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The Effects Of Peer Administered Methods For Increasing Social Interaction Between Young Handicapped And Nonhandicapped Children

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THE EFFECTS OF PEER ADMINISTERED METHODS FOR INCREASING
SOCIAL INTERACTION BETWEEN YOUNG HANDICAPPED
AND NONHANDICAPPED CHILDREN

A Dissertation
Presented to
the Faculty of the Graduate School
University of the Pacific

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Marilyn Errett

1987

ABSTRACT OF THE DISSERTATION

THE EFFECTS OF PEER ADMINISTERED METHODS FOR INCREASING SOCIAL INTERACTION BETWEEN YOUNG HANDICAPPED AND NONHANDICAPPED CHILDREN

Marilyn Errett

The purpose of the study was to compare the use of peer administered contingent reinforcement for social interaction with the use of play materials that facilitate interaction. The subsequent effects on the social interaction of mainstreamed preschool handicapped children with their nonhandicapped peers was examined. Three nonhandicapped kindergarten children were paired with three moderately mentally handicapped preschool children and trained to initiate play. A single-subject, alternating treatment design with a withdrawal phase was used to compare the effects of the two treatments. Generalization immediately following each treatment was also examined as was maintenance over time. Observers used an interval recording procedure and showed a mean interobserver reliability rating of 95%. All observations were conducted in an outdoor playground setting.

The use of play materials that facilitate interaction (Treatment C) was shown to be a significantly more effective method for increasing social interaction than was the use of peer

administered contingent reinforcement (Treatment B). The mean child-child interaction total for Treatment C was 71% while the mean child-child interaction total for Treatment B was 27%. The t value at a .10 level of probability was -7.74. Generalization immediately following treatment was greater after Treatment C (mean 24%) than after Treatment B (mean 7%). The t value of -1.98 did not, however, show a significant difference in generalization between the two treatments. Treatment C was implemented as the only treatment upon completion of the alternating treatment phase. Relatively little generalization occurred during the withdrawal phase (mean 17%) and the treatment effects were not maintained over time (mean 7%). A supplemental analysis of the relationship between play attempts by the peer "helper" and the number of actual interactions showed that, while there were a greater number of play attempts during Treatment C than during Treatment B, the difference was not large enough to account for the success of Treatment C. The outcome of the study helps to ascertain that the use of trained nonhandicapped peer "helpers" coupled with the use of play materials that facilitate interaction can be an effective means of increasing social interaction between young handicapped and nonhandicapped children.

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Chapter 1

Introduction

Early childhood educators have long stressed the acquisition of appropriate social skills as one of the most important functions of preschool education (Hartup, 1978). Current evidence shows that without an opportunity to interact with other children, children have difficulty in learning effective communication skills, modulating aggressive feelings, accommodating to social demands and forming a coherent set of moral values (Hartup, 1978; Horne & Philleo, 1976; Widerstrom, 1986). This exposure to peers may be of even more value to interaction between handicapped and nonhandicapped children during the early years.

The preschool and kindergarten environment, as opposed to higher grade levels, is seen by educators of young children as an ideal place for mainstreaming, or integrating, handicapped and nonhandicapped children. It has been suggested that young children, both handicapped and nonhandicapped, would benefit the most from being together on a regular basis during the years when their attitudes and perceptions of themselves and others are forming (Christopherson, 1972; Dickerson &

Davis, 1981; Klein, 1975; McLoughlin & Kershman, 1979). The preschool age is said to be a logical time to initiate the fostering of positive attitudes. Many young handicapped children, however, have been found to have difficulty in integrating socially with nonhandicapped peers (Allen, 1980; Cooke, Apolloni & Cooke, 1977; Hartup, 1978; Platt & Cook, 1976).

Statement of the Problem

Research indicates that handicapped preschool children can learn to use appropriate social behavior and to interact effectively with their peers (Bricker, 1978; Cooke, et al., 1977; Hartup, 1978). A closer look indicates that emotionally and mentally handicapped children in particular, ~~need instruction or modeling in~~ order to learn interactive skills (Cooke, et al., 1977; Strain & Kerr, 1981). Evidence suggests that nonhandicapped children also need instruction and encouragement to complete the interaction process (Cooke, et al., 1977). Mainstreamed handicapped preschool children have been shown to display more social interaction skills and more complexity of play than children in segregated settings, but have tended to become more isolated than their nonhandicapped peers unless specific intervention and structuring was added to the program to promote interaction (Cooke, et al.,

1977; Federlein, 1981; Hendrickson, Strain, Tremblay, & Shores, 1982; Peterson & Haralick, 1977; Wilton & Densen, 1977).

Adult administered intervention techniques such as social praise for appropriate social behavior (Shores, Hester, & Strain, 1976) and prompting peer imitation (Raver, 1979) have been found to be effective change agents in increasing the quality and duration of social interactions between young handicapped and nonhandicapped children. The adult attention involved in the aforementioned processes may, however, serve as a vehicle for promoting adult dependency on the part of the handicapped child. Burstein (1986) found that handicapped children interacted with adults more than with children in all settings in mainstreamed preschools. Herink (1980) found a negative correlation between teacher praise and social initiations to retarded students and the children's interactions with their preschool peers. Shores, et al. (1976) found that the delivery of social praise by the teacher served to direct the social behavior of children toward adults rather than peers.

One possibility of directing social attention toward peers rather than adults lies in using children as change agents. The focus of social behavior could then be placed within the realm of child-child

interaction as opposed to adult-child interaction. The challenge of providing techniques for increasing social interaction between young handicapped and nonhandicapped children lies not only in the area of effective techniques for increasing interaction, but also in training extremely young children as peer helpers. Methods that require few rules and that capitalize on natural helping and play behaviors of young children have been suggested (Keislar & Blumenfeld, 1972).

Rationale

Young children are in the process of developing life-impacting social skills (Blacher-Dixon, Leonard, & Turnbull, 1981; Hartup, 1978). Indeed, one of the areas emphasized at the preschool level is that of socialization. Learning appropriate behavior is seen as a major goal for handicapped children enrolled in any preschool (Peck, Apolloni, Cooke, & Raver, 1978). Without appropriate social interactive skills, the child will be unable to benefit fully from the learning opportunities offered in the integrated preschool setting (Klein, 1975). If the young handicapped child is more socially isolated than other children, steps must be taken to change that pattern.

Child-oriented techniques for increasing social interaction between young handicapped and nonhandicapped

children have proven effective in several studies (Devoney, Guralnick, & Rabin, 1974; Guralnick, 1976; Johnston & Johnston, 1972; Nordquist, 1974; Nordquist & Bradley, 1973; Shores, et al., 1976; Wishon, Spangler, & Keller, 1979). These techniques which utilize nonhandicapped preschool and kindergarten children as change agents toward the goal of increasing social interaction between handicapped and nonhandicapped children have, in fact, shown more success in the area of generalization than have adult administered models (Herink, 1980; Johnston & Johnston, 1972; Nordquist, 1974; Nordquist & Bradley, 1974). If one method can be shown to be more effective than others in increasing social interaction in young handicapped children it might be offered as a partial solution to a difficult problem.

Statement of Purpose

The purpose of this study was to compare the use of peer administered contingent reinforcement for social interaction with the use of play materials that facilitate interaction. The subsequent effects on the social interaction of mainstreamed handicapped children with their nonhandicapped peers was examined. It is possible that, while both methods have shown positive influence on social interaction, one may have a greater

influence than the other. One method may also have effects that are more easily generalized in non-treatment situations. If this is the case, the results might be used to help implement social strategies in mainstreamed preschool classrooms.

The dependent variable in this study was child-child interaction. (See Definition of Terms, p. 7). Any activity within the operationally defined range will be considered as a (+) or as a display of social interaction skills. The dependent variable was studied under six conditions: (1) baseline (A), (2) during peer administered contingent reinforcement (B), (3) generalization immediately following Treatment B, (4) during the use of play materials that facilitate interaction (C), (5) generalization immediately following Treatment C, and (6) maintenance over time.

The independent variables were (1) peer administered contingent reinforcement, and (2) the use of play materials that facilitate interaction.

Briefly, contingent reinforcement involves administering food, stickers, praise or other reinforcing items or events when a targeted behavior is displayed. Peer administered reinforcement involves children as the administering agents for other children. The use of play materials that facilitate interaction capitalizes on the cooperative and interactive nature of

games that require the participation of at least two children. For the purposes of this study, games involving balls were used. The nonhandicapped peer "helpers" were trained to initiate play with their handicapped peer prior to beginning treatment sessions. The training in play skills was employed during both phases, (B) and (C), of treatment to insure uniformity of play styles.

The subjects were randomly selected from a group of 6 moderately mentally handicapped preschool and kindergarten level children. These children attended a school for the handicapped, but were integrated with nonhandicapped children during recess at a private preschool and kindergarten. A total of 3 children were chosen for observation. ~~Adult observers from the~~ community were used to administer the interval recording, observational instrument.

Definition of Terms

For the purpose of this study, the following definitions were employed. These definitions were derived from the literature and are consistent with previous research.

Child-child Interaction: The basis for the behavior is that of interaction or reciprocity. It consists of: (1) answering questions from other

children either verbally or with a physical gesture such as nodding the head, (2) sharing or trading toys, (3) joining in the actions of other children while looking at the children or verbally expressing interest (e.g. running or hopping in a group), (4) engaging in a play activity with one or more children (house, peek-a-boo). It does not include: (1) play attempts by another child from which the targeted child turns away or does not respond, (2) play attempts by the targeted child to which the other child does not respond.

Mainstreaming: Mainstreaming is a delivery system that integrates handicapped children into a regular classroom (Lerner, 1981, p. 41).

Mentally Handicapped: (Mentally Retarded)

Functional Definition: . . . children who are significantly delayed in their development relative to their nonhandicapped peers. They learn, under the most ideal conditions, at a significantly slower rate than nonhandicapped students or students in remedial special education programs. Their learning impairment is usually associated with significant delay in several critical aspects of development (Sailor & Guess, 1983, p. 12).

The Research Questions and Hypotheses

Statement of the Questions

The specific questions to be addressed by the study are:

1. Does either peer administered contingent reinforcement or the use of play materials that facilitate interaction have a greater impact on increasing social interaction between young handicapped and nonhandicapped children in a mainstreamed setting?
2. Does either peer administered contingent reinforcement or the use of play materials that facilitate interaction show greater generalization during non-treatment play times; i.e., does the targeted handicapped child continue to interact with nonhandicapped peers after the treatment period is over?
3. If one method proves more effective than the other and is implemented on a regular basis, can it eventually be withdrawn and the increased interaction effects be maintained over time?

Statement of the Hypotheses

Null Hypotheses

1. There will be no difference between peer administered contingent reinforcement and the use of play materials that facilitate interaction in their

effect on social interaction between young handicapped and nonhandicapped children.

2. There will be no difference between peer administered contingent reinforcement and the use of play materials that facilitate interaction in their effect on generalization of social interaction between handicapped and nonhandicapped peers.

Directional Hypothesis

It is hypothesized that if one method proves more effective than the other, it can be implemented on a regular basis, placed on a leaner schedule and then withdrawn without affecting the gains in social interaction.

Limitations, Delimitations and Assumptions

Limitations

1. The differences in the behavioral definition of child-child interaction used by the observers and the simplified criteria used by the peer "helpers" administering reinforcement for "playing" may confound the results of the study.

2. While the design of the study helps to avoid sequencing effects through the alternation of treatments, it remains difficult to determine multi-treatment effects.

Delimitations

1. Only certain types of interaction are addressed in the study.

2. Social interaction is viewed in general terms. Choice of playmate is not addressed.

3. The effects of the interactive play of untrained, nonhandicapped children cannot be determined. No attempt was made to curtail their positive play with the handicapped children. It did, however, remain the responsibility of the trained peer helper to assure the inclusion of the targeted handicapped child in the play sessions.

4. The study is limited to the observation of outdoor play. Burstein in 1982 found that the most interaction took place during outdoor play. Replication is less dependent on classroom settings and materials.

5. The study is limited to observing children with moderate mental handicaps who are from a predominantly rural and suburban area. The results of the study should not be generalized without replication with the specific population being examined.

Assumptions

1. It is assumed that the handicapped children involved in the study are capable of differentiating between the two treatments. The overlapping of

treatments is avoided through eliminating balls on the playground during Treatment B (peer administered contingent reinforcement) and through providing no edible reinforcers during Treatment C (the use of play materials that facilitate interaction).

2. It is assumed that the handicapped children involved in the study are capable of responding to the stimulus of peer administered play initiations.

Organization of the Study

The following chapters describe the process of the study. Chapter 2 contains an overview of the literature concerning social interaction between young handicapped and nonhandicapped children. Research in methods of promoting social interaction is targeted. Chapter 3 outlines the methodology of the study. Included in this is a description of the subjects and setting, the research design and procedures, and a description of the measures employed. The results of the study are stated in Chapter 4. Chapter 5 includes a summary and discussion of the results of the study. Conclusions and the implications of the study are considered and recommendations are made for further research.

Chapter 2

Review of Literature

The review of literature examines the research pertaining to the issues of socialization in mainstreamed preschool classrooms. It examines the many positive results of studies involving social interaction between young handicapped children and their nonhandicapped peers as well as investigates problem areas in the process of socialization. The effects of types of social skill training and intervention techniques using peers rather than adults as the intervention agents is also discussed.

Much of the research in this area has focussed on children with various types of handicaps and, consequently, the results of the studies cannot be interpreted to affect only children with specific handicapping conditions. The effects of the various handicaps upon the outcomes cannot be ascertained. The studies have primarily been conducted in this manner due to the heterogeneous nature of mainstreamed preschool classrooms. Studies that focused on one type of handicap only are identified.

When comparing one study to another, it is important to note the possible confounding effects of: teacher-child ratio, ratio of handicapped to nonhandicapped children in the class, type of play equipment and learning materials, instructional styles and setting. These variables may account for some differences in study results. It should be noted, however, that in spite of such variance, much of the research has indicated strong areas of agreement and similar findings. The emphasis of much of the research in the area of socialization can be accredited to the accent on social skills in preschool curriculum.

