of two NPS Ss.

Hypothesis Four

Hypothesis four stated that newly acquired patterns of interaction would be maintained when training sessions were terminated. To discover if newly acquired social behaviors were maintained by natural contingencies in the classroom, the level of behaviors during baseline 3 (final baseline) were compared with the level of these behaviors during the final four weeks of intervention. For groups 3 and 4 the final four weeks of intervention was the period from day 13 to day 24; for groups 1 and 2 this was the period from day 9 to 12 and 17 to 24. The graphs are presented in figures 16, 17, and 18.

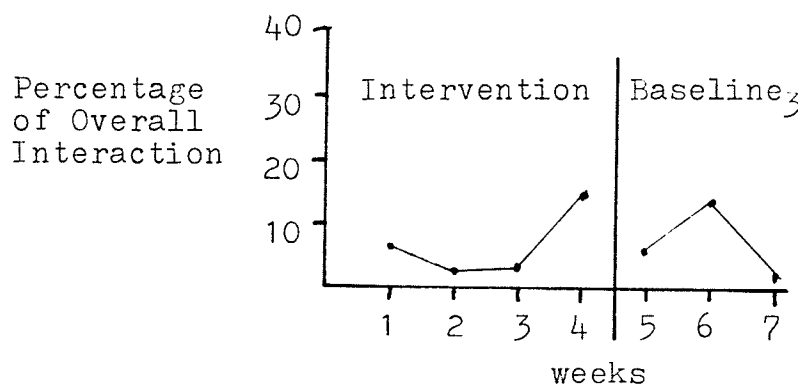


Figure 16 Overall Interaction with Handicapped Peer
(Final four weeks of intervention, all subjects
and final baseline (B₃))

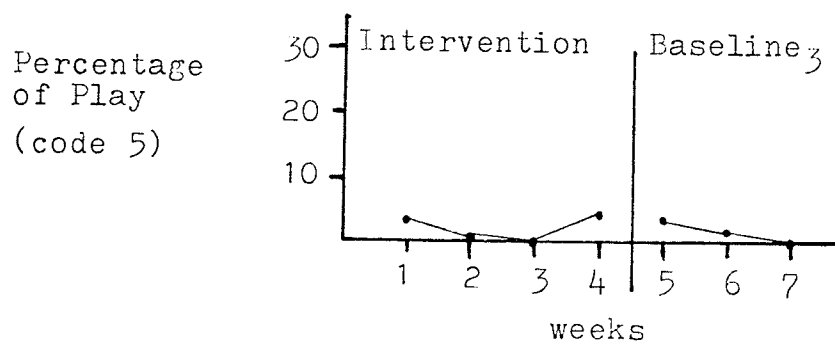


Figure 17 Interaction in Play with Handicapped Peer
(Final four weeks of intervention and
final baseline (B_3), all subjects)

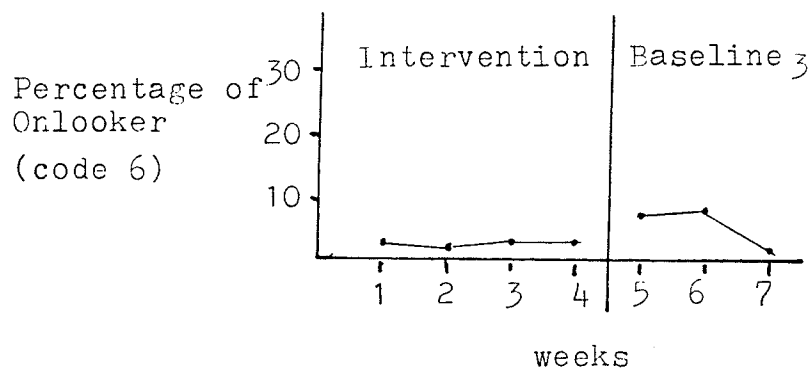


Figure 18 Interaction as Onlooker with Handicapped Peer
(Final four weeks of intervention and final
baseline (B_3), all subjects)

In graphs depicting the overall pattern of interaction and the interaction in play, figures 16 and 17, the intervention is seen to have the effect of increasing the interaction. The slope of the line increases slightly over the course of the intervention in both cases.

This is more evident in figure 16 than in figure 17. During baseline, however, the slopes of the lines on both graphs decline indicating a decrease in the level of interactions. In the graph depicting interaction as an onlooker (figure 18) a different effect is demonstrated. During the intervention period the slope of the line is virtually parallel to the abscissa. This indicates that the intervention is having no effect on the interactions of the nonhandicapped Ss with their handicapped peers as onlookers. Following intervention, under baseline conditions, however, the interactions of the nonhandicapped Ss with their handicapped peers as onlookers increases initially and then decreases to a level similar to that observed during the four week intervention period.

On the basis of these results, hypothesis four, that the newly acquired social behaviors are maintained by natural contingencies, received little support. A slight trend towards an effect was seen, however, in several categories.

Overall Interaction

Figure 19 depicts the level of overall interaction for all nonhandicapped Ss throughout the study. During the initial baseline (B_1) for all groups a sharp decline in interactions between the nonhandicapped Ss and their handicapped peers is demonstrated by the steep slope of the line. In phase I of the intervention, when groups 1 and 2 were participating in the doll play and groups 3 and 4 were continuing under baseline conditions, the decline in overall interactions with the handicapped continues at a slightly slower rate. The level of interaction begins to increase in phase II of the intervention. During the first two weeks of this phase groups 3 and 4 were participating

in the doll play and groups 1 and 2 returned to baseline. Finally, during the last two weeks of phase II when all groups were in intervention the level of interaction increases even more. In the final baseline period (B_3) when intervention of all groups was terminated, the level of interaction remains quite high but drops off sharply during the final week.

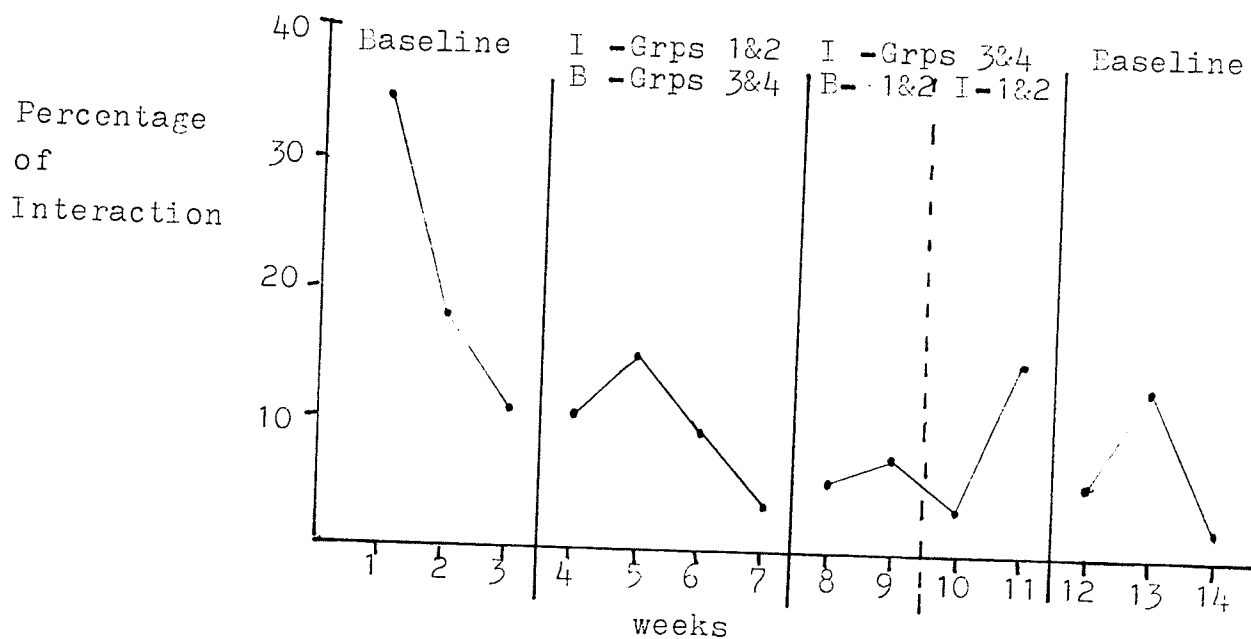


Figure 19 Overall Interaction (throughout study, all groups)

There is a noticeable reduction in interactions between the nonhandicapped and handicapped child from the initial to final baseline ($Baseline_1$ to $Baseline_3$).

