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MULTIPLE ASSESSMENT OF A WORKSHOP PROGRAM FOR SIBLINGS OF HANDICAPPED CHILDREN

A Dissertation Presented

By

DEBRA LOBATO-BARRERA

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University of Massachusetts in partial fulfillment
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Psychology

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ABSTRACT

Multiple Assessment of a Workshop Program for Siblings of Handicapped Children

(February 1981)

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The purpose of this research was to examine empirically the effects of a group workshop program for siblings (ages 3:9 to 7:4 years) of handicapped children. The program curriculum was designed first to increase the accuracy of the subjects' definitions and understanding of various forms of developmental disabilities. The second goal of the curriculum was to increase the subjects' recognition of the strengths and positive characteristics of themselves, of their handicapped brother or sister, and of other family members.

The experimental design used to evaluate the effects of the program was a multiple baseline across subject groups. Six subjects were assigned to two groups based on the compatibility of their family's schedules. Group 1 consisted of three boys, ages 3:9 to 4:10 years (mean age = 4:5 years) and Group 2 consisted of three girls, ages 5:9 to 7:4 years (mean age = 6:4 years). Following baseline periods of varying lengths, the two groups met for 1 1/2 hours per week for six consecutive weeks. The workshop program was evaluated as to its effects on two major classes of the subjects' behavior: 1) the content and paralinguistic characteristics of their verbalizations regarding developmental disabilities, themselves, and family members, and 2) the frequency and quality of their interactions with their handicapped brother or sister. Measures of the subjects' verbalizations were collected in three contexts: 1) in response to a role play assessment instrument administered throughout each week of baseline and intervention, 2) during workshop activities, and 3) at home, as recorded by parents throughout baseline and intervention. Measures of the subjects' interactions with their siblings were collected exclusively at home.

The results of the role-play assessment indicated that all subjects became more accurate in their definitions and understanding of developmental disabilities as a function of participating in the sibling workshop program. Five of the six subjects responded to the curriculum with an increase in the percentage of positive verbalizations regarding other family members. Four subjects showed an increase in positive self-referents with a concurrent decrease in negative self-referents. The results of the analyses of the subjects' paralinguistic behavior indicated that, concomitant with these changes, there was an increase in the quantity and the fluency of the subjects' speech.

The home observational data indicated that there was no case in which a subjects' home interactions or verbalizations were negatively affected by participation in the sibling workshop program. In most cases, the subjects' behavior remained stable across experimental phases. For two of the four observed subjects an increase occurred in the percentage of positive interactions with their siblings; and for one subject there was an increase in the percentage of positive statements at home regarding herself and family.

The results are discussed in terms of the future use of the sibling curriculum, possible sex differences in the responses of sisters and brothers to a handicapped child, and directions in future basic and applied research with siblings of handicapped children.

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CHAPTER I

INTRODUCTION

In recent years, increasing emphasis has been placed on the participation of parents in the education and habilitation of their handicapped children. In part, this emphasis has stemmed form the evolution of ethical ideologies and legal mandates (e.g., Public Law 94-142) which maintain that every child has the right to an appropriate, free, public school education within the least restrictive environment. The federal government has emphasized parental involvement in all federally-funded programs for special needs children and Chapter 766 of the Massachusetts Comprehensive Special Education Law (1972) insists that parents participate in all of the diagnostic, educational, and evaluative phases of programs for their children. With these ideological and legal changes has come an expansion in the availability of community-based programs (Begab, 1975), offering parents more home-based alternatives to the residential treatment of their handicapped youngsters.

As the roles for parents of disabled children change with these policies from being "just parents" to being special educators and therapists, so, too, might the traditional roles of the siblings within these families change. Unfortunately, however, relatively little research has been conducted to identify the nature of the interactions between handicapped and non-handicapped siblings. Even less has been done to develop constructive curricula or even the justification for providing educational and support services to the siblings.

The purpose of the present research project was twofold. The first purpose was to explore some of the ways in which young siblings (ages 4-7 years) of handicapped children respond to their unique family situations. The second purpose was to identify, through the introduction of a sibling workshop program, some of the factors which may contribute to the nature of the siblings' responses.

Before the present project is described, however, it is necessary to provide some background of the information relating to the social adjustment of siblings of handicapped children. Research in three major areas will be covered. The first area of research concerns the reaction of parents to a handicapped child, as these may set the tone for the reactions of other family members. The second major area deals with demographic and anecdotal reports of the adjustment of siblings of children with developmental disabilities and the final area covers those projects that involved some therapeutic of educaitonal intervention.