Mainstreamed Preschools:

A Form Of Early Intervention

Early intervention, or the provision of training and educational services for handicapped infants and young children, has been seen as an important preventative measure by many educators (Lerner, 1981). Early intervention programs have been found to result in moderately large immediate benefits in I.Q., motor development, language and academic achievement. There have been few results in the areas of social competency, family and peer relationships and long-term effects (Casto & Mastropieri, 1986). While many programs for young handicapped children have begun soon after birth,

there has been some evidence to suggest that the optimum age level for beginning intervention away from the home environment is between 36 and 48 months of age (Casto & Mastropieri, 1986). Casto and Mastropieri have also found through a meta-analysis of the literature that the crucial factors in the effectiveness of early intervention lie in the intensity and duration of the intervention programs. Longer, more intense programs have been associated with intervention effectiveness for handicapped populations.

One educational method of the early intervention concept has been that of mainstreaming or integrating handicapped and nonhandicapped children in a preschool or kindergarten environment. A distinction between the term mainstreamed and the term integrated has been made in some research studies. In these particular studies, the term mainstreamed referred to a regular preschool classroom that included a small number of handicapped children. The integrated classroom was a special education classroom that included a small number of nonhandicapped children. However, many studies simply used the terms interchangeably. In either situation, it was thought that young handicapped children learned appropriate social behavior and benefitted from the interaction with nonhandicapped peers. Nonhandicapped children, in turn, were thought to gain understanding

and learn appropriate behavior toward their handicapped peers.

The passage of Public Law 94-142, guaranteed an appropriate education for all handicapped children in the "least restrictive environment". The placement of handicapped children thus became not only an issue of effectiveness, but a legal issue as well (Watson, 1977). The concept of the "least restrictive environment" helped to ensure that children in public and private institutions were educated with children who were not handicapped, thus providing educational opportunity and equal protection under the law (Meisels, 1977; Turnbull & Blacher-Dixon, 1981). This federal mandate was not necessarily applied to 3, 4 and 5-year-olds if such requirements were inconsistent with state law or practice. A preschool incentive grant program was included as an amendment to P.L. 94-142 to help provide the same type of opportunities for young children that older children were guaranteed by law (Cohen, Semmes, & Guralnick, 1979). Federal Headstart programs have been mandated since 1972 in P.L. 92-424 to assure that not less than 10% of the total enrollment be handicapped (Klein & Randolph, 1973).

With the passage of P.L. 99-457 in 1986 came the federal mandate to extend all the rights and protections of P.L. 94-142 to handicapped children ages 3 through 5

years by school year 1990-91 (Smith, 1986). This meant that all handicapped children from 3 through 5 could benefit from a free, appropriate public education, an Individualized Education Program, placement in the least restrictive environment, protection in evaluation, due process and confidentiality (Lerner, 1981). To support the achievement of this objective, the prior Preschool Incentive Grant program (P.L. 94-142, Sec. 619) was revised to reflect authorization of a dramatic increase in the federal fiscal contribution for this age group (Smith, 1986). The recognition of the importance of education during the early childhood years for handicapped children helps to highlight the issue of early mainstreaming.

The early childhood years have been recognized as formative years for social attitudes and perceptions (Christopherson, 1972; Dickerson & Davis, 1981; Klein, 1975; McLoughlin & Kershman, 1979). Jones and Sisk in a 1967 study of 230 children between the ages of 2 and 6 found that children first began to develop perceptions of limitations for orthopedically handicapped children at around 4 years of age. Gerber (1977), in a similar study, corroborated these findings and added that awareness of less concrete handicaps such as mental retardation would come at a later age. There has been some evidence to suggest that school age children are

less accepting of handicaps than are younger children (Clark, 1964; Levitt & Cohen, 1976; Severy & Keith, 1971). The mainstreamed preschool classroom can help nonhandicapped children gain knowledge and tolerance and provides handicapped children with the opportunity to interact in a progressively more demanding environment (Bricker, 1978; Ispa & Matz, 1978).

Hartup (1978) found that exposure to nonhandicapped children in a preschool setting was influential in problem solving behavior, and contributed to social interaction skills in handicapped children. Hartup also noted that nonhandicapped children enjoyed being imitated and were more apt to be friendly toward the imitator than were older children.

Social Interaction

In 1982 Widerstrom stated that most public educational programs for preschool handicapped children were federally funded and conducted in segregated settings. Lynch and Simms (1978) found that mildly and moderately retarded children were the most likely to be found in mainstreamed preschools. This concentration on the less severely handicapped children in mainstreamed classrooms may have resulted from the findings that nonhandicapped children interacted more frequently with mildly handicapped children than with moderately or

severely handicapped children (Blacher-Dixon, et al., 1981; Guralnick, 1980). Social interaction has been shown to need fostering and may be more easily influenced in less severely handicapped children (Strain & Kerr, 1981).

Young children who have begun to perceive differences between themselves and others may need some guidance in dealing with these differences. It has become the responsibility of educators to address the issue of handicapped peers. It is important to discuss differences and to give nonhandicapped and handicapped children positive skills in peer helping and interaction (Platt & Cook, 1976; Spell & Carlson, 1981; Thurman & Lewis, 1979).

Clearly, attention must be given to developing procedures that not only address the behavior of the handicapped and nonhandicapped children, but will be intrinsically reinforcing for the children and easily integrated into ongoing classroom activities. (McEvoy, 1986, p. 1)

Types and levels of social interaction in segregated and mainstreamed preschool classrooms are important factors when examining the issue of mainstreaming. In a 1977 study comparing the social interaction of intellectually handicapped children in segregated and mainstreamed preschool settings, Wilton

and Densen found that the handicapped children in the mainstreamed preschool setting had a significantly higher level of social participation than those attending special segregated preschools. It should be noted that all of the handicapped children showed a significantly lower level of social participation than nonhandicapped children regardless of setting. A study by Federlein (1981) corroborated this finding. While handicapped children in integrated and mainstreamed settings have displayed more social behavior than those in segregated settings, the fact that they were less involved than their nonhandicapped peers and that their peers were at an age at which they began to recognize this difference could lead to the problem of social isolation (Cooke, et al., 1977; Hendrickson, et al., 1982; Peterson & Haralick, 1977).

In 1977 Peterson and Haralick observed the play behaviors of handicapped and nonhandicapped children in an integrated preschool. The researchers found that when handicapped children were the only playmates available that nonhandicapped children chose isolate or parallel play and also showed a preference for other nonhandicapped children in one-to-one situations. Nonhandicapped children, however, played socially with handicapped children when a mixed group of children was involved. Peterson and Haralick suggested a strategy of

involving at least two nonhandicapped children in play groups in order to promote social interaction. In direct contrast to this finding, Dunlop, Stoneman and Cantrell (1980) studied 6 handicapped and 6 nonhandicapped children and found no difference in play preference. Brackett and Henniges (1976) also stated that there was evidence that handicapped children interacted with other children and were not isolated or rejected. The differences in the findings may be due to ratios of handicapped to nonhandicapped children in the classrooms, teacher-child ratios, materials or type of setting. Several studies have examined methods aimed at avoiding social isolation and promoting interaction between handicapped and nonhandicapped children.

Promoting Social Interaction

Hendrickson, et al., in 1982 showed that nonhandicapped peers had a powerful influence over handicapped isolate children when they were trained to initiate play through the use of play organizers, shares and assists. They also showed that a handicapped child could be trained to effectively initiate play with an isolate peer. In both phases of the study, the isolate children showed marked gain in social responding, but little gain in social initiation.

Peer imitation is another avenue that has been studied by researchers as a method of increasing social skill and social interaction. According to Raver (1979) reciprocal peer imitation was an effective tool in promoting social skills and interaction. When examining the success of this particular researcher, it should be noted that a 1:1 adult child ratio was recommended.

In a study by Cooke, et al., (1977) direct instruction with handicapped children in imitative behavior was used to induce imitation and interaction with nonhandicapped peers. The study also concluded that nonhandicapped children would not imitate handicapped children without direct reinforcement as part of the training procedure. Other research has shown that peer models, did not imitate undesirable behavior patterns of their handicapped peers (Peck, et al., 1978; Peterson, Peterson, & Scriven, 1977). All children were more likely to imitate the positive behaviors of the nonhandicapped children (Allen, 1980; Peterson, et al., 1977). Peer imitation by either handicapped or nonhandicapped children increased when the subject saw the peer model receive a reward (Peterson, et al., 1977).

In general, the findings in the area of preschool mainstreaming have shown that mainstreamed and integrated handicapped children displayed more social

interaction skills and more complexity of play than did children in segregated settings. While this was a positive outcome, it was also generally agreed that handicapped children became more isolated than their nonhandicapped peers unless adult intervention and structuring of some sort was added to the program to promote interaction.

Skill Training And The Effects
Of Adult Presence

Parents and teachers have played major roles in directing the young child's social development. The questions raised by the research results in the area of skill training in socialization have created new challenges. The impact of adults during this type of direct skill training has been shown to be complex in its effects on subsequent social behavior and generalization in young children. This section of the literature review examines techniques used to develop social interaction skills in young handicapped children. Immediate and generalized effects are of particular emphasis.

While parent involvement in preschool mainstreamed and integrated programs has often been seen as an important factor in the success of the program, the scope of this paper will not delve into the particulars

of parent involvement. It is interesting, however, to note that parents of handicapped children indicated that volunteering to help in the preschool program was less important than teachers believed it was (Blacher & Turnbull, 1982). In a meta-analysis of early intervention programs, Casto and Mastropieri (1986) found that parents, while effective interveners, were not essential to intervention success. These findings can be argued, but help to focus on the importance of classroom activity.

Skill Training

One area of focus in the attempt to help young handicapped children interact on a positive social basis with their peers has been that of direct skill training. The research results have been overwhelmingly positive (Cooke, et al., 1977; Paloutzian, Hasazi, Streifel & Edgar, 1971; Wishon, et al., 1979), but leave unanswered the question of whether this type of training continues to place the main interaction focus on the adult-child relationship as opposed to the child-child relationship. This seems to be a question about optimal benefit.

In a related study, severely retarded young children were given imitation training through the use of physical prompting, reinforcement and subsequent fading of the prompts. This training then progressed to

imitation of social skills. Paloutzian, et al., (1971) found that the 10 subjects showed a significant change in the type and level of social interaction as compared to the 10 children in the control group.

Wishon, et al. (1979) used a single subject design with a baseline and experimental phase in order to find the effects of teacher priming on a 4-year-old socially isolate girl. The child's teacher primed her to use the play equipment before other children came to the playground. The child was asked by the teacher to help show the other children how to use the equipment. Peer initiated reinforcement was rewarded for all children. The subject showed a noticeable increase in peer social interaction as compared to the baseline phase of the study. ~~Another increase was seen upon the introduction~~ of thematic play.

Another form of increasing social interaction has been the use of contingent reinforcement (Furman, Rahe, & Hartup, 1979). Hart, Reynolds, Baer, Brawley, and Harris (1968) found that reinforcement contingent on cooperative play significantly increased the amount of cooperative play displayed by a 5 year-old-girl. This type of reinforcement as well as the techniques previously discussed has brought to the forefront a new question concerning adult-child interaction as compared to child-child interaction.

Adult-Child Interaction and
Child-Child Interaction

Burstein (1986) found that handicapped children interacted with adults more than with children in all settings in mainstreamed preschools. The research showed that handicapped children interacted with their peers more frequently during outdoor play, but also showed more inappropriate behavior during those interactions. Burgess (1980) also showed the pervasiveness of adult-child interaction in all settings and further stated that social proximity was not sufficient to insure social integration. Herink (1980) found a negative correlation between teacher initiations to retarded students and the children's interactions with their preschool peers. Shores, et al., (1976) found that the delivery of social praise by the teacher served to direct the social behavior of children toward adults rather than peers. Strain and Hill (1978) stated that the immediate temporal effect of adult social praise was a cessation of peer interaction. This lack of child-child interaction may be due, in part, to the structuring of programs that rely heavily on direct adult-child instruction (Widerstrom, 1986).

Research has suggested that teacher presence and direct instruction of skills are imperative to the education of young children. Teacher supervision is

also essential to safety in free-play situations. However, it may be possible for teachers to change their behavior according to the situation, setting and desired outcome of the activity (Stowitschek, 1984). A teacher, for example, may choose to be very predominant in specific training situations in order to ensure skill levels and stabilization of rate in social interaction (McKeene, Hops, & Walker, 1972), but may change to the role of reinforcer of peer interaction and then to observer of social interaction with peers.

While Raver (1979) stated that the ideal adult-child ratio in a preschool employing the integration of handicapped and nonhandicapped children was 1:1 in order to establish peer imitation and interaction, many other researchers suggested that teachers may, in fact, decrease the opportunity for peer interaction (Burgess, 1980; Burstein, 1986; Herink, 1980; Shores, et al., 1976; Stowitschek, 1984; Strain & Hill, 1978). Structuring by the teacher is, however, a necessary component in ensuring the social interaction of handicapped and nonhandicapped children in the preschool environment (Blacher-Dixon, et al., 1981; Cooke, et al., 1977; Hartup, 1978; Kerr & Strain, 1978; Meisels, 1977; Odom, Strain, Karger, & Smith, 1986; Peterson & Haralick, 1977; Strain & Kerr, 1981). One

method that seems to have been effective is that of teacher structured free-play.

Teacher Structured Free-Play

Shores, et al. (1976) compared the effects of the amounts and types of teacher-child interaction during free-play. They found that more child-child interaction occurred when there was no teacher involvement as opposed to active teacher involvement. However, the most child-child interaction occurred during teacher structured free-play. Devoney, et al., (1974) found that teacher structured free-play increased peer social interaction and that the play of handicapped preschool children became more sophisticated and organized after ~~this type of play with nonhandicapped peers.~~ The increase in interaction after the introduction of thematic play (Wishon, et al., 1979) is another example of increased play through the use of this technique. This technique has seemed particularly effective with emotionally disturbed children (Devoney, et al., 1974; Shores, et al., 1976; Wishon, et al., 1979).