CHAPTER 5

DISCUSSION

Summary of Results

Although general response to the intervention procedures used in this study was weak, there were some positive signs. In particular, symbolic dramatic play experience may increase interactions with handicapped peers for preschoolers who demonstrate an initial acceptance of the handicapped. The study also suggested that the effects of training may be maintained in the natural environment following termination of the intervention.

Implications

The results of this study suggest several major implications. Methods that may take advantage of initial receptivity of the nonhandicapped toward their handicapped peers are suggested in response to the high initial interaction levels found in this study. In addition, according to the effects of the symbolic dramatic play intervention in this study, several suggestions regarding the utility of the procedure and adaptations that may be made are presented.

High Initial Interaction Levels

Contrary to expectations (Thurman & Lewis, 1979), overall initial interaction attempts by the nonhandicapped Ss to their handicapped peers occurred at a relatively high level. It may be, in this case, that the behavior or social responses of the handicapped children, and not their appearance, identified them as different. As the nonhandicapped Ss became aware of these differences, social interaction with

the handicapped children declined rapidly. The overall effect of the intervention was seen to counteract this decrease in social interactions to some extent. Had the handicapped Ss been able to respond appropriately and reinforce initial friendly overtures, however, the nonhandicapped Ss may have learned to interact with them with very little adult intervention.

Since the high level of social attempts of the nonhandicapped Ss has not been documented elsewhere, initial encounters should be studied further. If high initial levels of interaction are found consistently, then initial contacts may deserve closer attention in intervention programs. Perhaps handicapped children can be trained to respond appropriately to other children's initial social overtures. Such training might reinforce the nonhandicapped children's initiatives, and thereby prevent their dramatic decrease later, as happened in this study.

Gottlieb's (1981) suggestion that we identify characteristics of pupils who "appear to adapt well in mainstreamed classes" relates to this issue. If we can identify social behaviors that facilitate a handicapped child's acceptance by regular children, as well as methods for training them in these behaviors we may set the stage for more natural social interactions in a mainstreamed setting. Like other children, the handicapped may create their own social environment; the frequency of positive social reinforcement given may be directly reflected in the degree of social acceptance received. If in fact their lack of socially reinforcing behaviors causes their social rejection or isolation in the mainstream, social skill training prior to integration may well be a solution. Even though social skill training is not a panacea (Gresham, 1982), a few studies cited

earlier have demonstrated generalization and maintenance of socially reinforcing behaviors such as smiling, sharing and positive physical contacting (Wiesen et al., 1967; Cooke et al., 1976).

Another method of preparing handicapped children for an integrated class would be to make them familiar with the classroom and staff so that they would be more confident and more able to use their social skills. The handicapped children in this study appeared to be affected considerably by the physical environment of the classroom. At one point, for example, the house and book corners were interchanged; the house area was moved closer to the quieter areas of the classroom. Previously M., who avoided the noisy areas, had never been observed in the playhouse, but now he began playing there daily. Opportunities for interactions to occur between him and his peers were thus increased. Shortly after this M. began curling up in a large arm chair in the house center, rather than playing. When the chair was moved out of the house the amount of time he spent curled up in it, engrossed in his own world, decreased, and he began playing again in the house centre.

Such behavior changes imply value to acclimatizing the handicapped children to the classroom environment purposely and to adjusting the environment, program or methods to suit their observed needs. When a handicapped child is introduced to an established, ongoing classroom, he must deal with many new experiences as well as attempt to participate in existing social groups in spite of weak social skills. Perhaps he can cope with this complexity better if he is already familiar with the classroom and its routines. If the nonhandicapped are introduced to his established environment, he may be able to concentrate more fully on interacting with them.

Symbolic Dramatic Play

For several reasons, symbolic dramatic play may be a valuable tool in developing social interactions between the handicapped and nonhandicapped preschooler. This approach is quite adaptable and incorporates many established social learning techniques: role playing play therapy, positive reinforcement, coaching and modeling. In addition, by focusing on child-directed solutions, the behaviors portrayed may be more readily assimilated by the children than adult directed programs.

In this study, however, some of the children may have found the symbolic nature of the task too difficult, and focused therefore on the play materials instead of on the problems presented. Although by age four children can often hypothesize and solve problems about future events (Westby, 1980), many of the children in this study may just be entering this stage.

In addition, the task presented in this study required decentering and role taking abilities which many of these children may not have possessed. If so, then, this play intervention would work better with children who are slightly older; as Fein (1981) states, "older children are more likely than younger children to produce integrative role structures." Alternately, the problem could be presented more simply, to match closer the children's developmental level. In some situations, simplifying the tasks has allowed preschool children to perform decentering tasks (Maratsos, 1973; Donaldson, 1978).

The tendency to interact in the classroom following intervention may actually last longer than appeared in the results. Data for the last week includes observations from only one day, the last regular teaching day, usually not considered a typical teaching day. Possibly,

for example, teachers felt less enthusiastic at this point. One teacher commented to the investigator that she did not feel like coming; her courses were over and she had completed all her degree requirements. Excluding the final day's observations from the data would have made the remaining data seem more promising by suggesting a continuation of social interaction between the nonhandicapped Ss and their handicapped peers. Continuation of interaction was predicted because the intervention required Ss to draw on their own understandings and attitudes in their symbolic dramatic experiences with handicapped children. Solutions to the problems of how to relate to the handicapped children had to be in accordance with the children's abilities and understanding, rather than superimposed teacher solutions.

The intervention might have shown greater effects if attitudes as well as behaviors had been monitored. This study focused on observable social interactions, however, because they are more important; from the handicapped child's perspective, an attitude that does not translate into actual interactions in the natural setting has little value. The tentative and limited trends identified in this study, therefore, do at least represent real behavior change in the classroom environment. Even such minor changes may represent major improvements in the social atmosphere afforded the handicapped. Furthermore, since the behaviors were not imposed, the changes observed are more likely to reflect underlying changes in attitude.

Ideally, in keeping with the principle of integration, further investigations of this nature should be conducted in the classroom. This should facilitate generalization of the skills (Michelson & Wood, 1980) and help demonstrate its suitability for regular classroom use (Gottlieb, 1982). A classroom program using symbolic dramatic play can

use material available in most early childhood classrooms. A program is needed that would be less disruptive of children's play allowing children to focus on problem solution rather than manipulation of materials. This might be done, for example, with the teacher manipulating a puppet representing the handicapped child, and joining the ongoing play.

Individual Differences in Intervention Effect

The intervention affected individual Ss' behavior toward the handicapped to varying degrees. There was a slight intervention effect observed in the PS Ss, but none in the NPS Ss.

For example, one of the PS Ss told his mother, "There's a nice boy in school called M.", and during a play session, the other PS child commented, "I love P. and I love M." They made these comments earlier and seemed to be less ambivalent in their feelings than the NPS children. Their positive attitudes were reflected in their receptivity to positive behavior change. G., after his first intervention session tried to get M. to come and play with him. He persisted until he succeeded. During the second set of intervention sessions G. began making speech attempts to his handicapped peers. He had not been observed to do this since his initial speech attempts when the handicapped children were first introduced. It seems possible that a longer study would have demonstrated a greater effect even for the PS children in the study.