Reactions of Parents

There is general agreement in the literature that the responses of families to the birth of a handicapped child are highly individualistic. Although each case is unique, there are certain commonalities in the problems and responses of parents with disabled children. The intensity and nature of parents' responses to the child depend on such factors as marital harmony prior to the birth of the child, socioeconomic and educational background, the sex of the child, and parents' perception of deviancy (Farber, Jenne & Toigo, 1960). Despite this wide range of individual responses almost all parents report experiencing enormous changes in their lives and roles as parents (Fowle, 1968; Olshansky, 1962; Waisbren, 1980). Unfortunately, the changes reported in the research are not for the better. Parents report a prolonged sense of loss, hopelessness, and sorrow; a decrease in self-esteem; shame; guilt; and a decision to limit family size (Farber et al., 1960; Fowle, 1961; Holt, 1958a; Olshansky, 1962; Solnit & Stark, 1961; Waisbren, 1980). One may argue that the majority of these studies are outdated and that the reported negative effects on the parents were related to the more pervasive societal attitudes towards and limited services for handicapped people during the 1950s and 1960s. However, this picture of psychological stress has been maintained in more recent research with parents in the U.S. and Denmark who were involved in a progressive network of supportive community services (Waisbren, 1980).

Though most researchers acknowledge that parents of disabled children must face additional stress, there is less consensus as to the best approach to take in resolving these problems. It is not surprising to find that the nature of services historically offered to parents at any given time has closely resembled the state of the art of the helping professions. According to Wolfensberger (1967) at one time the only services offered to parents were those of a diagnostic nature. The second trend in parent services evolved from a pessimistic psychiatric approach that often viewed the parents only as being "problem-ridden, anxious, and maladjusted" (Wolfensberger, 1967). The resultant counseling offered to parents often ignored the reality of the child's disability and management needs and focused, instead, only on the inner conflicts and weaknesses of the parents (e.g., Yates & Lederer, 1961). Such approaches placed a heavy emotional burden on the parents with little concomitant responsibility for the education of the child. The latter either remained the responsibility of the special education teacher or of no one, as retardation was viewed as an intractible condition.

The more contemporary approaches to working with parents of disabled children do not ignore their emotional reactions, but focus greater attention on providing concrete information regarding such issues as citizens' rights and advocacy as well as effective behavior management techniques. Much of this change in approach can be linked to the emergence of parents' organizations such as the National Association for Retarded Citizens as well as to the advances in applying learning principles to the teaching of the retarded. Though these changes may have lightened the emotional burden on the parents, they are associated with an increased legal responsibility for them to participate in their child's educational program.

To date, very little has been documented regarding any positive feelings parents have about a child born handicapped. This relative lack of information may be a true reflection of the parents' experience; but it is more likely to be a reflection of the preoccupation with pathology held by many clinical psychologists and social workers. It may also be a result of the fact that more research has been conducted with parents of younger children (Robinson & Robinson, 1976) who are less likely to have yet accepted their child's disability (Rosen, 1955). Nevertheless, these studies portray an overwhelmingly pessimistic portrait of parents of disabled children. Based on these findings, it is logical to question the prognosis for good emotional adjustment of any normal children developing under such stressful family conditions. It is to this issue that the following section is addressed.

Reaction of Siblings

As stated previously, the reactions of siblings to having a handicapped brother or sister are not adequately understood. The data have been based predominantly on reports from parents and interviews with older siblings of retarded children.

Some of the original research in this area appears to have been motivated by one resounding concern; namely, to determine if it was better for normal siblings if the disabled child was raised at home or away from home in a residential facility. For the most part this issue was of greatest concern to researchers during the mid-1950s to the mid-1960s. The major debate is summarized below.

Farber and his colleagues (Farber, 1959; Farber, et al. 1960) examined the responses of 240 mothers of severely retarded children on his index of marital integration and sibling role tension. The mothers were asked to rate the oldest normal siblings (ages 6-15 years) in the family. Farber reported that siblings of less dependent, higher functioning retarded children had better adjustment ratings than those of the most severely retarded and dependent children. In addition, he reported that older sisters in families where the retarded child was raised at home experienced greater problems than those sisters whose retarded siblings were institutionalized.

As in the Farber et al. studies (1959; 1960) Fowle's (1968) data were based on the verbal reports of a large sample (n=70) of mothers of severely mentally retarded children rather than on the direct observations or interviews with the siblings themselves. Fowle's sample was divided into two groups of 35 families matched on the age and sex of the retarded child, socioeconomic status and ethnic background, and geographic location of the family home. The first group consisted of families whose retarded child had been placed in an institution within five years of the research, and the second group consisted of those 35 families whose child was living at home. Fowle reported that siblings (ages 6 to 17 years) of retarded children reared at home suffered from significantly greater "role tension" (as defined by the Farber Role Tension Index) than did siblings of children placed in residential care. This was especially true of older sisters, though in both subject groups, "tensions" were greater for sisters than for brothers. Despite Fowle's well-matched subject groups, the study contained other significant methodological problems. "Role tension" was not defined; the data were based exclusively on parent rather than on sibling reports; and sibling characteristics were inadequately described as to age, sex, and ordinal position within the family. Fotheringham, Skelton, and Hodinot (1971) generally concurred with the conclusions of Farber et al. (1959; 1960) and Fowle (1968). They reported that, over the course of one year, siblings of retarded children living at home showed significant decreases in four out of seven measures of functioning (i.e., physical health, mental health, individual behavior and adjustment, and relationship between the siblings.)