A brief overview of these studies seems to indicate that some direct skill training is helpful in providing social skills and promotes social interaction, but that too much teacher involvement may thwart child-child interaction. The teacher in a mainstreamed or

integrated preschool, it would seem, must structure the environment and type of play in order to promote peer social interaction. One method of doing so is to use peers as models, play initiators and tutors. Hartup (1978) stated the following:

The utilization of children as agents in their own socialization should be a key consideration in planning many different kinds of early intervention activities, particularly those activities that involve the integration of handicapped and nonhandicapped children. (p. 48)

Children as Tutors and Trained
Social Initiators

~~In 1982 Widerstrom stated that the importance of~~
peer friendship in mainstreamed and integrated preschool classrooms was often overlooked. The author wrote that peer relationships brought about competent and adaptive social activity and that social rules and appropriate behavior were established and maintained through play. Methods of bringing about appropriate social and learning behaviors through peer relationships include peer reinforcement and peer tutoring (Hartup, 1978).

Generalization of Newly Learned Skills

Hendrickson, et al., (1982) found that adult mediated behavior did not generalize as effectively as peer mediated behavior in a preschool setting. They showed that children as young as 4-years-old could be used as effective treatment agents. Johnston and Johnston (1972) found that kindergarten children were more effective than adults in helping each other with articulation problems. Children were trained to attend to particular correct and incorrect consonant sounds in the articulation of their peers. These peers had only displayed correct consonant sounds in speech therapy sessions previous to peer intervention. The value of the peer reinforcement in this situation and others (Nordquist, 1974; Nordquist & Bradley, 1973) was in helping to generalize from one specific setting or person to the classroom as a whole.

Peer Administered Contingent Reinforcement

Guralnick (1976) reported that play behaviors and positive verbalizations increased in two retarded preschool children when peers were taught to attend selectively to the subject children's appropriate positive behavior. Peers have also been trained to ignore behaviors targeted for extinction. Wahler (1967)

found a marked decrease in certain inappropriate behaviors when he employed this method.

Trained peer confederates have been used in preschool settings to help increase social interaction in isolate, retarded children (Kerr & Strain, 1978; Odom, et al., 1986; Strain, Shores, & Timm, 1977). Social responding was greatly increased in both the experimental and classroom settings as long as peer treatment continued. Social initiations, however, were not greatly increased. Wanlass and Prinz (1982) found that this type of operant procedure produced positive effects but that most studies failed to determine durability of treatment effects. The same was found to be the case with modeling, coaching and structuring play activities and play materials.

Play Materials that Facilitate Interaction

According to many researchers, there exists a strong relationship between the type of play materials used by children and the amount of social interaction that they display (Cole, 1986; Hart & Sheehan, 1986; Hendrickson, et al., 1981; Jones, Jarrett, & Quay, 1984; Poling, 1976; Quay, Weaver, & Neel, 1986; Quilitch & Risley, 1973; Stoneman, Cantrell, & Hoover-Dempsey, 1983; Strain & Powell, 1982). Poling (1976) found that the social play of 4 and 5-year-olds was influenced by

the availability of particular play materials. Materials considered to enhance social interaction were associated with increased social play. In a 1973 study conducted by Quilitch and Risley, toys categorized as either "social" or "isolate" were given to children. The children interacted 78% of the time when playing with the "social" toys and 16% of the time when playing with the "isolate" toys. It has also been suggested that a limited amount of play materials increases the possibility of interaction and sharing behaviors (Robson, Lipshutz, & Jason, 1980).

Particular toys or play areas targeted by researchers as facilitating social interaction include: blocks, vehicles, dolls, tea sets, dress-up clothes, water play and balls (Stoneman, et al., 1983; Strain & Powell, 1982). Interactive play behaviors considered to be negative were found more often in drama, manipulatives, doll-house and woodworking play areas (Jones, et al., 1984; Quay, et al., 1986). Jones, et al., (1984) suggested that one procedure for facilitating handicapped children's social interactions might be to direct them to those play areas and materials that reinforce naturally occurring positive social interaction.

In outdoor settings, Hart and Sheehan (1986) found that preschool age children were more likely to interact

in more traditional types of playgrounds. Traditional playgrounds included more manipulative materials than did playgrounds of a contemporary design. Hendrickson, et al., in 1981 stated that when young children played with balls, they displayed a 96% use of sharing and cooperative behavior as opposed to only 4% of isolate behavior. In a 1986 study, Cole added the component of training nonhandicapped peers in the use of "highly reactive toys" and found an increase in social interaction between handicapped and nonhandicapped children during peer instruction sessions.

Training the Peer Tutor or Confederate

More specific work has been done in order to obtain information on what actually helps young children in the tutor-tutee process. There has been interesting conflict in findings in the area of relationships between the tutor or confederate and the targeted child. Gartner, Kohler, and Riessman (1971) claimed that it was of utmost importance that there be a caring relationship between the children involved in the process. Hartup, however, found in his 1964 study of 36 preschool children, that a marble dropping activity was better maintained during a 6 min testing period when the reinforcing agent was a disliked rather than a liked peer. Hartup concluded that it was possible that

anxiety might increase performance or that the nonaggressive, positive attention of a disliked peer was more reinforcing than the expected positive attention of a liked peer. The personality type of the peer tutor was considered to be an important variable in the success of social interaction training (Nietupski, 1983). The researcher stated that socially outgoing 3 and 4-years-olds were more effective in facilitating play with handicapped peers than were socially withdrawn children of the same age.

The question of tutor or confederate training is a markedly different matter at the preschool rather than the elementary or above levels (Burstein, 1982). Young children cannot read instructions well, they tend to have shorter attention spans than older children, and they learn in a more "hands-on" less passive manner. While trained tutors have been found to be more effective than untrained tutors (Devin-Sheehan & Allen, 1977), just how to effectively train is an ongoing question. The question of attention span was addressed (Odom, et al., 1986), and it was found that single peer confederates were as effective over time as multiple tutor groups. It has been generally agreed that training young tutors to use contingent reinforcement is possible and desirable (Allen, 1976; Guralnick, 1976; Hartup, 1978; Hendrickson, et al., 1983; Johnston &

Johnston, 1972). This trained reinforcement has been found to have a greater effect on the functioning of low I.Q. children than an higher I.Q. children (Hamblin & Hamblin, 1972).

One method of training young peer tutors found to be particularly effective has been role playing (Kerr & Strain, 1978; Odom, et al., 1986; Strain, et al., 1977; Von Harrison, 1977). Repetition, modeling and role playing to a pre-stated criterion level has been recommended (Odom, et al., 1986; Strain, et al., 1977).

One area of strong agreement found in the research involved methods for working with young tutors. Their short attention span and general lack of concern for on task behavior required a different training and ~~supervisorial approach than that used with older~~ children. Many studies cited the need for continuous reinforcement of the tutor or confederate by an adult (Buckholdt, 1974; Odom, et al., 1986). None of the research found in this area of study actually left child tutors without direct adult guidance and reinforcement.

Keislar and Blumenfeld (1972) recommended a more informal context for peer tutoring in order to avoid the need for constant adult attention. One recommended method was to take advantage of young children's natural inclination to teach by demonstration and through assistance (Bueche, 1980).

Conclusion

While it seems that mainstreaming or integrating handicapped and nonhandicapped children at the preschool level has had a positive effect on the social skills and interaction levels of young handicapped children, it also seems that social isolation can occur. Adult intervention, either through direct means or through manipulation of the environment, type of play or peers seems essential to assure social interaction between handicapped and nonhandicapped children.

Methods such as direct skill training of imitation and specific social skills and contingent reinforcement have been shown to be effective. Adult administered treatments, however, have not proven to be as effective in allowing the young handicapped child to generalize newly found social skills. In fact, young peers have been used more effectively than adults in bringing about social interaction change and generalization. Adults have been effective when introducing thematic play ideas to groups of children or in training peer tutors or confederates to initiate play, to reinforce certain behaviors, and to share usage of play materials that facilitate interaction.

Because of the young age of the children involved in this process, adult guidance and reinforcement seems

essential. It would seem that helping to train young tutors to reinforce social behavior or to initiate play with interactive toys through the use of modeling and role playing is in line with the learning styles of young children. It also seems appropriate to take advantage of the natural skills of preschool level children in the areas of helping behaviors. Through the use of peer intervention, increasing positive social interaction between handicapped and nonhandicapped preschool children seems very promising.

Chapter 3

Methodology

Research Design

A single-subject research design was developed as the most appropriate method for examining the relationships between the variables of interest in this study. According to Tawney and Gast, 1984:

Single subject research design is an integral part of the behavior-analytic tradition. The term refers to a research strategy developed to document changes in the behavior of the individual subject. Through the accurate selection and utilization of a family of designs, it is possible to demonstrate a functional relationship between intervention and a change in behavior. To demonstrate a functional relationship means simply that the experimenter has confidence, through empirical verification, that behavior change occurred because the intervention occurred, and for no other likely reason. (p. 10)

Borg and Gall (1983) stated that single-subject experiments should not be equated with the case-study method of investigation. Both focus on the single individual, yet they differ in degree of experimental

control. Single-subject designs use several procedures to achieve experimental control: reliability checks on the experimenter's observations of the subject's behavior, frequent observations of the behaviors targeted for change, description of the treatment in sufficient detail to permit replication, and replication of treatment effects within the experiment. Replication is attained through measures that are repeated in comparison to a baseline or another treatment. It is also frequently attained through applying the treatments across subjects, settings or behaviors. In contrast, case studies usually are limited to impressionistic descriptions of a student or group problem and how the author intervened to solve the problem. Quantitative data and replication attempts are not usually reported.

Borg and Gall (1983) also stated that:

Some researchers think that the single-subject experiment is a watered-down, easier version of one of the multisubject (group) designs. This is not true. Experimenters who work with single-subject designs are equally as concerned with problems of internal validity and external validity as multisubject experimenters. (p. 706)

Single-subject research requires repeated data gathering over time. Several studies referred to earlier utilized the single-subject design (Guralnick, 1976; Hart, et

al., 1968; Hendrickson, et al., 1982; Johnston & Johnston, 1972; Kerr, et al., 1978; Odom, et al., 1986; Wishon, et al., 1979).

The evaluation of the effects on specifically defined behavior in moderately handicapped preschool children through the comparison of two intervention methods were examined in this study. This type of comparison is often addressed through the use of a comparative intervention design (Tawney & Gast, 1984). These designs enable the researcher to compare the effects of two or more interventions across one or more learners and/or one or more behaviors.

An alternating treatment design was chosen specifically for this study. The alternating treatment design has been used to compare the effectiveness of two or more interventions by introducing them over the same time period in alternating succession. Single-subject research often compares a treatment phase to a baseline, no treatment phase in order to establish experimental control. In this case, however, it is questionable whether this type of comparison would be effective. It is possible that acquisition skills such as social behavior would be maintained in the child's repertoire even upon cessation of treatment. In this situation however, a baseline can be recorded in order to ascertain generalization.

The basic feature of the alternating treatment design is the fast alternation of two different intervention conditions with an individual or group of learners. The interventions are alternated or counterbalanced session by session. Stability in the baseline or in the treatment data is not required prior to introducing the next intervention. When the level of responding varies by the alternating conditions, experimental control has been demonstrated (Tawney & Gast, 1984). The most important element in this type of design is stimulus discrimination that permits the subject(s) to identify which intervention is in effect at a certain time.

For this study, baseline, or no treatment, data was recorded before and during the alternating treatments. Baseline (A) data was taken for 5 days prior to the introduction of the interventions in order to ascertain functioning level. The two treatments, peer administered contingent reinforcement (B) and the use of play materials that facilitate interaction (C) were then introduced in alternating order. The treatments were administered for a 9 min period on the assigned day. The short time period was chosen to alleviate problems with waning attention span and to facilitate observation during a limited recess time. A 9 min observation of baseline (A) followed the treatment phase in order to

note any immediate generalization of social interaction behaviors. (see Figure 1, p. 42).

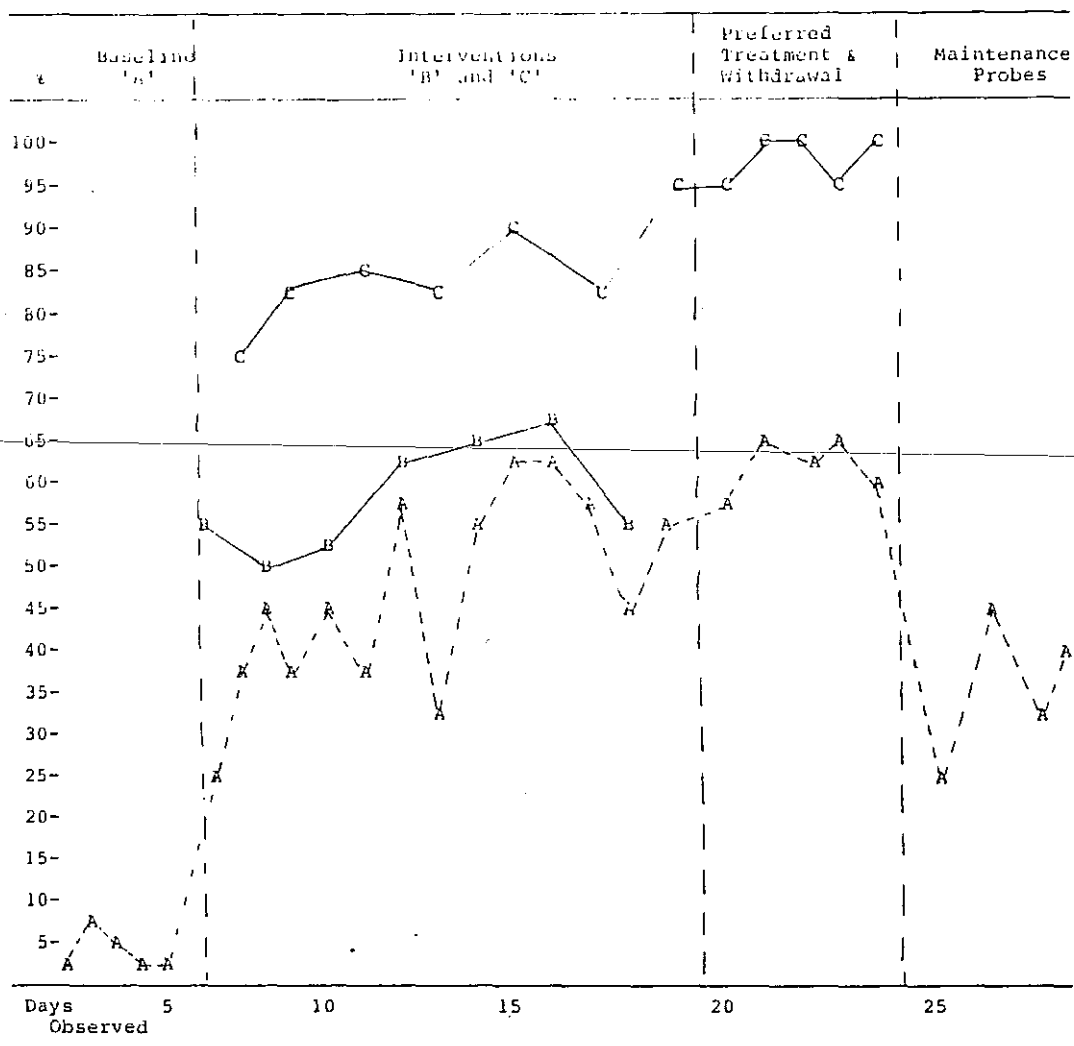
Upon introduction of treatment, the social behaviors of the peer helpers were also monitored. The categories of play organizer, share and assistance as outlined by Strain, et al. (1977) and Hendrickson, et al. (1982) were used. (see page 46 for Training Peer "Helpers".) Observation and recording took place in order to monitor the effects of the training procedures.