Although similar behavior changes were not observed in the NPS Ss, the intervention may have had some effect on their thoughts about their handicapped peers. For example, D., one of the NPS Ss who interacted infrequently with the handicapped children throughout the study, drew

a picture of a child wearing a cast, and commented, "This is a kid in a cast, but we can't help him. He's a picture." This comment may indicate that he had begun to think about physical difficulties from a "being helpful" point of view. Later on at the end of the study, his mother told the investigator that he said, "When I talk to M he never answers me." This may signify that he was attempting to interact with him. Perhaps, had the study continued, this would have been reflected in observed behavior changes.

One of the eight Ss, W, was affected adversely by the play sessions. During initial observations this child engaged in relatively few interactions with his nonhandicapped peers, and was considerably more aggressive towards the handicapped child than any other Ss. W's mother indicated that he had a 50% hearing loss which was only discovered and corrected at two years of age. She felt he had some social problems; he especially didn't adjust well to new people. W did not want to leave the room and play with the dolls. When he did come, he was very aggressive with the dolls (hitting, throwing sand, grabbing snack, etc.). Since this appeared to be reinforcing negative behaviors, W was only included in three intervention sessions. A degree of positive general social interaction skills appears to be a pre-requisite for a program such as this.

This differential treatment effect suggests that behaviors of the nonhandicapped children prior to intervention must be carefully examined. Research that would help identify the characteristics of nonhandicapped children who are suitable candidates for integrated classrooms is urgently needed. A study by Strain, Shore & Timm (1977), for example, used prior social activity and high I.Q. as criteria in choosing peer-tutors. In this study, the PS children both seemed to have a strong sense of right and wrong in terms of adult-made rules.

Focus of Sessions

Overattention to Play Materials

Manipulating the dolls and puppets required considerable effort on the part of most Ss. They would often focus their attention on how to use them, or, more frequently, lay them aside and focus on the prosthetic devices or play equipment. This over-attending to the materials was reflected in several incidents. One boy, when putting on his shoes, decided to use his shoe as a puppet and said to the investigator, "Hi! I'm shoe." Others asked questions about how and why the dolls were made the way they were. Still others focused on the devices, taking the scooter board, for instance, or pretending that an ordinary chair was a wheelchair. During the second intervention phase the prosthetic devices were not used, however, the children were still required to manipulate the dolls.

Other studies that have used doll and puppet play to modify social behavior have usually been more directive, and have involved the experimenter manipulating the dolls or puppets (Chittenden, 1942; Day, Powell, Dy-Lin & Stowitscher, 1982). In doing so these studies prevent the children from focusing on the materials too much. Although superior results are demonstrated, they have not been maintained once the intervention is terminated. This could reflect the more directive nature of the solutions, however, and not be related to the actual manipulation of the dolls.

General Versus Specific Approach

The second intervention phase in this study, by focusing on the problems of the actual children, seemed more effective than the first,

general approach. It was during the second phase that the overall level of interaction between the nonhandicapped and handicapped began to increase. Partly the increase resulted from including all Ss in the intervention. In addition, however, the Ss who had participated in the first intervention seemed more receptive to the ideas in the more focused session than they had been to the ideas presented in the more general interventions. This trend suggests that future studies should use quite specific intervention, and should confront the nature of handicaps quite explicitly. At the same time, a balance must be struck between teacher and child initiative. Perhaps teacher structure may be needed to produce the desired effect at first, but, to maintain this effect after intervention, the child must direct himself.

Observational System

Throughout the study anecdotal incidents were reported and recorded by the observers, teachers and parents. Although they were not collected regularly or systematically, they have enriched the data collected on the observation forms considerably, and may even suggest how the observation form can be improved. In order to gain as much information as possible from further studies of this nature, it may be advisable to "broaden the data base" (Sheehan & Keogh, 1981). Supplementing the observation form with naturalistic observations collected in a systematic manner may provide a more thorough understanding of the various factors affecting the outcome of the study.

Over the course of this study, for instance, the investigator and others noted that the children were playing closer to each other. It appears that this might be an early indication of an attitudinal change. Initially children avoided the area where a handicapped child was playing. This appeared to be an intentional behavior; several times

a child who was heading for a specific area would announce, "She's in there." and go somewhere else. Gradually this decreased until, by the end of the study, such discrimination was no longer observed. Whether or not this was specifically affected by the interventions or not is not clear. The inclusion of a "Proximity" measure in future studies of this nature would appear to be a valuable addition to the observation form.

Handicapped Children

Although this study focused on changing the behavior of the nonhandicapped children towards the handicapped, the effect of the resulting environment on the handicapped children was constantly monitored. The data gathered on the two handicapped children is presented in Appendix VI. Generally onlooker behavior decreased as the handicapped children became involved in the classroom activities. At the same time, their attempts to interact became more prosocial.

Several individual effects were noted as well. P experienced a decrease in solitary play, but M did not. His self-stimulating behavior appeared to decrease in intensity, however, and most of his rocking and ear plugging behavior disappeared. M's speech attempts to adults increased while P's non-verbal attempts to peers increased. P spend most of her time inside a large shape box watching the other children at first, but, by the end of the study, she was involved in many classroom activities and was hard to distinguish from her nonhandicapped peers. She was observed, on several occasions, to stand up for herself and defend herself against aggression.

Although M continued to flap objects in his hands, and to engage in a considerable amount of solitary play, he did make some gains. M's

solitary play more frequently occurred in closer proximity to other children. Towards the end of the study he rarely went off to a corner by himself; initially this had occurred regularly for extended periods of time. M 's mother was impressed with his progress in the integrated setting. Prior to his involvement in this study, he had been attending a segregated day care program for three years and his mother doubted that he could cope with or benefit from school placement next fall. After seeing him function quite well in this program she felt more confident in his ability to manage next year.

M himself had definite feelings about the integrated environment. His mother reported that on days when he knew he was going to the university, he would get up and get dressed willingly. On other days, however, when he was to attend the segregated program, he became quite oppositional, and refused to get up and dress.

Conclusion

Only weak, non-significant effects of symbolic dramatic play on the integration of nonhandicapped and handicapped preschoolers were demonstrated in this study. Nevertheless, further exploration of this method seems warranted for two reasons: first, because the intervention had slight positive effects on some children, and second, because these effects appear to be maintained by natural contingencies. There has been very little research to date using social learning theory techniques, including modeling, coaching and role playing to facilitate interactions between nonhandicapped and handicapped children (Gresham, 1981). Future studies should sample the children's behaviors over a longer period of time, and the intervention should more closely match the developmental levels of the children.

To maximize the effects of symbolic play intervention, the sessions should be quite specific. The nature of the handicapping conditions must be addressed as directly as possible. The materials should be chosen with care; those that may distract attention from the problem at hand should be avoided.

In addition, since some children proved more responsive to intervention and integration with the handicapped than others, behaviors that may indicate suitability for integrated programs must be considered. In this study the intervention program proved most successful for children with average or above average general social interaction skills and initial acceptance of the handicapped child.

Perhaps of even greater importance, the period of initial acceptance that this study discovered suggests further exploration of methods that will enable the handicapped to respond appropriately and thus reinforce the initial social approaches of the nonhandicapped. Capitalizing on the initial receptivity of the nonhandicapped peers may be a very productive idea to develop.

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APPENDIX I

Permission Letter

January, 1982

Dear Parents,

Your child has been chosen to participate in a program which involves measuring the interactions that occur with handicapped children. The project will include a ten minute period of puppet and/or doll play two times a week for a portion of the term.