The Sample

The subjects were 3 preschool/kindergarten children chosen randomly from a group of 6 moderately mentally handicapped children from Jesse Baker School in Elk Grove, California. The children were between the ages of 4 and 6 and displayed a variety of handicaps. All of the children were enrolled in a class for the Trainable Mentally Retarded. The criteria for admission to this class included the requirement that the children function at less than one half of chronological age expectation.

The peer "helpers" were from a private Montessori preschool and kindergarten in Elk Grove, California. Nine children were originally chosen on the basis of teacher perceived maturity and helping behaviors. The American Association on Mental Deficiency's Adaptive

Figure 1: Percentage of "4" Responses for Interaction



Key: A = Baseline; B = Contingent Reinforcement; C = Interactive Play Materials

Behavior Scale, School Edition (ABS-SE) (Lambert, Windmiller, Tharinger, & Cole, 1981) was administered to all 9 children. In this assessment scale, adaptive behavior is defined as:

. . . the effectiveness or degree with which the individual meets the standards of personal independence and social responsibility expected for his or her age and cultural group (Lambert, et al., 1981, p. iii).

The ABS-SE reference group norms are based on scores earned by students assigned to Regular, EMR, and TMR programs. Regular student norms were used and are available for students aged 3 through 16.

Three children were chosen for the study based on the similarities of their ABS-SE profiles. The children were asked to participate and had the option of declining. The parents of all of the children involved in the study were asked to sign a consent form. (see Appendix A.) No child was included without the signed consent of a parent or guardian. All of the subjects included in the study were from a suburban/rural area.

The Setting

The children from Jesse Baker School joined the Montessori School children for outdoor recess three times per week from 10:40 to 11:00 a.m. The playground

area included a large sandbox with various sand toys, a climbing structure and slide, rope swings, a tire swing and a climbing structure made of tires. It had a gravel area and a cement area with picnic tables, benches, ball areas and gardening areas. The observers stood at a distance from the targeted children but were allowed to follow closely enough to see all actions and hear any conversation attempts.

Training Observers

The observers were two volunteers from the population of Montessori School parents. They participated in the study in exchange for tuition. Parents of children participating in the study were not chosen. The facilitator trained the observers using the procedures suggested by Borg and Gall (1983). The observation form was discussed in detail and the observers practiced recording and timing observations with a video tape. Practice observations then took place on the playground. Any difficulties expressed by the observers were addressed at that point. Observers were required to demonstrate a minimum of 80% agreement level in training. Once trained, one observer collected data at every session and the second observer took data once a week in order to assess interobserver agreements.

In consideration of a possible "reactive effect of measurement" (Webb, Campbell, Schwartz, & Sechrest, 1971), measures were taken to help minimize the effects of observer presence. According to Brandt (1972) several steps may be taken to help alleviate observer influence. First, considerable time was allowed for the observers to become a routine fixture before observations, other than practice, were made. Second, plausible reasons were given for the presence of the observers. In this case, the entire group of children was told that the parents chosen to help with the study were helping with a "college project". Third, the specific nature of the data to be obtained was not made explicit.

Training Peer "Helpers"

The preschool or kindergarten peer "helpers" were trained through the use of demonstration, modeling and practice with feedback. The training took place in the school office during two 20 min sessions. The facilitator demonstrated the desired behaviors for the children. During the first session, the children were asked to copy the facilitator's actions. The children then practiced with each other, each taking turns at "being" the "helper" and the targeted handicapped child. The targeted play behaviors were:

"PLAY ORGANIZER: Any verbalization wherein the child specifies an activity. For instance, the child proposes a role for self or others, "I'll be daddy." Or proposes a game or other activity, "Let's play house." (Any verbal attempt to initiate play will be included in this category).

SHARE: Offers or gives an object to another child; or two or more children using a common object in mutual play.

ASSISTANCE: Provides help to another child, this includes boosting or supporting a peer, assisting another to "fix" something." (Hendrickson, et al., 1982, pp. 328-329).

The second session consisted of testing the children through the use of a game of "what if". The facilitator asked each child how he/she would help a handicapped friend play in a given situation. Some examples of situations are:

1. "If your friend was sitting on the bench and you wanted him/her to play on the slide with you . . . what would you do?" (The child could say, "Let's go play on the slide!")
2. "If your friend was in the sandbox, but had no toys . . . what would you do?" (The child could hand some toys to his/her friend.)

3. "If your friend fell down when he/she caught the ball . . . what would you do?" (The child could check to see that the friend was not hurt and possibly suggest rolling the ball from a sitting position.)

Each child was asked to give a verbal answer to the question and then asked to demonstrate. The children were also asked to identify the action as either a play organizer, share or assist. A 90% criterion level for correct responding was expected.

Before treatment, either (B) contingent reinforcement or (C) the use of play materials that facilitate interaction, the children received daily reminders to use play organizers, shares and assistance in their play attempts with their handicapped friends. The fact that many of their play attempts would be unsuccessful at first was also addressed. Recess ended with a short period of teacher reinforcement for displaying the aforementioned behaviors.

Treatment (B) contingent reinforcement required training for administering the reinforcement. The same method of demonstration, role playing and practice was used. The peer helpers were required to demonstrate a 90% level of reinforcement response before Treatment B began. The behavioral definition of social interactive behavior was simplified to either remaining with the

children or wandering away. Treatment C only required that the children play ball for 9 min. The peer "helpers" were given a sticker daily and a small toy at the end of each week of participation in the study.

Treatment Procedure

The particular single-subject research design which was used in this study is that of alternating treatment with continuous baseline. Data was taken 3 days per week for a 9 min period of either Treatment B or C and a 9 min period of non-treatment free play (A).

Baseline (A): Prior to treatment, the students were observed for 5 days in the playground setting. The observers recorded the child-child interaction frequency on the observational sheet. (see Appendix B.) Data collection continued until the behavior had stabilized.

Baseline data collection continued after the introduction of treatment. This always took place immediately following treatment. The purpose of taking continuous non-treatment data was to examine generalization of treatment effects.

Treatment B - Contingent Reinforcement: The student "helpers" were assigned to a particular handicapped child. They were asked to begin each 9 min session by giving the handicapped child a reinforcer. The reinforcers were chosen by the teacher of the

handicapped children. The teacher felt that small crackers were more effective than less "primary" reinforcers such as stickers or tokens. The nonhandicapped "helper" also took a reinforcer at that time. Thereafter, a playground teacher told the "helpers" that it was time for reinforcers. This was based on 2 min intervals and was administered on a VI2 schedule. The "helper" also took a reinforcer at these times. The reinforcement was only given if the handicapped child had remained in close proximity and had displayed some interest in play. The "helper" always received the reinforcer. The playground teacher was allowed to help the children with difficult judgment calls.

Treatment C - The Use of Play Materials that Facilitate Interaction: The student "helpers" were assigned to the same child as in Treatment B. All of the "helpers" and handicapped children began the 9 min session with the playground teacher. Each peer "helper" was given a ball. They were told to make sure that their friend got lots of turns. Three methods for playing ball were suggested. The methods were: playing catch, taking turns bouncing the ball off of the wall, or rolling the ball back and forth from a seated position on the ground. The children, however, were not restricted to only those techniques. The teacher then

left the children and data recording began. Each treatment (B) and (C) was administered seven times.

Maintenance and Videotaping

One method proved to be more effective than the other and replaced the alternating schedule for 5 days, 2 days the first week, 2 days the second week and 1 day the last week. This occurred during Weeks 7, 8 and 9 of the study (see Figure 2.) Baseline recording continued. Maintenance probes were administered for a 9 min period once a week for 1 month.

The children were videotaped at certain intervals during the study. Play sessions were taped to help during observer training. The tape was useful in this situation due to the ability to re-run a play attempt or interaction on which the observers disagreed. An initial reliability estimate was also taken during a videotape practice session. Baseline behaviors for all 3 target handicapped children were taped. Demonstration videotapes were taken for each intervention technique and the "helping" behaviors were also taped.

The Observational Instrument

The operational definition of child-child interaction was taken from direct observation of the children and was validated by two preschool teachers and a teacher trainer. Videotapes of the children were

Table 1

Outline of the Procedure

Baseline	Treatment and Generalization	Preferred Treatment and Withdrawal	Maintenance Probes								
A A A A A	B C B C B C B C B C B C B C A A A A A A A A A A A A A A	? ? ? ? ? A A A A A	A A A A								
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Wk 10	Wk 11	Wk 12

shown to experts in the field of early childhood education for validation of occurrence and recording reliability. Operational definition of child-child interaction:

The basis for the behavior is that of interaction or reciprocity. It consists of: (1) answering questions from other children either verbally or with a physical gesture such as nodding the head, (2) sharing or trading toys, (3) joining in the actions of other children while looking at the children or verbally expressing interest (e.g. running or hopping in a group), (4) engaging in a play activity with one or more children (house, peek-a-boo). It does not include: (1) play attempts by another child from which the targeted child turns away or does not respond, (2) play attempts by the targeted child to which the other child does not respond.

The observational instrument (see Appendix B) employed an interval recording format. The observer recorded either a (+) for the occurrence of the targeted behavior or a (-) for non-occurrence. The observer watched one child for 10 s to see if the targeted behavior occurred. A 20 s interval was taken for recording before observation of the next child began.

The observations were rotated in this manner for each 9 min observation period.

After treatment began, the trained behaviors of the peer helpers were recorded in addition to the social behaviors of the handicapped children. The initials "o", "s", and "a" were recorded if the peer helper displayed the behaviors of play organizer, share or assistance during the 10 s interval. (see Appendix B.) A minimum of five play attempts was considered to be adequate. If the peer helper displayed fewer helping behaviors than five, a new training session was to be instituted.

The number of (+) responses produced daily by each child was converted to percentage by calculating the number of occurrences divided by the number of observations and multiplied by 100. Percentages were recorded for both treatment and baseline phases. The information was converted to graph form (see Figure 1.)

In single-subject research, visual inspection is used in reaching judgment about the reliability of intervention effects. The data for baseline and treatment effects is visually examined and when the intervention effects are potent, the need for statistical analysis is obviated (Kazdin, 1982). If conclusions are difficult based on visual inspection, a

simple t-test can be used to determine statistical significance (Borg & Gall, 1983).

Reliability and Validity

Interobserver reliability was demonstrated by the percentage of agreement between the observer and the outside observer using the point by point method.

$$\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100 = \begin{array}{l} \text{Percentage} \\ \text{of} \\ \text{Agreement} \end{array}$$

Internal validity in the alternating treatment design is demonstrated when one intervention is consistently associated with a different level of responding than other interventions. The internal validity of the alternating treatment design is usually good because the rapid alternations of two interventions controls maturational and historical effects. The rapid alternation also reduces sequencing problems because no intervention is consistently introduced first and maintained for an extended period of time (Tawney & Gast, 1984).

External validity is difficult to demonstrate in one study using single-subject design. In order for external validity to be demonstrated in an alternating treatment design, the differential effects of the interventions must be replicated across different

populations or groups of subjects, across different behaviors and/or across different conditions.

The study followed the single-subject research design of alternating treatment. It compared the effects of two peer-based methods for increasing social interaction between young handicapped and nonhandicapped children. It employed the use of an observational instrument designed to record the occurrence or nonoccurrence of child-child interaction. The basic phases of the study were: (A) baseline, (B) peer administered contingent reinforcement, (C) the use of play materials that facilitate interaction, and (D) maintenance. Generalized effects were also examined.

Chapter 4

Results

The results of the study are presented in the order of the stated hypotheses. The findings for each student are discussed as well as the combined mean results. Following the reporting of results is a section describing supplemental analyses. These analyses were conducted based on the original findings and contribute to a more in-depth examination of the outcome of the study.

The dependent variable under consideration was that of child-child interaction. (see Definition of Terms, p. 8). It was examined under six conditions: (1) baseline (A); (2) during peer administered contingent reinforcement (B); (3) generalization immediately following Treatment B; (4) during the use of play materials that facilitate interaction (C); (5) generalization immediately following, Treatment C; (6) maintenance over time. The dependent variables were: (1) peer administered contingent reinforcement, and (2) the use of play materials that facilitate interaction.

Statement of the Hypotheses

Null Hypotheses

1. There will be no difference between peer administered contingent reinforcement and the use of play materials that facilitate interaction in their effect on social interaction between young handicapped and nonhandicapped children.

2. There will be no difference between peer administered contingent reinforcement and the use of play materials that facilitate interaction in their effect on generalization of social interaction between handicapped and nonhandicapped peers.

Directional Hypothesis

It is hypothesized that if one method proves more effective than the other, it can be implemented on a regular basis, placed on a leaner schedule and then withdrawn without affecting the gains in social interaction.

Subjects, Peer "Helpers" and Observation Reliability

Subjects

A more in-depth description of the subjects is provided here. Due to the focus on individual

performance in the study, information on each child may be of interest.

Student #1: Student #1 was 4 years 3 months old at the beginning of the study. She was diagnosed during infancy as having Down Syndrome. She also suffers from a congenital heart disease and has a slight hearing loss. Her language development, when last tested at age 3 years 8 months, was that of a 16-month-old. She communicates through the use of single words, gestures and some sign language. Her motor development was delayed and on her last test date was shown to be at a 2½-year-old level.

Student #2: Student #2 was 4 years 7 months old at the beginning of the study. She is considered to be moderately retarded as a result of Prader - Willi syndrome. Also associated with the syndrome are hypotonia and a tendency toward obesity and passivity. When evaluated at 3 years 11 months, she had the language of an 18-month-old and the motor development of a 22-month-old. Like Student #2, she communicates through the use of single words, gestures and sign language.

Student #3: Student #3 was 6 years 5 months old at the beginning of the study. She is considered to be more severely retarded than Students #1 and #2, but her level was difficult to pinpoint due to her young age,

and what are considered to be cultural and stimulus deprivation in the home. When evaluated at age 4 years 6 months, she showed the language development of an 8-month-old and the motor development of a child 1 year 10 months old. At the time of the study, she communicated through gestures and sign language.

Peer "Helpers"

The peer helpers were randomly assigned to work with one handicapped friend. All of the "helpers" were enrolled in kindergarten and were considered to be normally functioning children. They were chosen for the study based on the close proximity of scores on the ABS-SE. Table 2 outlines pertinent scores for Peer "Helpers" #1, #2 and #3.

Observation Reliability

Interobserver reliability was determined by the point by point method.

$$\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100 = \begin{array}{l} \text{Percentage} \\ \text{of} \\ \text{Agreement} \end{array}$$

At the completion of the training program, the two observers demonstrated 100% agreement during a test-run with the observation instrument. Twelve subsequent reliability tests were administered during the course of

the study. The percentages of agreement ranged from 89% to 100%. The mean score was 95%, the median was 97% and the mode was 100%.

Findings

Hypothesis 1

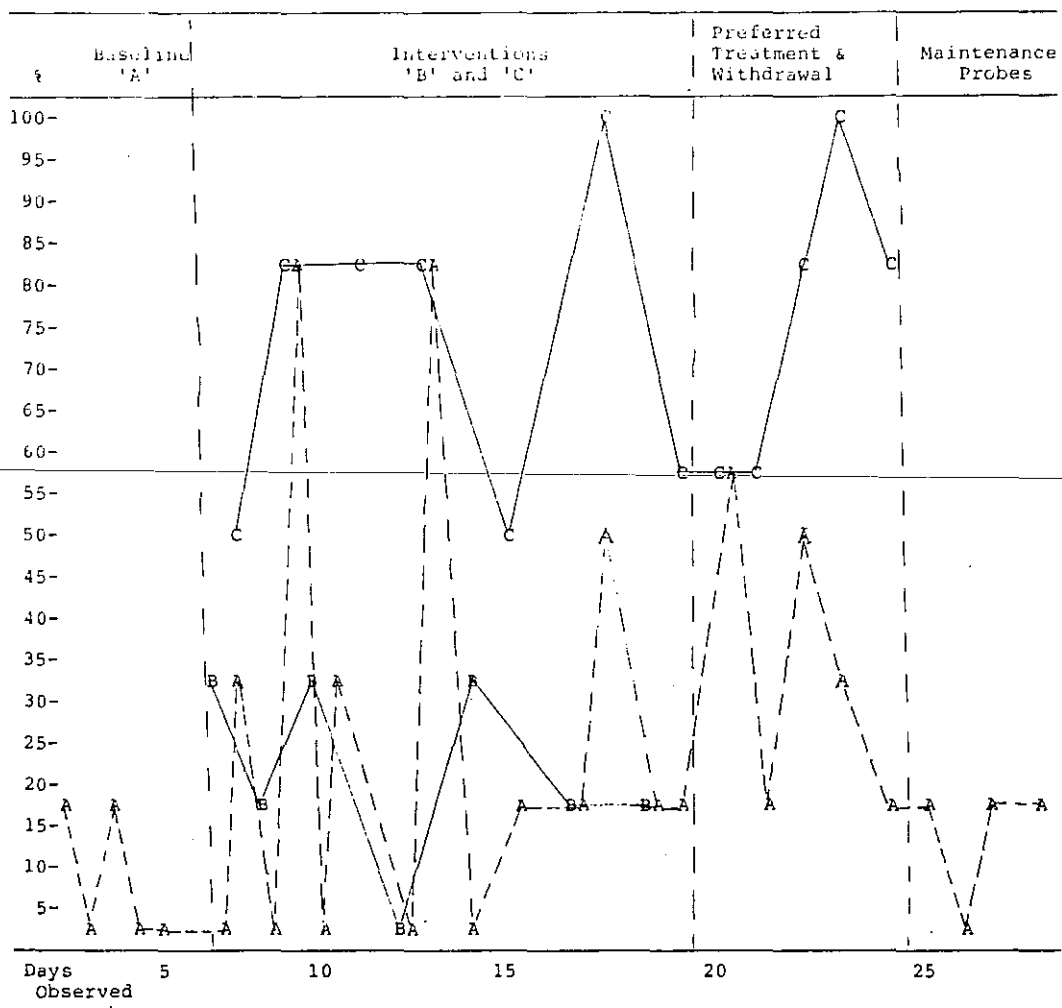
There will be no difference between peer administered contingent reinforcement and the use of play materials that facilitate interaction in their effect on social interaction between young handicapped and nonhandicapped children.

The null hypothesis was not supported by the results of the study. Student #1 showed a marked preference for Treatment C, the use of play materials that facilitate interaction. (see Figure 2.)

Interaction responses for Treatment C ranged from a low of 50% to a high of 100% while interactions for Treatment B, peer administered contingent reinforcement showed a low of 0% and a high of 33%. The mean interaction for Treatment C was 74% and for Treatment B only 19%. (see Table 3.)

Student #2 also showed a preference for Treatment C, but the results were less clearly defined than those of Student #1. Interaction responses for Treatment C ranged from a low of 50% to a high of 100%. The initial

Figure 2: Student #1 - Percentage of responses



Key: A = Baseline; B = Contingent Reinforcement; C = Interactive Play Materials

Table 2

Adaptive Behavior Scale Pertinent Socialization Scores for Peer Helpers

(Lambert, Windmiller, Tharinger, & Cole, 1981)

Pertinent Socialization	Peer Helper #1	Peer Helper #2	Peer Helper #3
Language Development	26	32	32
Self Direction	18	18	17
Responsibility	4	5	4
Socialization	23	24	19
Aggressiveness	0	0	0
Antisocial vs. Social Behavior	2	1	0
Rebelliosness	0	0	2
Trustworthiness	0	0	0
Withdrawal vs. Involvement	0	0	0
Total	73	80	74

Table 3

Child-Child Interaction: A Comparison of Treatments and Generalization: Student #1

Day	Treatment 'B'		Generalization		Treatment 'C'		Generalization	
	Rate	Percentage	Rate	Percentage	Rate	Percentage	Rate	Percentage
1	2	33.0%	0	0.0%	3	50.0%	2	33.0%
2	1	17.0%	0	0.0%	5	83.0%	5	83.0%
3	0	0.0%	3	50.0%	5	83.0%	2	33.0%
4	0	0.0%	0	0.0%	5	83.0%	5	83.0%
5	3	50.0%	0	0.0%	3	50.0%	1	17.0%
6	1	17.0%	1	17.0%	6	100.0%	3	50.0%
7	1	17.0%	1	17.0%	4	67.0%	1	17.0%
Total Interactions	8		5		31		19	
Mean	1	19.0%	.71	12.0%	4	74.0%	3	45.0%

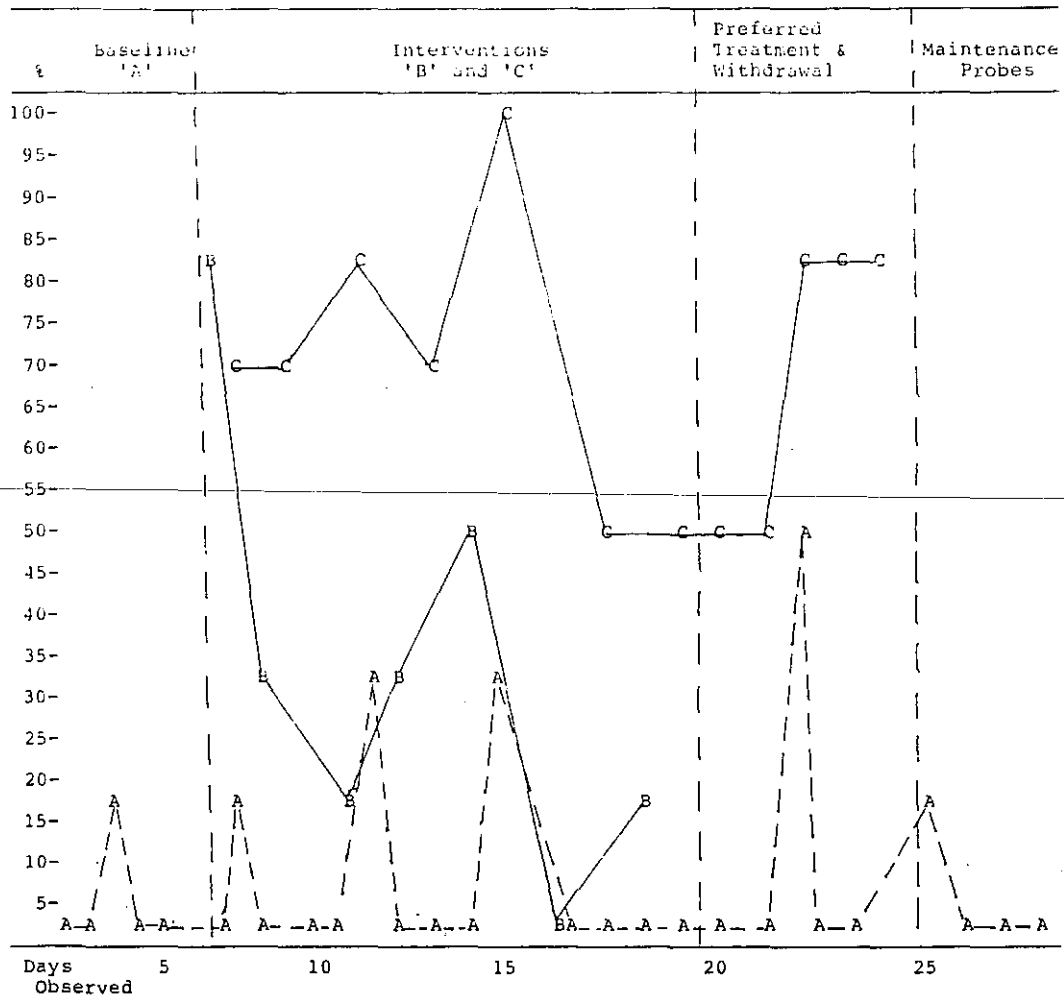
response to Treatment B was 83%, but scores after that ranged from 0% to 1 day of 50%. (see Figure 3.) Preference for Treatment C is more clearly shown in the mean percentages found in Table 4. Interaction was at 74% for Treatment C and at 33% for Treatment B. (see Table 4.)

There was some overlap in the results for Student #3, but a preference for Treatment C was still clear. (see Figure 4.) The range for Treatment C was from 50% to 83%. Treatment B ranged from 0% to 50%. The mean percentage for Treatment C was 64% and was 28% for Treatment B. (see Table 5.)

Table 6 shows the total mean percentages for all 3 students combined. The mean total for Treatment C was 71%. ~~The mean total for Treatment B was 27%. While a~~ preference for Treatment C was established by the data, some overlap in the results for Students #2 and #3 might confound claims of experimental control.