I would appreciate your signing the consent form below and returning it to me at your earliest convenience. Should you have any questions regarding this project, please feel free to talk to me at the preschool or call me at home.

Sincerely,

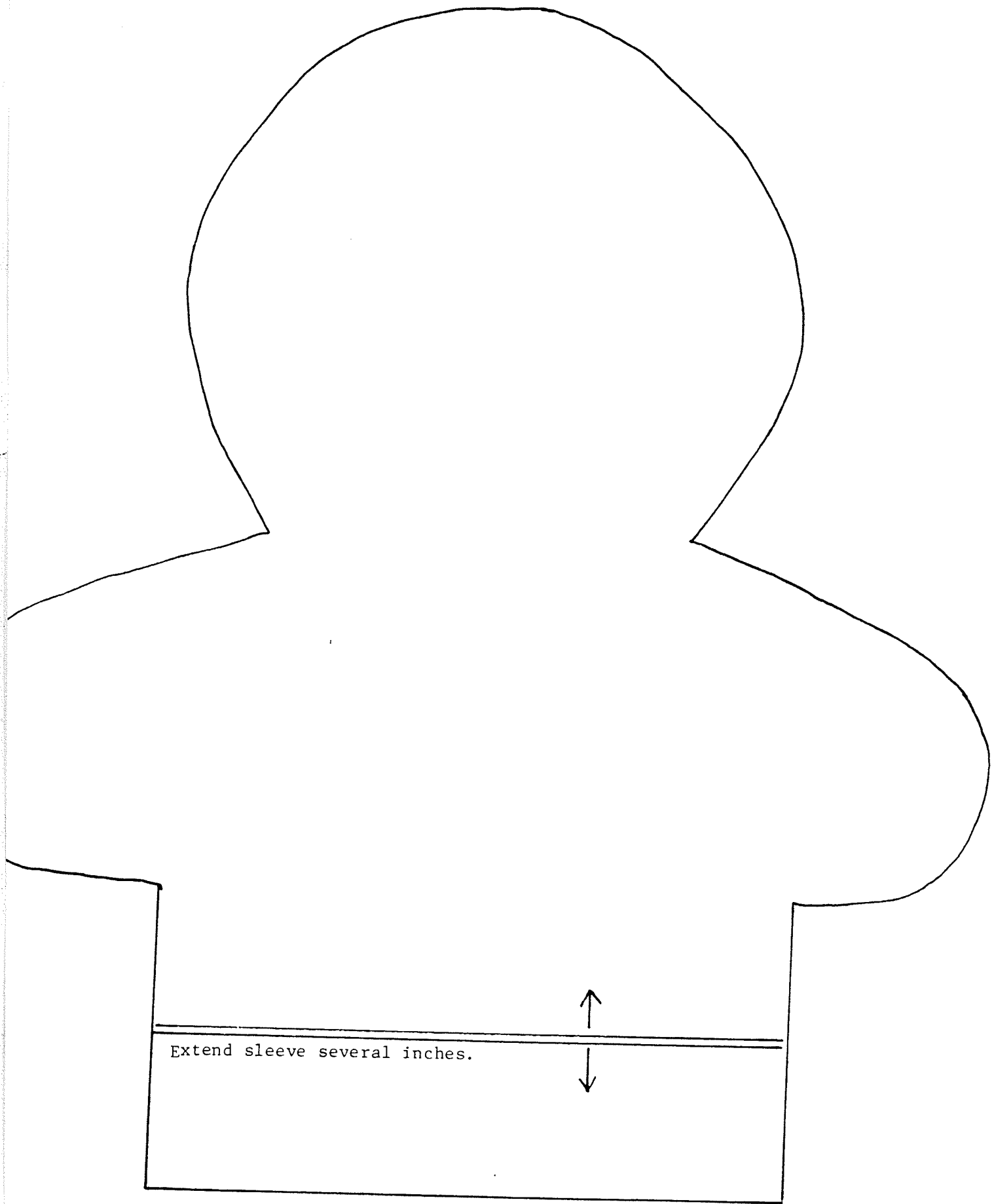
Bonnie E. Thiessen

I hereby give permission for my child, _____,
to participate in a project to measure interaction in the preschool
at the University of Manitoba this term.

Signature

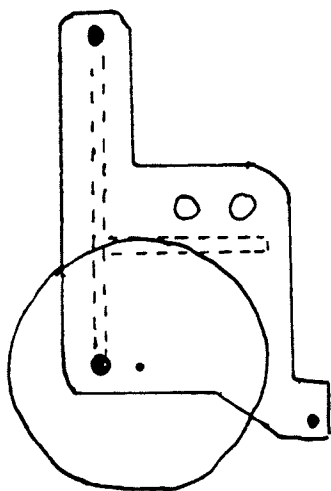
APPENDIX II

Materials

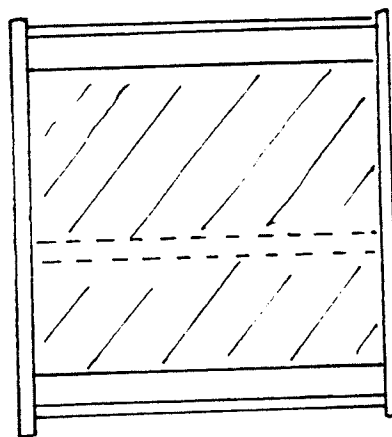


(Puppet outline)

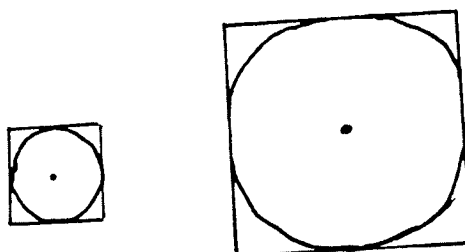
Wheelchair Pattern



side view



rear view



wheels

Materials used for wheelchair, table and chairs:

- 1 - piece 1/4" plywood 24'x12"
- 2 - lengths of 1/4" dowling
- 28 - 1/2" brads
- 4 - 3/16" stove bolts
- 8 - 3/16" flat washers

Scale 1 cm = 1 in.

Table and Chairs Patterns

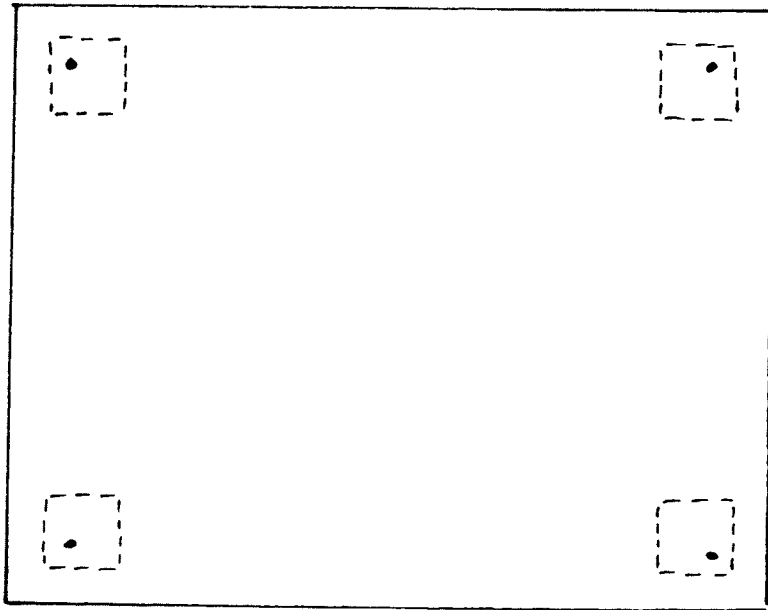


Table (Top View)