To help clarify the results, an independent t-test was used to establish statistical significance. (see Table 7.) Due to the small number of cases under examination, statistical methods are used only as an addition to graphic analysis. A probability level of .10 was chosen for the critical value of t. With the small degree of freedom used (2), a substantial difference between treatments needed to exist in order

Figure 3: Student #2 - Percentage of Responses



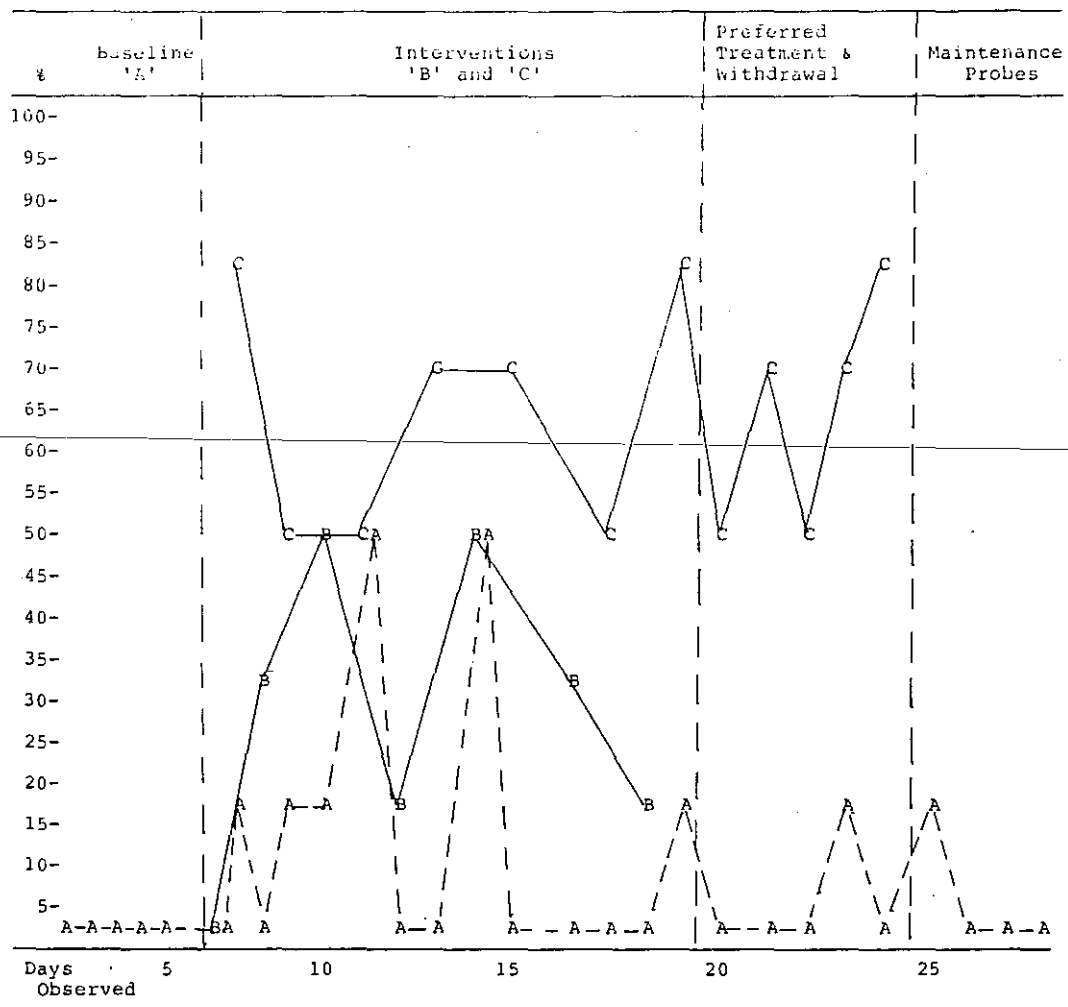
Key: A = Baseline; B = Contingent Reinforcement; C = Interactive Play Materials

Table 4

Child-Child Interaction: A Comparison of Treatments and Generalization: Student #2

Day	Treatment 'B'		Generalization		Treatment 'C'		Generalization	
	Rate	Percentage	Rate	Percentage	Rate	Percentage	Rate	Percentage
1	5	83.0%	0	0.0%	4	67.0%	1	17.0%
2	2	33.0%	0	0.0%	4	67.0%	0	0.0%
3	1	17.0%	0	0.0%	5	83.0%	2	33.0%
4	2	33.0%	0	0.0%	4	67.0%	0	0.0%
5	3	50.0%	0	0.0%	6	100.0%	2	33.0%
6	0	0.0%	0	0.0%	3	50.0%	0	0.0%
7	1	17.0%	0	0.0%	3	50.0%	0	0.0%
Total Inter- actions	14		0		29		5	
Mean	2	33.0%	0	0.0%	4	74.0%	.71	12.0%

Figure 4: Student #3 - Percentage of Responses



Key: A = Baseline; B = Contingent Reinforcement; C = Interactive Play Materials

Table 5

Child-Child Interaction: A Comparison of Treatments and Generalization: Student #3

Day	Treatment 'B'		Generalization		Treatment 'C'		Generalization	
	Rate	Percentage	Rate	Percentage	Rate	Percentage	Rate	Percentage
1	0	0.0%	0	0.0%	5	83.0%	1	17.0%
2	2	33.0%	0	0.0%	3	50.0%	1	17.0%
3	3	50.0%	1	17.0%	3	50.0%	3	50.0%
4	1	17.0%	0	0.0%	4	67.0%	0	0.0%
5	3	50.0%	3	50.0%	4	67.0%	0	0.0%
6	2	33.0%	0	0.0%	3	50.0%	0	0.0%
7	1	17.0%	0	0.0%	5	83.0%	1	17.0%
Total Interactions	12		4		27		6	
Mean	2	28.0%	.57	9.0%	4	64.0%	.86	14.0%

Table 6

Child-Child Interaction: A Comparison of Treatments and Generalization: Mean Totals for Students #1, #2, and #3

	Baseline	Treatment 'B'	Generalization	Treatment 'C'	Generalization	Maintenance
Student #1	7.0%	19.0%	12.0%	74.0%	45.0%	13.0%
Student #2	3.0%	33.0%	0.0%	74.0%	12.0%	4.0%
Student #3	0.0%	28.0%	9.0%	64.0%	14.0%	4.0%
Total Means	3.0%	27.0%	7.0%	71.0%	24.0%	7.0%

Table 7

Child-Child Interaction: Independent t-Test Comparisons
of Treatments B and C

Variable	Number of Cases	<u>t</u> Value	2-Tail Prob.
B	3	-7.74*	0.016
C			

*p < .10

for statistical significance to be established. The t value was calculated at -7.74 which was well above the significance range at the .10 level. Two-tailed probability was 0.016. This helped to ascertain the rejection of Null Hypothesis 1 and supported the preference for Treatment C, the use of play materials that facilitate interaction.

Hypothesis Number 2

There will be no difference between peer administered contingent reinforcement and the use of play materials that facilitate interaction in their effect on generalization of social interaction between handicapped and nonhandicapped peers.

Student #1 continued to interact at a higher percentage rate after Treatment C, the use of play materials that facilitate interaction, than she did after Treatment B, peer administered contingent reinforcement. Interaction after Treatment C ranged from a low of 17% to a high of 83%. Interaction after Treatment B ranged from 0% to 50%. The mean interaction level for generalization following Treatment C was 45% while the mean interaction following Treatment B was only 12%. The data indicate stronger generalization of social interactive behaviors following the application of Treatment C, thus refuting Null Hypothesis 2. (see Figure 2 and Table 3.)

The social interaction behaviors of Student #2 did not generalize as well as those of Student #1. She showed slightly higher generalization levels after Treatment C. The generalization range after Treatment C was from 0% to 33%. The generalization range after Treatment B stayed at 0%. The mean interaction level following Treatment C was 12% while interaction following Treatment B was 0%. It was difficult, in this case, to establish experimental control through visual inspection of the data. In the case of Student #2 the results were not strong enough to refute Null Hypothesis 2. (see Figure 3 and Table 4.)

Student #3 showed slightly more generalization than did Student #2, but indicated little preference for play following either Treatment B or C. Interaction levels following Treatment C ranged from 0% to 50%. Interaction levels following Treatment B ranged from 0% to 17%. The mean generalization rate for Treatment C was 14% and was 9% for Treatment B. Again, experimental control was difficult to establish. (see Figure 4 and Table 5.)

Table 6 shows the total mean levels of interaction for Students #1, #2 and #3. Generalization of social interaction behaviors following Treatment C was 24% and was at a level of 7% following Treatment B.

Due to the difficulty in establishing experimental control, an independent t-test was administered in order to help either support or refute Null Hypothesis 2. (see Table 8.) The t value was calculated at -1.98. This was not found to be significant at the .10 level. Therefore, while there was a more positive trend toward interaction in Treatment C than in Treatment B, there was not enough difference to refute the null hypothesis.

Hypothesis 3

It is hypothesized that if one method proves more effective than the other, it can be implemented on a regular basis, placed on a leaner schedule and then

Table 8

Child-Child Interaction: Independent t-Test Comparisons
of Generalization Following Treatments B and C

Variable	Number of Cases	t Value	2-Tail Prob.
General- ization B	3	-0.198	0.186
General- ization C			

*p .10

withdrawn without affecting the gains in social interaction.

Student #1 did not maintain an active interaction level after Treatment C was withdrawn. Her mean baseline level of interaction was 7% and her maintenance level went back down to 13%. Her mean generalization rate during the withdrawal phase of Treatment C was 37%. This indicates that independent interaction behavior was already on the decline during the withdrawal phase of the study. (see Table 9.)

Student #2 also did not maintain an active interaction level after Treatment C was withdrawn. Her mean baseline level of interaction was 3% and her

Table 9

Child-Child Interaction: Mean Interaction Percentages
for Students #1, #2 and #3 During Baseline, Withdrawal
Generalization and Maintenance

	Baseline	Gen. During Withdrawal	Maintenance
Student #1	7.0%	37.0%	13.0%
Student #2	3.0%	10.0%	4.0%
Student #3	0.0%	4.0%	3.0%
Mean Totals	3.0%	17.0%	7.0%

maintenance level went back down to 4%. Her mean generalization following Treatment C was 10%. (see Table 9.)

Student #3 repeated the pattern. Her mean baseline level of interaction went back down to 4%. Her mean generalization during the withdrawal phase of Treatment C was only 3%. (see Table 9.)

Clearly, Hypothesis 3 was rejected. The treatment effects were not maintained and relatively little generalization occurred during the withdrawal phase.

Supplemental Analyses

The original findings led to further questions concerning the support or rejection of the hypotheses. Two further questions based on the data collected were explored. Both questions dealt with the relationship between play attempts by the peer "helper" and the number of actual interactions. Question number one addressed the relationship between play attempts and interaction and question number two explored the nature of the success of Treatment C, the use of play materials that facilitate interaction.

Before the supplemental analysis was conducted, an interobserver reliability rate was calculated based on the number of play attempts coded by each observer. The ~~point-by-point~~ method was again used. The range of agreement was from 55% to 100%. The mean was 79%, the median 80% and the mode 100%. While the mean was one percentage point below the criterion level for the main body of research, it was considered to be high enough to give value to a supplemental exploration.

Question 1

Is there a relationship between play attempts by the peer "helper" and the number of social interactions that occur between the "helper" and his/her handicapped friend?

A larger number of play attempts on the part of the peer "helper" did seem to elicit a greater number of interaction responses on an overall basis. This pattern was inconsistent for all 3 students. (see Tables 10-13.) The results of a Pearson's correlation coefficient showed a slight positive relationship between play attempts and interactions. Caution is again expressed over the statistical results when a small number of subjects are used. Play attempts during Treatment B showed a $p = .041$ correlation to interactions and Treatment C showed a $p = .019$ correlation.

Question 2

Is there a large enough difference between play attempts in Treatments B and C to account for the greater number of interactions in Treatment C?

The mean totals for play attempts and interactions in Treatments B and C showed respective ratios of 5:2 for Treatment B and 6:4 for Treatment C. (see Table 13.) An independent t -test showed no significant difference in play attempts between Treatments B and C. (see Table 14.) It would seem that while Treatment C showed more play attempts than Treatment B, the difference was not large enough to account for the success of Treatment C.

Table 10

Peer "Helper" Play Attempts and Interaction: Student #1

Day	Play Attempts Treatment 'B'	Percent- age of Inter- actions	Play Attempts Generalization	Percent- age of Inter- actions	Play Attempts Treatment 'C'	Percent- age of Inter- actions	Play Attempts Generalization	Percent- age of Inter- action
1	6	2.0%	2	0.0%	5	3.0%	4	2.0%
2	6	1.0%	0	0.0%	10	5.0%	3	5.0%
3	5	0.0%	0	3.0%	8	5.0%	2	2.0%
4	5	0.0%	1	0.0%	6	5.0%	0	5.0%
5	8	3.0%	3	0.0%	5	3.0%	0	1.0%
6	6	1.0%	2	1.0%	11	6.0%	2	3.0%
7	6	1.0%	1	1.0%	7	4.0%	5	1.0%
Totals	42	8.0%	9	5.0%	52	31.0%	16	19.0%
Means	6	1.0%	1	.71%	7	4.0%	2	3.0%

Table 11

Peer "Helper" Play Attempts and Interaction: Student #2

Day	Play Attempts Treatment 'B'	Percent- age of Inter- actions	Play Attempts Generalization	Percent- age of Inter- actions	Play Attempts Treatment 'C'	Percent- age of Inter- actions	Play Attempts Generalization	Percent- age of Inter- action
1	6	5.0%	0	0.0%	6	4.0%	1	1.0%
2	5	2.0%	0	0.0%	6	4.0%	1	0.0%
3	5	1.0%	3	0.0%	8	5.0%	0	2.0%
4	5	2.0%	2	0.0%	7	4.0%	4	0.0%
5	5	3.0%	2	0.0%	5	6.0%	1	2.0%
6	5	0.0%	0	0.0%	5	3.0%	2	0.0%
7	5	1.0%	0	0.0%	6	3.0%	4	0.0%
Totals	36	14.0%	7	0.0%	43	29.0%	13	5.0%
Means	5	2.0%	1	0.0%	6	4.0%	2	.71%

Table 12

Peer "Helper" Play Attempts and Interaction: Student #3

Day	Play Attempts Treatment 'B'	Percent- age of Inter- actions	Play Attempts Generalization	Percent- age of Inter- actions	Play Attempts Treatment 'C'	Percent- age of Inter- actions	Play Attempts Generalization	Percent- age of Inter- action
1	5	0.0%	0	0.0%	5	5.0%	0	1.0%
2	5	2.0%	0	0.0%	6	3.0%	0	1.0%
3	5	3.0%	0	1.0%	6	3.0%	0	3.0%
4	5	1.0%	0	0.0%	7	4.0%	0	0.0%
5	6	3.0%	0	3.0%	8	4.0%	2	0.0%
6	5	2.0%	3	0.0%	6	3.0%	1	0.0%
7	5	1.0%	1	0.0%	5	5.0%	2	1.0%
Totals	36	12.0%	4	4.0%	43	27.0%	5	6.0%
Means	5	2.0%	.57	.57%	6	4.0%	.71	.86%

Table 13

Peer "Helper" Play Attempts and Interaction Mean Totals for Students #1, #2 and #3

Student	Play Attempts Treatment 'B'	Percentage of Interactions	Play Attempts Generalization	Percentage of Interactions	Play Attempts Treatment 'C'	Percentage of Interactions	Play Attempts Generalization	Percentage of Interactions
1	6	1.0%	1.0	.71%	7	4.0%	2.0	3.0%
2	5	2.0%	1.0	0.0%	6	4.0%	2.0	.71%
3	5	2.0%	.57	.57%	6	4.0%	.71	.86%
Total Rate	5	2.0%	.86	.43%	6	4.0%	2.0	1.0%
Total Means	16	5.0%	2.57	1.28%	19	12.0%	4.71	4.57%

Table 14
Independent t Test Comparisons of Play Attempts During
Treatments B and C

Variable	Number of Cases	<u>t</u> Value	2-Tail Prob.
Play Attempts B	3	-2.12	0.101
Play Attempts C			

*p < .10

Summary

Null Hypothesis 1 was found to be untenable. All 3 students showed a much higher social interaction level when they were engaged in the use of play materials that facilitate interaction (C) as opposed to interaction levels during the use of peer administered contingent reinforcement. While there was an upward trend in social interaction during generalization upon cessation of Treatments B or C, there was not a significant difference in generalization after particular treatments. Treatment C showed a higher level of generalization, but not enough to refute Null Hypotheses

2. The results, therefore, support the second hypothesis. The treatment effects were not maintained, thus refuting Directional Hypothesis 3. When Treatment C was withdrawn, and no treatment was continued with the students, the interaction levels went back to only slightly above baseline.