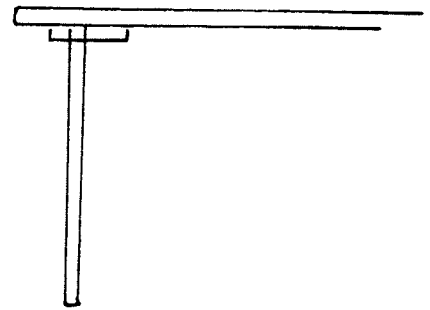
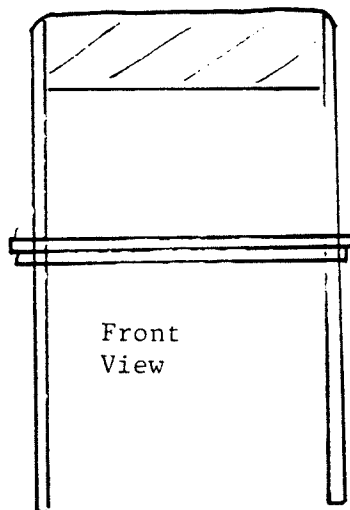
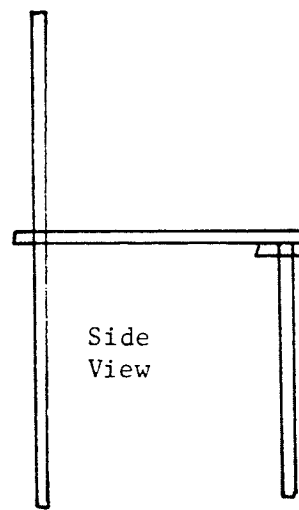


Table (Side View)



Front
View



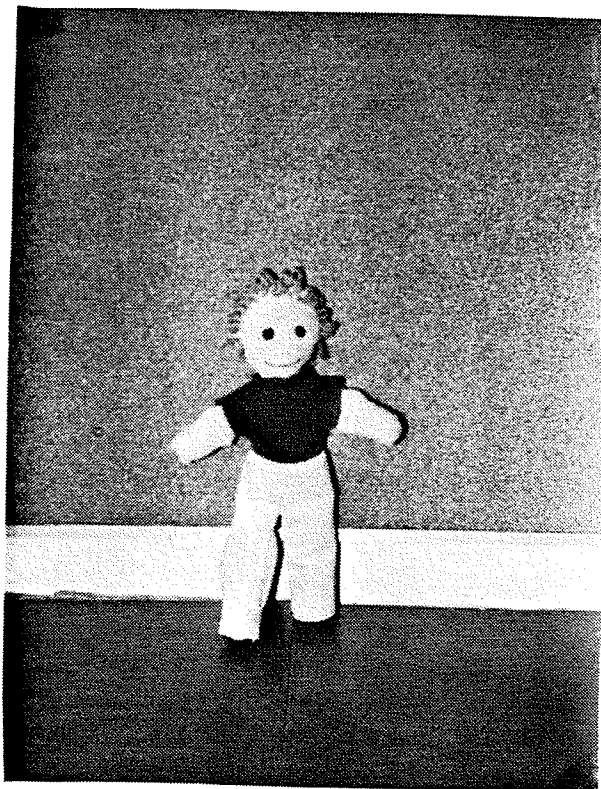
Side
View

Chair

Scale 1 cm = 1 in.



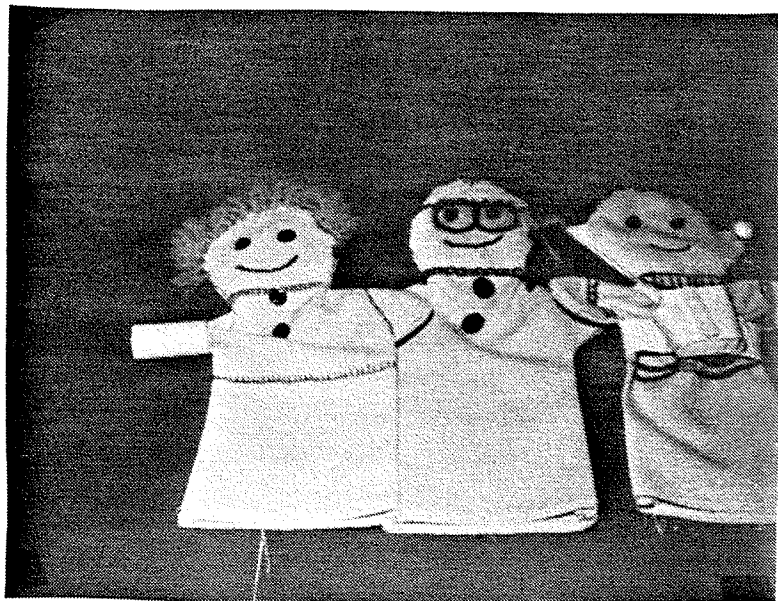
Doll Wearing
Helmet



Doll Wearing
Leg Brace



Doll in Wheelchair



Puppets wearing - from left to right:
arm cast, glasses, hearing aid

APPENDIX III

Introductions to Intervention Sessions

METHOD OF INTRODUCING CHILDREN TO THE PLAY (INTERVENTIONS)

Phase I

Small problem:

In classroom - Remember those dolls I showed you a few days ago?
Today we're going to play with them.

In play session - Here is the playroom. It is snack time. See the teacher has put the snack on the table. Here are the children. This one is smaller than the others. The other children have to help her sometimes. I'm going to play with her. What shall I call her? You can be one of the children. Which one will you be? What is your name? (to both children) This little girl sometimes doesn't remember what the teacher wants her to do. Let's see if we can help her today. Let's pretend.

Helmet problem:

In classroom - Have you ever worn a helmet? Do you know what one of the dolls has today? A helmet! Come and see!

In play session - This boy has a helmet. I will be him. His name is _____. He has to wear a helmet all the time because his head gets hurt very easily. He has to be careful not to fall or bump his head. Here are two other children that go to school with him. They are going to play with him at the block centre. I wonder what they'll make? Let's see if they can help him. Which one will you be? What's your name? Let's pretend!

Cast problem:

In classroom - Have you ever broken your arm or leg?
(yes) What did you do? (cast)
(no) Do you know someone who did and had to wear a cast? Today one of our puppets has a cast on her arm. Come and see.

In play session - This girl broke her arm. She has to wear a cast. She can't bend her arm with the cast on it. It makes problems for her. She can't color very well. Her cast gets in her way. She can't eat very well. She can't go swimming. The children are coloring today. Let's see if the other children can help her have fun! Let's call her Susy. Which one will you be? What's your name? Let's pretend.

Glasses problem:

In classroom - Have you ever worn glasses? How would you like to wear glasses like these? (let the children try a pair of very strong lenses on that makes everything foggy.) Today one of our puppets is wearing glasses like this. Come and see!

In play session - Here is the puppet that is wearing glasses. Her name is Jane. Even with the glasses on she can't see too well. Today the children are playing in the sandbox. Jane can't see the toys too well. She can't shovel the sand too well. Sometimes she misses the sand and it seems as if she's throwing it. Let's see if you can help her. Which one are you? What is your name? Let's pretend!

Hearing aid problem:

In classroom - I have some music in this recorder. You can't hear it very well unless you listen with this earphone. Would you like to try it? Some people can't hear unless they wear earphones in their ears all the time. These special earphones are called hearing aids. Today our puppet has a hearing aid. Come and see!

In play session - This is our puppet, John's, hearing aid. He wears the receiver, like a small radio or tape player, in a pocket and puts an ear mold in his ear. Even with a hearing aid, he can't hear too well. Let's see if you can help him. Today they are playing with the blocks. Some noises, like blocks banging, are too loud. Other noises, like talking, are too quiet. Which one are you? What is your name? Let's pretend!

Leg Brace problem:

In classroom - Today we are going to play with the dolls again. One of the dolls has a brace on his leg. He can't bend his leg. Can you walk with a stiff leg down to the playroom? Let's see!

In play session - This is John. One of his legs is very weak. It's not strong enough to walk on. He has to wear a brace on it. He has trouble walking, running and kneeling down. Sometimes the brace gets in the way and hurts him. Let's see if you can help him paint today. What are your names? Let's pretend!

Wheelchair Problem:

In classroom - Do you have a bike or a wagon? Do you like to ride it? Have you ever been in a wheelchair? Today one of our dolls has a wheelchair. Come and see!

In play session - This is Joan. She cannot walk. She must use a wheelchair all the time. She needs help to get out of it. She has

trouble getting close to things that she wants. Today the children are printing in school. Let's see if you can help Joan. What's your name? Let's pretend!

Scooterboard problem:

In classroom - Today we have a scooterboard for our muppets. Come and see!

In play session - This is Mike. He cannot sit or stand up. He has to lay down all the time. His Mom and Dad got him a scooter board to get around on. It is hard for Mike to play and eat. He feels shy because he is different from the other children. Let's see if you can help him have a good time. Let's make sure he's not lonely. What's your name? Let's pretend!

Phase II

In classroom motivation for all sessions - It's your turn for the "Muppet Show".

Session 1

This is P. She is going to play with you in the play room. She likes to play with you, but sometimes her tongue hangs out by accident. It doesn't mean she doesn't like you. She isn't sticking her tongue out at you. Let's see if you can have a fun time with her today. Which one are you? What's your name? Let's pretend!

Session 2

This is M. He likes to play, but sometimes he sits by himself and rocks back and forth. I wonder if we can help him play with us today? Which one are you? What is your name? Let's pretend!

Session 3

Here is P again. She likes to play with you, but sometimes she doesn't know how to join in. When she wants to play she just comes and stares at what you're doing. She is trying to be friendly. She might not talk to you even when you talk to her, but she wants to play with you. Which one are you? Let's see if you can help her today. Let's pretend!

Session 4

Here is M again. He likes to play. Sometimes he has trouble knowing how to play with things though. Sometimes he just twirls or flaps toys in the air instead of playing with them like you do. Let's see if you can help him play with them the right way today. Who are you? Let's pretend!

Session 5

Here is P. She wants to play with you today. She has trouble talking, though. Sometimes it's hard to understand what she says. Sometimes she doesn't say anything because she thinks you won't understand her. It's really hard to understand her. We'll have to

try very hard, but let's see if we can do it and help her have a good time. What is your name? Let's pretend!

Session 6

Here is M. Have you ever seen him put his fingers in his ears? Do you know why he does that? Sometimes the classroom gets too noisy for him. It might not sound too loud for you, but it might be too loud for M. Let's see if we can play today so that M doesn't have to plug his ears. Who are you? Let's pretend!

Session 7

Here is M. He wants to play with the other children, but he doesn't know how. Sometimes he just sits by himself and looks at the other children, or looks around the room. He would really have more fun if he were playing with you. Let's see if we can help him do that today. Who are you? Let's pretend.

note**Session 8 was deleted from the intervention as the class took a trip to McDonalds on that day.

APPENDIX IV
Observation Forms

PUPIL OBSERVATION FORM

Recorder: _____

Time Ended: _____

Time Started: _____

Duration: _____

[illegible]

Nonhandicapped Student
Integrated Preschool Observation Form

Subject: _____ Recorder: _____
 Project No.: _____ Time Ended: _____ Started: _____
 Date: _____ Duration: _____

Level of Interaction	Code	Tallies	Percent	Quality of Soc. Beh.
Speech Attempts to Peer	1			Code Tallies %
				P
				A
Non-verbal Attempts to Peer	3			Direction
				Code Tallies %
				i
Interaction with Peer in Play	5			Communication
				Code Tallies %
				S
Interaction with Peer as onlooker	6			W
				V
				Level of Play
No interaction	-			Code Tallies %
				//
				=
TOTALS				X

Adapted from the University of Manitoba Integrated Preschool Project
 Pupil Observation Form. (January, 1982) B. Thiessen

APPENDIX V

Tabulated data for nonhandicapped Ss

Percentages of Overall Interaction
to Handicapped Peer

day/child	G	D	S	F	A	B	K	W
1	70	5	-	-	65	0	0	70
2	17.5	20	17.5	-	-	0	17.5	-
3	5	2.5	-	0	5	5	0	25
4	X	20	7.5	11.25	40	7.5	X	X
5	0	X	X	0	-	-	0	8.75
6	0	0	38.75	*	32.5	-	-	27.5
7	5	0	10	0	5	7.5	-	35
8	X	X	5	72.5	12.5	-	-	-
9	*	2.5	*	4	7.5	10	0	12.5
10	0	0	*	7.5	0	82.5	0	2.5
11	2.5	2.5	0	0	5	5	2.5	2.5
12	12.5	2.5	0	5	0	0	20	0
13	5	5	5	0	3	0	5	5
14	5	0	2.5	0	7.5	12.5	5	32.5
15	7.5	2.5	10	0	10	10	*	0*
16	5	0	55	0	0	*	*	0
17	7.5	10	5	2.5	0	*	*	0*
18	2.5	0	0	2.5	0	*	*	10*
19	42.5	0	0	0	0	5	73	0*
20	0	0	10	0	10	-	5	0
21	17.5	5	15	10	0	-	17.5	10
22	25	0	2.5	0	55	-	-	0
23	5	0	30	5	20	-	20	10
24	0	0	0	5	10	0	-	0

- child absent

X missed observation

* missed intervention

Percentage of Speech Attempts
to Handicapped Peer

day/child	G	D	S	F	A	B	K	W
1	5	0	-	-	5	0	0	5
2	2.5	4	0	-	-	-	0	-
3	0	0	-	0	2.5	0	0	
4	X	0	0	0	2.5		X	X
5	0	X	X	0	-	-	0	0
6	0	0	0	*	0	-	-	0
7	0	0	0	0	0	0	-	0
8	0	X	0	0	2.5	-	-	-
9	*	0	*	0	0	0	0	0
10	-	0	*	0	0	0	0	0
11	0	0	-	0	0	0	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	7.5	0
14	0	0	0	0	0	0	0	0
15	0	0	0	0	2.5	0	0	0
16	0	0	0	0	0	0	*	0*
17	0	0	0	0	0	*	*	0
18	2.5	0	0	0	0	-	-	0*
19	0	0	0	0	0	*	*	2.5*
20	0	0	0	0	0	-	-	0*
21	5	0	0	0	0	0	13	0*
22	0	0	0	0	0	-	0	0
23	0	0	0	0	0	-	0	2.5
24	0	0	0	0	0	-	-	0

- child absent

X missed observation

* missed intervention

Percentages of Non-Verbal Attempts
to Handicapped Peer

day/child	G	D	S	F	A	B	K	W
1	0	0	-	-	0	0	0	0
2	2.5	2	0	-	-	-	0	-
3	0	0	-	0	0	0	0	2.5
4	X	0	0	0	2.5	0	X	X
5	0	X	X	0	-	-	0	0
6	0	0	0	*	0	-	-	10
7	0	0	0	0	0	0	-	0
8	0	X	0	0	0	-	-	-
9	*	0	*	0	0	0	0	0
10	-	0	*	0	0	0	0	0
11	0	0	-	0	0	0	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	*	0*
16	0	0	0	0	0	*	*	0
17	0	0	0	0	0	*	*	0*
18	0	0	0	0	0	*	*	0*
19	0	0	0	2.5	0	0	0	0*
20	0	0	5	0	0	-	0	0
21	0	0	0	0	0	-	0	0
22	0	0	0	0	0	-	-	0
23	0	0	0	0	0	-	0	0
24	0	0	0	0	0	0	-	0