There was a slight positive correlation between play attempts by the peer "helpers" and actual social interactions. Treatment C showed less of a correlation than did Treatment B; in fact, there was not a significant difference between the number of play attempts in Treatments B and C. The results of the supplemental analysis points to the success of Treatment C as not being dependent on an increased number of play attempts.

Overall, it can be stated that the use of play materials that facilitate interaction was highly successful as a tool for increasing the social interaction between nonhandicapped peer "helpers" and their handicapped friends. The treatment, however, did not induce generalized social interaction at a significantly high level and did not maintain over time after withdrawal of the treatment phase.

Chapter 5

Summary and Discussion

The closing chapter of the study provides a brief overview of the problem under discussion and its relationship to the study results. The results are also discussed in light of previous research. Also of importance in this chapter are the practical implications and suggestions for future research.

The social interaction of young handicapped and nonhandicapped children has been shown to be beneficial. Handicapped children seem to benefit from exposure to more sophisticated, complex, and appropriate role modeling. Nonhandicapped children gain a greater comfort level with the handicapped and learn to understand that others can be different from themselves. There has, however, been a problem with the social isolation of young handicapped children.

While research in the area of socialization in mainstreamed preschools has been fairly extensive, this study focused on the use of nonhandicapped peers as agents in the socialization process of handicapped children. Generalization of skills has been shown to be greater when peers rather than adults were responsible

for administering treatment. Many peer administered methods have been shown to be effective.

The purpose of this study was to compare the use of peer administered contingent reinforcement for social interaction with the use of play materials that facilitate interaction. The subsequent effects on the social interaction of mainstreamed handicapped children with their nonhandicapped peers was examined.

A single-subject research design was developed for examining the relationships between the variables. Two intervention techniques were compared through the use of an alternating treatment design. Baseline data was recorded before and during the alternating treatment phase. The two treatments, peer administered contingent reinforcement (B) and the use of play materials that facilitate interaction (C) were introduced in alternating order. Treatment C, the use of play materials that facilitate interaction was more successful than was Treatment B. It was implemented on a less frequent basis and then completely withdrawn. Maintenance probes were continued once a week for one month.

The treatment phase of the study employed the use of nonhandicapped peer "helpers" who were trained to initiate play. The "helpers" were randomly assigned to a handicapped peer and served as the intervention agents

for both treatments. The interaction levels of the handicapped children were recorded as were the play initiating behaviors of the trained peer "helpers."

Discussion of the Results

Hypothesis Number 1

The use of play materials that facilitate interaction (C) was shown to be more effective in eliciting social interactive behaviors in handicapped children than was the use of peer administered contingent reinforcement (B). This was the case for all 3 children studied. Ball games as vehicles for interactive play seemed to mesh well with the natural play styles of the children. Young children seem to concentrate well when playing with materials that are manipulative and that encourage physical activity (Burstein, 1982.) The fact that the ball games gave the peer "helpers" something concrete to do with their handicapped friends seemed to give the "helpers" more direction than did the instructions to, "play with your friends," found in Treatment B. The concrete, physical nature of the ball games, however, may have fit more easily the definition of child-child interaction than play behaviors elicited in Treatment B, thus confounding the results. Coding errors might have included counting simple ball throwing as interaction and not counting

more subtle glances or attention involvement possibly found in Treatment B.

Another possible contribution to the success of Treatment C can be found in the universal nature of ball games. The handicapped children in the study had all had previous experience with balls. It is possible that this previous, successful experience allowed the children to play and interact with more confidence and interest. The structure of simple ball games in dyad play was appropriate to the cognitive level of the handicapped children and yet remained interesting to the nonhandicapped peer "helpers". The results of this study helped to corroborate the findings (Hendrickson, et al., 1981; Strain & Powell, 1982) that interactive toys, in this case balls, facilitate social interaction.

Hypothesis Number 2

The results for Hypothesis number two were more difficult to interpret. The generalization behaviors of Student #1 were clearly higher after Treatment C than they were after Treatment B. Students #2 and #3 showed poor generalization after both methods B and C. A closer look at the individuals may contribute a subjective view for the difference in generalization.

Student #1 began with a slightly higher baseline rate than did Students #2 and #3. She also was

considered to be slightly less delayed than the other 2 students. Previous research has indicated that children with more mild or moderate mental handicaps tend to interact more and are more easily influenced by their peers than are children with more severe handicaps (Blacher-Dixon, 1981; Guralnick, 1980; Strain & Kerr, 1981.)

Another contributing factor to the lower rates of generalization behaviors for Students #2 and #3 may be specific characteristics or disabilities mentioned in their profiles. Student #2 was noted as showing passive behavior as a result of Prader-Willi syndrome. Student #3 was noted as having a sensory disturbance which may have contributed to a general disregard for activities in her environment. Whether the characteristics of the handicapped students contributed to the number of play attempts on the part of the peer "helpers" is not known. It should be noted that the peer "helpers" for Students #2 and #3 showed fewer play attempts than did the "helper" for Student #1.

Hypothesis Number 3

Hypothesis number three was refuted by the results of the study. None of the handicapped children maintained high levels of interaction after treatment was withdrawn. Several previous studies (Hendrickson,

et al., 1982; Johnston & Johnston, 1972; Nordquist, 1974; Nordquist & Bradley, 1973) pointed to a greater generalization level after the use of peer administered methods than after adult administered methods. Wanlass & Prinz (1982), however, stated that most methods failed to demonstrate durability of treatment effects.

Two drawbacks found in the structure of the study may have contributed to the relatively low generalization levels in Students #2 and #3 as well as to the lack of maintenance in all 3 students. The first problem concerns the length of the study. As Casto and Mastropieri found in their 1986 meta-analysis, the intensity and the duration of treatment were key factors in the effectiveness of treatment. The relatively short duration of the study and the limited daily treatment time may not have provided enough time for non-treatment and long term effects to materialize.

The second factor concerns the level of mainstreaming that was involved. There are many levels of mainstreaming. Definitions have not specified the amount of integration that is necessary in order for a handicapped child to be considered mainstreamed. The handicapped children in this study were not full-time classmates of their peer "helpers." It may be that limited exposure contributed to the lack of ongoing interaction.

Implications

The outcome of the study contributes, in a practical sense, to helping increase social interaction between handicapped and nonhandicapped preschool children. The use of play materials that facilitate interaction, in this case ball games, can be easily integrated into any preschool program. In most cases, teachers would merely need to emphasize interaction and possibly add more interactive structure to existing activities. It might also be advantageous, in light of the study results, to integrate such activities on an ongoing basis rather than to view them as a separate treatment.

The behavior of the nonhandicapped children who were not involved in the study suggested that the peer training package might be successfully implemented on a class-wide basis. The social behaviors of play organizer, sharing and assistance can be useful skills for any child to master. The children who were not involved in the study began, quickly, to imitate the trained behaviors of the peer "helpers." The expectation of reinforcement may have prompted this behavior, but, most likely, did not contribute to its continuation. Class members might alternate being a

"special helper" for the game in order to help widen the circle of friends available to handicapped children.

Full-time mainstreaming might also contribute to more socialization between handicapped and nonhandicapped children. The implementation of a social skills training program and the use of interactive toys could be maintained for longer periods of time in such a situation. Full mainstreaming is quite often the case in many preschools such as Headstart. The implementation of the aforementioned techniques could be easily attained in programs that already use other methods to nurture social interaction.

Recommendations for Further Research

This study focused on comparing two strategies for increasing social interaction between young handicapped and nonhandicapped children. Both peer administered contingent reinforcement and the use of play materials that facilitate interaction have been shown, in previous research, to be effective. Based on the results of this study, which showed that ball games were highly effective in increasing interaction, further research could examine the effects of other types of interactive games and toys.

An issue that was pointed out in the supplemental analyses could also be examined more closely. While the

number of play attempts was correlated with the number of interactions, it was shown that increased play attempts were not entirely responsible for the success of the ball games. The exploration of the relationship between peer "helper" training and the use of interactive toys might lead to an emphasis or deemphasis on peer training.

A broader issue, brought to the forefront by a limitation of the study, was that of the amount of mainstreaming that handicapped children experience. Levels of social interaction could well be related to the perceived "belonging" to the class of a handicapped child. Attempts at social interaction both on the part of the handicapped and nonhandicapped children might change in relation to levels of mainstreaming.

The overall results of the study have helped contribute to the evidence that the social isolation of handicapped children in mainstreamed preschools can be combated. The use of trained nonhandicapped peers as agents for increasing social interaction through the use of play materials that facilitate interaction has proven successful. The method can be applied in most preschool and kindergarten situations with little change in the existing programs.

References

- Allen, K. E. (1980). Mainstreaming: What have we learned. Young Children, 35(5), 54-63.
- Allen, V. L. (1976). Young children as teachers. New York: Academic Press, Inc.
- Blacher-Dixon, J., Leonard, J., & Turnbull, A. P. (1981). Mainstreaming at the early childhood level: Current and future perspectives. Mental Retardation, 19, 235-240.
- Blacher, J., & Turnbull, A. (1982). Teacher and Parent perspectives on selected social aspects of preschool mainstreaming. The Exceptional Child, 29(3), 191-199.
- ~~Berg, W. R. & Gall, M.D. (1983). Educational research an introduction. New York: Longman Inc.~~
- Brackett, D., & Henniges, M. (1976). Communicative interaction of preschool hearing impaired children in an integrated setting. The Volta Review, 78, 276-285.
- Brandt, R. M. (1972). Studying behavior in natural settings. New York: Holt, Reinhart & Winston, Inc.

- Bricker, D. D. (1978). A rationale for the integration of handicapped and nonhandicapped preschool children. In M. J. Guralnick (Ed.). Early intervention and the integration of handicapped and nonhandicapped children. Baltimore: University Park Press.
- Buckholdt, D. R. (1974). The effects of different reinforcement systems on cooperative behaviors exhibited by children in classroom contexts. Paper presented at the Annual Meeting of the American Psychological Association - National Institute of Mental Health. Washington, D.C.
- Bueche, N. A. (1980). Preschoolers as teachers: Where children are seen but not heard. Child Study Journal, 10(2), 107-118.
- Burgess, J. L. (1980). The effects of age, gender and developmental status on social integration patterns in early childhood classrooms. Pennsylvania State University, College of Human Development.
- Burstein, N. D. (1982). The effects of classroom organization on preschool handicapped and nonhandicapped children's experiences in mainstreamed settings. Unpublished doctoral dissertation, University of California, Los Angeles.

- Burstein, N. D. (1986). The effects of classroom organization on mainstreamed preschool children. Exceptional Children, 52(5), 425-434.
- Casto, G., & Mastropieri, M. A. (1986). The efficacy of early intervention programs: A meta-analysis. Exceptional Children, 52(5), 417-424.
- Christopherson, J. (1972). The special child in the regular preschool: Some administrative notes. Childhood Education, 49(3), 138-140.
- Clark, E. T. (1964). Children's perceptions of educable mentally retarded children. American Journal of Mental Deficiency, 68(5), 602-611.
- Cohen, S., Semmes, M., & Guralnick, M. J. (1979). Public Law 94-142 and the education of preschool handicapped children. Exceptional Children, 45 279-285.
- Cole, D. A. (1986). Facilitating play in children's peer relationships: Are we having fun yet? American Education Research Journal, 23, 201-215.
- Cooke, T., Apolloni, T., & Cooke, S. (1977). Normal preschool children as behavioral models for retarded peers. Exceptional Children, 43(8), 521-532.
- Devin-Sheehan, L., & Allen, V. L. (1976). Children tutoring children. In V. L. Allen (Ed.). Young children as teachers, New York: Academic Press, Inc.

- Devoney, C., Guralnick, M., & Rabin, H. (1974).
Integrating handicapped and nonhandicapped preschool
children: Effects of social play. Childhood
Education, 50(6), 360-364.
- Dickerson, M. G., & Davis, M. D. (1981). The
developmental approach: A successful way to
mainstream the young child. Childhood Education,
58, 8-13.
- Dunlop, K., Stoneman, Z., & Cantrell, M. (1980).
Social interaction of exceptional and other children
in a mainstreamed preschool classroom. Exceptional
Children, 47(2), 132-141.
- Federlein, A. C. (1981). Play in preschool
mainstreamed and handicapped settings. Saratoga,
CA: Twenty One Publishing.
- Furman, W., Rahe, D. F., & Hartup, W. W. (1979).
Rehabilitation of socially withdrawn preschool
children through mixed-age and same-age
socialization. Child Development, 50, 915-922.
- Gartner, A., Kohler, M., & Riessman, F. (1971).
Children teach children. New York: Harper and Row.
- Gerber, P. J. (1977). Awareness of handicapping
conditions and sociometric status in an integrated
preschool setting. Mental Retardation, 15, 24-25.

- Guralnick, M. J. (1976). The value of integrating handicapped and nonhandicapped preschool children. American Journal of Orthopsychiatry, 46, 236-245.
- Guralnick, M. J. (1980). Early interaction among preschool children. Exceptional Children, 46(4), 248-253.
- Hamblin, J. A., & Hamblin, R. L. (1972). On teaching disadvantaged preschoolers to read: A successful experiment. American Educational Research Journal, 9(2), 209-216.
- Hart, B. M., Reynolds, N. J., Baer, D. M., Brawley, E. R., & Harris, F. R. (1968). Effect of contingent and non-contingent social reinforcement on the cooperative play of a preschool child. Journal of Applied Behavior Analysis, 1, 73-76.
- Hart, C. H. & Sheehan, R. (1986). Preschooler's play behavior in outdoor environments; Effects of traditional and contemporary playgrounds. American Education Research Journal, 23, 668-678.
- Hartup, W. W. (1964). Friendship status and the effectiveness of peers as reinforcing agents. Journal of Experimental Child Psychology, 1, 154-162.

- Hartup, W. W. (1978). Peer interaction and the process of socialization. In M. J. Guralnick (Ed.) Early intervention and the integration of handicapped and nonhandicapped children. Baltimore: University Park Press.
- Hendrickson, J. M., Strain, P. S., Tremblay, A., & Shores, R. E. (1981). Relationship between toy and material use and the occurrence of social interactive behaviors of normally developing preschool children. Psychology in the Schools, 18(4), 500-504.
- Hendrickson, J. M., Strain, P. S., Tremblay, A., & Shores, R. E. (1982). Interactions of behaviorally handicapped children: Functional effects of peer social interactions. Behavior Modification, 6(3), 323-353.
- Herink, N. (1980). Results of mainstreaming on social interaction of mentally retarded preschoolers. Paper presented at the Annual International Convention of the Council for Exceptional Children. Philadelphia, PA.
- Horne, B. M. & Philleo, L. L. (1976). A comparative study of the spontaneous play activities of normal and mentally defective children. In J. S. Bruner, A. Jolly & K. Sylva (Eds.) Play, its role in development and evolution. New York: Basic Books.

- Ispa, J., & Matz, R. D. (1978). Integrating handicapped preschool children within a cognitively oriented program. In M. J. Guralnick (Ed.), Early intervention and the integration of handicapped and nonhandicapped children. Baltimore: University Park Press.
- Johnston, J. M., & Johnston, G. T. (1972). Modification of consonant speech-sound articulation in young children. Journal of Applied Behavior Analysis, 5, 233-246.
- Jones, C. L., Jarrett, O. S. & Quay, L. C. (1984). Play materials and social behaviors of handicapped and nonhandicapped preschoolers. Academic Psychology Bulletin, 6(3), 309-319.
- Jones, R. L., & Sisk, D. A. (1967). Early perceptions of orthopedic disability. Exceptional Children, 34, 42-44.
- Kazdin, A. E. (1982). Single-case research designs: Methods for clinical and applied settings. New York: Oxford University Press.
- Keislar, E. R., & Blumenfeld, P. (1972). A peer tutoring game for four-year-olds. Unpublished manuscript, University of California, Los Angeles, Early Childhood Research Center.

- Kerr, M. M., & Strain, P. S. (1978). The use of peer social initiation strategies to improve the social skills of withdrawn children. Paper presented at the World Congress in Future Special Education, First Stirling, Scotland.
- Klein, J. W. (1975). Mainstreaming the preschooler. Young Children, 30(5), 317-326.
- Klein, J. W., & Randolph, L. A. (1973). Placing handicapped children in head start programs. Children Today, 3(6), 7-10/36.
- Lambert, N., Windmiller, M., Tharinger, D. & Cole, L. (1981). The American Association on Mental Deficiency's Adaptive Behavior Scale, School Edition. Monterey, CA. Publishers Test Service, McGraw Hill.
- Lerner, J. (1981). Serving the early childhood years. In, J. Lerner (Ed.). Learning disabilities - theories, diagnosis, & teaching strategies. Boston: Houghton Mifflin Company.
- Levitt, E., & Cohen, S. (1976). Attitudes of children toward their handicapped peers. Childhood Education, 52, 1971-1973.
- Lynch, E. W., & Simms, B. H. (1978). Mainstreaming preschoolers: Children with mental retardation. Belmont, Mass: Contract Research Corporation.

- McEvoy, A. (1986). Using affective activities' to develop interaction. Division for Early Childhood Communicator, 13(2), 1.
- McKeene, C., Hops, H., & Walker, H. (1972). Peer interaction rate, classroom activity and teaching style. Unpublished manuscript, University of Oregon, Eugene. Center at Oregon for Research in the Behavioral Education of the Handicapped. Bureau of Education for the Handicapped, Washington, D.C.
- McLoughlin, J., & Kershman, S. (1979). Mainstreaming in early childhood, strategies and resources. Young Children, 34(4), 54-66.
- Meisels, S. J. (1977). First steps in mainstreaming: Some questions and answers. Young Children, 33(1), 4-13.
- Nietupski, J. (1983). Effects of socially outgoing versus withdrawn nonhandicapped peer partners on nonhandicapped/handicapped student interactions. Behavioral Disorders, 8(4), 244-250.
- Nordquist, V. M. (1974). Naturalistic treatment of childhood autism. Final Progress Report, #MH 21100-01, 1 R03. Washington, D.C.: National Institute of Mental Health.
- Nordquist, V. M., & Bradley, B. (1973). Speech acquisition in a nonverbal isolate child. Journal of Experimental Child Psychology, 15, 149-160.

- Odom, S. L., Strain, P. S., Karger, M. A., & Smith, J. D. (1986). Using single and multiple peers to promote social interaction of preschool children with handicaps. Early Childhood, 10(1), 53-64.
- Paloutzian, R. F., Hasazi, J., Streifel, J., & Edgar, C. L. (1971). Promotion of positive social interaction in severely retarded young children. American Journal of Mental Deficiency, 75(4), 519-524.
- Peck, C. A., Apolloni, T., Cooke, T. P., & Raver, S. (1978). Teaching retarded preschoolers to imitate the free play behavior of non-retarded classmates: Trained and generalized effects. Journal of Special Education, 12, 195-207.
-
- ~~Peterson, N. L., & Haralick, J. G. (1977).~~
Integration of handicapped and nonhandicapped preschoolers: An analysis of play behavior and social interaction. Education and Training of the Mentally Retarded, 12(3), 235-245.
- Peterson, C., Peterson, J., & Scriven, G. (1977). Peer imitation by nonhandicapped preschoolers. Exceptional Children, 43(4), 223-225.
- Platt, N., & Cook, N. (1976). Celebrating the similarities. Pointer, 20(3), 10-16.

- Poling, A. (1976). The effects of particular toys on the social play of preschool children. Mental Retardation Bulletin, 4(2), 85-93.
- Quay, L. C., Weaver, J. H., Neel, J. H. (1986). The effects of play materials on positive and negative social behavior in preschool boys and girls. Child Study Journal, 16(1), 67-76.
- Quilitch, H. R. & Risley, T. R. (1973). The effects of play materials on social play. Journal of Applied Behavior Analysis, 6(4), 573-578.
- Raver, S. A. (1979). Preschool integration: Experiences from the classroom. Teaching Exceptional Children, 12(1), 22-26.
- Robson, S. D., Lipshutz, S. A., & Jason, L. A. (1980). ~~Altering sharing behaviors through stimulus control.~~ Psychological record, 30(4), 547-552.
- Sailor, W. & Guess, D. (1983). Severely handicapped students. Boston: Houghton Mifflin Company.
- Severy, L. J., & Keith, E. S. (1971). Helping behavior among normal and retarded children. Child Development, 42, 1017-1031.
- Shores, R. E., Hester, P., & Strain, P. S. (1976). The effects of amount and type of teacher-child interaction on child-child interaction during free-play. Psychology in the Schools, 13(2), 171-175.

- Smith, B. J. (1986). New federal preschool program under P.L. 99-457. Division for Early Childhood Communicator, 13(2), 2.
- Spell, J., & Carlson, N. (1981). Mainstreaming at the preschool level? Early Years, 11, 70-71.
- Stoneman, Z., Cantrell, M. L. & Hoover-Dempsey, K. (1983). The association between play materials and social behavior in a mainstreamed preschool: A naturalistic investigation. Journal of Applied Developmental Psychology, 4(2), 163-174.
- Stowitschek, J. J. (1984). A social integration model for young handicapped children. Unpublished manuscript, Utah State University, Logan. Exceptional Child Center.
-
- Strain, P. S., & Hill, A. D. (1978). Social interaction training with the severely handicapped. In P. Wehman (Ed.), Leisure time skills for the severely handicapped. Baltimore:University Park Press.
- Strain, P. S., & Kerr, M. M. (1981). Peer social behavior in integrated preschool settings: Developmental and instructional potentials. In, Mainstreaming children in schools? New York: Academic Press.

- Strain, P. S., & Powell, T. H. (1982). Using peer helpers to remediate social withdrawal. Pointer, 27(1), 43-47.
- Strain, P. S., Shores, R. E., & Timm, M. A. (1977). Effects of peer social initiations on the behavior of withdrawn preschool children. Journal of Applied Behavior Analysis, 10(2), 289-298.
- Tawney, J. W., & Gast, D. L. (1984). Single subject research in special education. Columbus: Charles E. Merrill Publishing Company.
- Thurman, S. K., & Lewis, M. (1979). Children's response to differences: Some implications for mainstreaming. Exceptional Children, 45(6), 468-470.
-
- Turnbull, A. P., & Blacher-Dixon, J. (1981). Preschool mainstreaming: An empirical and conceptual review. In P. S. Strain & M. M. Kerr, (Eds.) Mainstreaming of children in schools: research and programmatic issues. New York: Academic Press.
- Von Harrison, G. (1976). Structured tutoring: Antidote for low achievement. In V. L. Allen (Ed.), Young Children as Teachers. New York: Academic Press.

- Wahler, R. G. (1967). Child-child interactions in free field settings: Some experimental analyses. Journal of Experimental Child Psychology, 5, 278-293.
- Wanlass, R. L. & Prinz, R. J. (1982). Methodological issues in conceptualizing and treating childhood social isolation. Psychological Bulletin, 92(1), 39-55.
- Watson, M. (1977). Mainstreaming - with special emphasis on the educable mentally retarded. Washington, D.C.: National Education Association.
- Webb, E. J., Campbell, D. T., Schwartz, R. D., & Sechrest, L. (1971). Unobtrusive measures: Nonreactive research in the social sciences. Chicago: Rand McNally & Co.
- Widerstrom, A. H. (1982). Mainstreaming handicapped preschoolers: Should we or shouldn't we? Childhood Education, 58, 172-174.
- Wilderstrom, A. H. (1986). Educating young handicapped children: What can early childhood education contribute? Childhood Education, 63(2), 78-83.
- Wilton, K., & Densen, P. (1977). Social interaction of intellectually handicapped children in integrated and segregated preschools. The Exceptional Child, 24(3), 165-172.

Wishon, P., Spangler, R. S., & Keller, L. G. (1979).

Accelerating peer social interaction of a preschool isolate through play. Paper presented to the annual meeting of the American Psychological Association.

Appendix A

Parental Consent Form:

1. Handicapped Students
 2. Peer "Helpers"
-

Parental Consent Form for the Handicapped Students

Dear _____,

My name is Marilyn Errett and I am a doctoral student in special education at the University of the Pacific in Stockton, California. I am also co-owner of Elk Grove Montessori School. For the past several years, the preschool children from Jesse Baker have joined the Montessori children for recess. We have noticed very positive changes in all of the children.

We would like to encourage more social interaction between the children by structuring their play and reinforcing them for positive play behavior. I will be using the results of our efforts in my doctoral dissertation.

My study will still allow for free play time and will be fun and gentle. I do, however, need your permission to include _____.

Please sign at the bottom of this form and return it in the envelope provided if I have your permission. If you have any questions, please call me at 685-6540.

Thank you,

Marilyn Errett

(Signature of parent or guardian)

Parental Consent Form for the Peer "Helpers"

Dear _____,

As I'm sure you know, I'm working on my Ed.D. in Special Education at the University of the Pacific. My dissertation work will be centered around the subject of integrating young handicapped children into the regular preschool/kindergarten environment. I will be examining the social interaction between handicapped and nonhandicapped children.

The study will involve training nonhandicapped children to initiate play with their handicapped peers. The study is a very positive one and only involves nine minutes per day three days per week. I would love to borrow _____ for this project. He/she already shows an interest in helping other children.

Please sign this consent form if I have your permission to work with _____.

Please call me if you have any questions.

Thanks,

Appendix B

Observation Package

Social Interaction Observation Record

Operational Definition of Child-Child Interaction

Observer _____

Handicapped Student _____

Peer Helper _____

Date _____

SOCIAL INTERACTION OBSERVATION RECORD

See the attached sheet for the definitions of child-child interaction and for the definitions of organizing, sharing and assisting.

Record a + in the box if the handicapped child displays interactive play behaviors during the 10 second interval. Record a - if it does not occur.

Record an o, s or a (or any combination) if the peer helper displays any of those behaviors toward the handicapped child during the 10 second interval.

You will observe for 10 seconds and record and re-group for 20 seconds.

Please flip to the next page after recording. Your observations will alternate from child to child.

	1	2	3	4	5	6
H.C. Student						
Peer Helper						

Operational Definition of Child-Child Interaction

The basis for the behavior is that of interaction or reciprocity. It consists of: (1) answering questions from other children either verbally or with a physical gesture such as nodding the head, (2) sharing or trading toys, (3) joining in the actions of other children while looking at the children or verbally expressing interest (e.g. running or hopping in a group), (4) engaging in a play activity with one or more children (house, peek-a-boo.) It does not include: (1) play attempts by another child from which the targeted child turns away or does not respond, (2) play attempts by the targeted child to which the other child does not respond.

"PLAY ORGANIZER: Any verbalization wherein the child specifies an activity. For instance, the child proposes a role for self or others, 'I'll be daddy.' Or proposes a game or other activity, 'Let's play house.'" (Any verbal attempt to initiate play will be included in this category.)

SHARE: Offers or gives an object to another child; or two or more children using a common object in mutual play.

ASSISTANCE: Provides help to another child, this includes boosting or supporting a peer, assisting another to 'fix' something." (Hendrickson, et al., 1982, pp. 328-329.)