- child absent

X missed observation

* missed intervention

Percentage of Play with Handicapped Peer

day/child	G	D	S	F	A	B	K	W
1	65	0	-	-	50	0	0	65
2	5	4	17.5	-	-	-	12.5	-
3	0	0	-	0	0	0	0	20
4	X	0	0	6.25	10	7.5	X	X
5	0	X	X	0	-	-	0	0
6	0	0	32.5	*	32.5	-	-	17.5
7	0	0	0	0	0	0	-	30
8	0	X	0	72.5	10	-	-	-
9	*	0	*	0	0	0	0	10
10	0	0	*	0	0	82.5	0	2.5
11	0	0	0	0	0	0	0	0
12	10	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	5	0	2.5	0	0	12.5	0	32.5
15	0	0	7.5	0	0	0	*	0*
16	0	0	50	0	0	*	*	0
17	2.5	0	0	0	0	*	*	0*
18	0	0	0	0	0	*	*	0*
19	27.5	0	0	0	0	0	43	0*
20	0	0	0	0	0	-	0	0
21	0	0	2.5	10	0	-	0	7.5
22	5	0	0	0	30	-	-	0
23	0	0	25	0	0	-	0	0
24	0	0	0	0	0	0	-	0

- child absent

X missed observation

* missed intervention

Percentages of Onlooker Interaction
with Handicapped Peer

day/child	G	D	S	F	A	B	K	W
1	0	5	-	-	10	0	0	0
2	7.5	10	0	-	-	-	5	-
3	5	2.5	-	0	2.5	5	0	2.5
4	X	20	7.5	5	25	0	X	X
5	0	X	X	0	-	-	0	8.75
6	0	0	6.25	*	0	-	-	0
7	5	0	10	0	5	7.5	-	5
8	0	X	5	0	0	-	-	-
9	*	2.5	*	4	7.5	10	0	2.5
10	0	0	*	7.5	0	0	0	0
11	2.5	2.5	0	0	5	5	2.5	2.5
12	2.5	2.5	0	2.5	0	0	12.5	0
13	5	5	5	0	3	0	5	5
14	0	0	0	0	5	0	5	0
15	7.5	2.5	2.5	0	10	10	*	0*
16	5	0	5	0	0	*	*	0
17	2.5	10	5	2.5	0	*	*	0*
18	2.5	0	0	2.5	0	*	*	7.5*
19	5	0	0	0	0	5	17	0*
20	0	0	5	0	10	-	5	0
21	17.5	5	12.5	0	0	-	17.5	0
22	20	0	2.5	0	25	-	-	0
23	5	0	5	0	20	-	20	10
24	0	0	0	5	10	0	-	0

- child absent

X missed observation

* missed intervention

Number of "P" & "A" Attempts
To Handicapped Peers
 (Per 10 min. observation)

day/child	G	D	S	F	A	B	K	W
1	P=0;A=2	0	-	-	P=2;A=0	0	0	P=0;A=2
2	P=2;A=0	P=2;A=1	0	-	-	-	0	-
3	0	0	-	0	P=1;A=0	0	0	P=1;A=0
4	-	0	0	0	P=1;A=1	0	X	X
5	0	X	X	0	-	-	0	0
6	0	0	0	*	0	-	-	P=3;A=1
7	0	0	0	0	0	0	-	0
8	X	X	0	0	P=1;A=0	-	-	-
9	*	0	*	0	0	0	0	0
10	0	0	*	0	0	0	0	0
11	0	0	0	0	0	0	0	0
12	0	0	0	P=1;A=0	0	0	P=3;A=0	0
13	0	0	0	0	0	0	0	0
14	0	0	0	0	P=1;A=0	0	0	0
15	0	0	0	0	0	0	*	0*
16	0	0	0	0	0	*	*	0
17	P=1;A=0	0	0	0	0	*	*	0*
18	0	0	0	0	0	*	*	P=1;A=0*
19	P=2;A=0	0	0	0	0	0	P=5;A=0	0
20	0	0	P=2;A=0	0	0	-	0	0
21	0	0	0	0	0	-	0	P=1;A=0
22	0	0	0	0	0	-	-	0
23	0	0	0	P=2;A=0	0	-	0	0
24	0	0	0	0	0	0	-	0

- child absent

X missed observation

* missed intervention

P = prosocial

A = antisocial

Number of "i" & "r" Attempts
To Handicapped Peers
 (Per 10 min. observation)

day/child	G	D	S	F	A	B	K	W
1	i=2;r=0	0	-	-	i=2;r=0	0	0	i=2;r=0
2	i=2;r=0	i=3;r=0	0	-	-	-	0	-
3	0	0	-	0	i=1;r=0	0	0	i=1;r=0
4	-	0	0	0	i=0;r=2	0	X	X
5	0	X	X	0	-	-	0	0
6	0	0	0	*	0	-	-	i=2;r=2
7	0	0	0	0	0	0	-	0
8	X	X	0	0	i=1;r=2	-	-	-
9	*	0	*	0	0	0	0	0
10	0	0	*	0	0	0	0	0
11	0	0	0	0	0	0	0	0
12	0	0	0	i=1;r=0	0	0	i=3;r=0	0
13	0	0	0	0	0	0	0	0
14	0	0	0	0	i=1;r=0	0	0	0
15	0	0	0	0	0	0	*	0*
16	0	0	0	0	0	*	*	0
17	i=1;r=0	0	0	0	0	*	*	0*
18	0	0	0	0	0	*	*	i=1;r=0*
19	i=2;r=0	0	0	0	0	0	i=5;r=0	0
20	0	0	i=2;r=0	0	0	-	0	0
21	0	0	0	0	0	-	0	i=1;r=0
22	0	0	0	0	0	-	-	0
23	0	0	0	i=1;r=0	0	-	0	0
24	0	0	0	0	0	0	-	0

- child absent

X missed observation

* missed intervention

i = initiated

r = responded

Type & Freq. of Communication
To Handicapped Peers
 (Per 10 min. observation)

day/child	G	D	S	F	A	B	K	W
1	w-2	0	-	-	s-2	0	0	s-2
2	s-1	s-1;w-1	0	-	-	-	0	-
3	0	0	-	0	s-1	0	0	0
4	-	0	0	0	0	0	X	X
5	0	X	X	0	-	-	0	0
6	0	0	0	*	0	-	-	0
7	0	0	0	0	0	0	-	0
8	X	X	0	0	s-1	-	-	-
9	*	0	*	0	0	0	0	0
10	0	0	*	0	0	0	0	0
11	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	0	0	0	0	s-1	0	0	0
15	0	0	0	0	0	0	*	0*
16	0	0	0	0	0	*	*	0
17	s-1	0	0	0	0	*	*	0*
18	0	0	0	0	0	*	*	w-1*
19	s-2	0	0	0	0	0	s-5	0
20	0	0	0	0	0	-	0	0
21	0	0	0	0	0	-	0	s-1
22	0	0	0	0	0	-	-	0
23	0	0	0	s-2	0	-	0	0
24	0	0	0	0	0	0	-	0

- child absent

X missed observation

* missed intervation

s = sentence

w = word

v = vocalization

Level & Freq. of Play
with Handicapped Peers
(Per 10 min. observation)

day/child	G	D	S	F	A	B	K	W
1	24//;2=	0	-	-	20//	0	0	26//
2	2//	2//	7//	-	-	-	5//	-
3	0	0	-	0	0	0	0	6//;2=
4	-	0	0	5//	4//	3//	X	X
5	0	X	X	0	-	-	0	0
6	0	0	13//	*	13//	-	-	7//
7	0	0	0	0	0	0	-	12//
8	X	X	0	29//	4//	-	-	-
9	*	0	*	0	0	0	0	4//
10	0	0	*	0	0	26//	0	1//
11	0	0	0	0	0	0	0	0
12	4//	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	2//	0	1//	0	0	5//	0	13//
15	0	0	3//	0	0	0	*	0*
16	0	0	20//	0	0	*	*	0
17	1//	0	0	0	0	*	*	0*
18	0	0	0	0	0	*	*	0*
19	11//	0	0	0	0	0	17//	0
20	0	0	0	0	0	-	0	0
21	0	0	1//	4//	0	-	0	3//
22	2//	0	0	0	12//	-	-	0
23	0	0	10//	0	0	-	0	0
24	0	0	0	0	0	0	-	0

- child absent

X missed observation

* missed intervention

// = parallel

= = associative

X = Cooperative

APPENDIX VI

Tabulated data for the handicapped Ss

PERCENTAGE SPEECH ATTEMPTS TO PEERS

DAY	P	M
i	2.5	-
ii	0	
1	0	-
2	X	-
3	-	0
4	0	0
5	-	0
6	0	-
7	-	0
8	0	0
9	-	0
10	0	0
11	-	0
12	X	2.5
13	-	10
14	0	0
15	-	0
16	0	0
17	-	0
18	0	0
19	2.5	0
20	-	0
21	0	0
22	-	0
23	0	0
24	-	3

X = missed observation

- = child absent

N.B. days i and ii are pre-experimental days

PERCENTAGE SPEECH ATTEMPTS TO ADULTS

DAY	P	M
i	0	-
ii	0	-
1	7.5	-
2	X	-
3	-	6.6
4	7.5	5
5	-	2.5
6	0	-
7	-	0
8	0	0
9	-	0
10	0	7
11	-	0
12	X	7.5
13	-	30
14	0	37.5
15	-	0
16	0	0
17	-	72.7
18	2.5	20
19	7.5	0
20	-	25
21	0	10
22	-	35
23	6	3
24	-	14

X = missed observation

- = child absent

PERCENTAGE NON-VERBAL ATTEMPTS TO PEERS

DAY	P	M
i	2.5	-
ii	20	-
1	0	-
2	X	-
3	-	5
4	0	0
5	-	2.5
6	25	-
7	-	2.5
8	0	0
9	-	0
10	7.5	0
11	-	0
12	X	7.5
13	-	0
14	0	0
15	-	0
16	5	0
17	-	0
18	2.5	2.5
19	7.5	5
20	-	0
21	2.5	5
22	-	0
23	0	0
24	-	0

X = missed observation

- = child absent

PERCENTAGE NON-VERBAL ATTEMPTS TO ADULTS

DAY	P	M
i	0	-
ii	0	-
1	0	-
2	X	-
3	-	5
4	0	5
5	-	0
6	10	-
7	-	5
8	45	7.5
9	-	7
10	25	10
11	-	0
12	X	10
13	-	0
14	2.5	20
15	-	0
16	7.5	0
17	-	0
18	15	7.5
19	0	0
20	-	5
21	0	2.5
22	-	15
23	37	0
24	-	0

X = missed observation

- = child absent

PERCENTAGE INTERACTION WITH OTHERS IN PLAY

DAY	P	M
i	0	-
ii	12.5	-
1	75	-
2	X	-
3	-	1.6
4	7.5	0
5	-	0
6	55	-
7	-	0
8	55	2.5
9	-	7
10	27.5	0
11	-	0
12	X	2.5
13	-	0
14	5	0
15	-	0
16	35	0
17	-	18.5
18	35	5
19	55	60
20	-	0
21	75	0
22	-	0
23	10	20
24	-	3

X = missed observation

- = child absent

PERCENTAGE INTERACTION WITH OTHERS AS ONLOOKER

DAY	P	M
i	50	-
ii	30	-
1	75	-
2	X	-
3	-	38.3
4	40	55
5	-	77.5
6	5	-
7	-	60
8	0	15
9	-	67
10	20	15
11	-	45
12	X	7.5
13	-	50
14	22.5	7.5
15	-	30
16	35	30
17	-	9.1
18	20	7.5
19	15	25
20	-	20
21	0	27.5
22	-	17.5
23	20	40
24	-	20

X = missed observation

- = child absent

PERCENTAGE INTERACTION WITH SELF IN SOLITARY PLAY

DAY	P	M
i	42.5	-
ii	37.5	-
1	5	-
2	X	-
3	-	43.3
4	45	35
5	-	17.5
6	5	-
7	-	32.5
8	0	75
9	-	20
10	20	66
11	-	55
12	X	62.5
13	-	10
14	70	40
15	-	70
16	16.5	70
17	-	0
18	25	57.5
19	12.5	10
20	-	50
21	22.5	55
22	-	32.5
23	27	37
24	-	60

X = missed observation

- = child absent

PERCENTAGE OF SOCIAL BEHAVIOR "P", "A", OR "N"

DAY	P	M
i	P=100	-
ii	P=75, A=25	-
1	P=100	-
2	X	-
3	-	P=100
4	P=100	P=100
5	-	P=50, N=50
6	P=93, A=7	-
7	-	P=33, A=33, N=33
8	P=100	P=100
9	-	P=100
10	P=92, N=8	P=100
11	-	0
12	X	P=55, A=36, N=9
13	-	P=100
14	P=100	P=100
15	-	0
16	P=40, A=20, N=40	0
17	-	P=100
18	P=100	P=100
19	P=100	P=100
20	-	P=100
21	P=100	P=100
22	-	P=100
23	P=100	P=100
24	-	P=100

X = missed observation

- = child absent

N.B. "P" = pro-social; "A" = anti-social; "N" = neutral

PERCENTAGE OF "i" AND "r" IN DIRECTION OF SOCIAL BEHAVIOR

DAY	P	M
i	i=50,r=50	-
ii	i=50,r=50	-
1	i=100	-
2	X	-
3	-	i=30,r=70
4	i=100	i=25,r=75
5	-	i=0,r=100
6	i=57,r=43	-
7	-	i=33,r=67
8	i=22,r=78	i=33,r=67
9	-	r=100
10	i=15,r=85	r=100
11	-	0
12	X	i=33,r=67
13	-	i=87.5,r=12.5
14	r=100	i=14.3,r=85.7
15	-	0
16	i=20,r=80	0
17	-	r=100
18	i=12.5,r=87.5	i=67,r=33
19	i=25,r=75	r=100
20	-	i=17,r=83
21	r=100	i=57,r=43
22	-	i=20,r=80
23	i=8,r=92	r=100
24	-	i=60,r=20

X = missed observation

- = child absent

N.B. "i" = initiated; "r" = responded

PERCENTAGE OF "S", "W", AND "V" USED IN COMMUNICATION

DAY	P	M
i	v=100	-
ii	0	-
1	w=67, v=33	-
2	X	-
3	-	s=100
4	w=100	w=100
5	-	s=100
6	0	-
7	-	0
8	0	0
9	-	0
10	0	w=50, v=50
11	-	0
12	X	s=25, w=75
13	-	s=75, w=25
14	0	s=77, w=23
15	-	0
16	0	0
17	-	w=100
18	w=100	s=62.5, w=37.5
19	w=50, v=50	0
20	-	s=80, w=20
21	0	s=25, w=75
22	-	s=50, w=50
23	s=100	w=100
24	-	s=60, w=40

X = missed observation

- = child absent

N.B. "S" = sentence; "W" = word; and "V" = vocalization