Other reports, by Caldwell and Guze (1960) and Graliker, Fisher and Koch (1962) failed to support the conclusion that residential care of the retarded child is better for the adjustment of the siblings. Unlike the studies presented above, Caldwell and Guze's (1960) procedures involved actual interviews with the siblings themselves, as well as with their mothers. The subjects were 32 mothers and siblings of retarded children--half of whom were living in a state institution and half of whom were living at home. The retarded children in both groups ranged in age from 2 to 17 years and the siblings ranged from 6 to 19 in the home sample and from 6 to 15 in the institution sample. The groups were successfully matched on the I.Q.s of the siblings and retarded children. However, the groups differed on other relevant variables such as the age difference between the siblings, the sex ratio for the retarded and non-retarded children across groups, and the ordinal position of the retarded children and siblings within the families. Caldwell and Guze conducted one 45 minute psychiatric interview with each of the mothers and siblings, and administered a battery of attitude and anxiety scales (i.e., the Children's Manifest Anxiety Scale, the Attitude Research Instrument, the Family Attitude Scale, and the Cornell Medical Index). Based on the results of these Assessments the authors concluded that there were no differences between the mother and siblings of retarded children living at home or in an institution. Siblings of children raised in an institution showed a slightly greater number of symptoms, though the difference was not statistically significant. Siblings in both groups expressed the opinion that they should be provided with information regarding the nature of the retarded child's problem. The interviewers requested information on what siblings thought were good and bad effects of the retarded child on the family. As good effects the siblings reported as increased tolerance and understanding of handicapped children, an increase in religious values, and an increase in family cohesiveness. This latter "good effect" stands in direct opposition to Farber's (1959) contention based on mother's reports, that the presence of a retarded child negatively affects family integration. As negative effects of the retarded child, the siblings in Caldwell and Guze's report mentioned added financial expense, explanations to friends, and extra work for some members of the family, typically the mother.

One of the greatest differences between Caldwell and Guze's home sample and the institutional sample occurred in their responses to the question as to whether it was better for retarded children to live at home or in an institution. The siblings' answers paralleled the existing family policy, i.e., children whose siblings lived at an institution felt that was the best place for them to be, whereas the other group believed retarded children should live at home. Graliker, Fishler, and Koch (1962) corroborated this latter finding in their interviews with 21 teenage siblings of retarded children (ages 10 months to 5.6 years).

Though 19 of the retarded children in this sample lived at home, in those cases where institutionalization was discussed as a realistic possibility, the siblings reflected that same opinion.

Thus the early research was concerned with determining the advantages and disadvantages to the siblings of being raised with a retarded child at home. As shown above, each of these studies suffers from significant methodological problems. Researchers who concluded that home rearing results in harm to the normal sibling did not include in their procedures any observation or interview directly with the siblings. Their data were based on the reports of parents (read "mothers"). Considering the opinions of the siblings interviewed by Caldwell and Guze that mothers are the family members who are burdened most with the care of the retarded child, it is not terribly surprising that the reports of mothers may be more pessimistic than the reports of other family members. Only Caldwell and Guze had direct contact with the sibling subjects in their comparison between home-reared and institution-reared children. Few differences existed between the groups on the subjective adjustment ratings of the interviewers. In summary, then, the serious methodological problems of these studies limit the conclusions that can be made regarding the effects of retarded children on their nonretarded siblings.

Though this issue of institutionalization has predominated the research, additional factors have been examined as to their impact on the adjustment of siblings. One such factor alluded to in the previous discussions is the interaction of a child's sex and birth order within the family. The importance of this interaction in determining a child's family responsibilities and personality characteristics has been amply documented in the research with normal sibling groupings (e.g., Sutton-Smith & Rosenberg, 1970). Even in the most typical western families the first born female usually takes greater responsibility for the care of her siblings than either a first-born male or a later born female. Thus this sibling position might be particularly vulnerable to the additional caretaking stress posed by a younger disabled child.

In both Farber's (1959; 1960) and Fowle's (1962) studies older sisters, in particular, were more adversely affected by the presence of a retarded child in the family. This same sex difference was reported by Grossman (1972) for upper-lower to lower-middle class families. Generally older siblings in both socioeconomic groups were rated as being more socially adaptive than younger siblings. Grossman concluded that younger siblings were probably relatively more deprived of their parents' attention through childhood and were probably less able to understand the circumstances when they were discussed in the family. However, older sisters in lower class families were reported by Grossman to have been delegated the greatest amount of responsibility for the retarded child of any child born into any other sibling status position.

Other factors which appear to exert some influence on the effects of a handicapped child on his or her siblings are the nature and severity of the child's disability. Farber (1959; 1960) concluded that the single most important variable to siblings was the degree of dependency of the retarded child. The siblings of higher-functioning and less dependent children received better adjustment ratings than siblings of more dependent children.

Grossman (1972) argued that the severity of the child's dependency plays only a seocndary influence on the social adjustment of siblings of handicapped children. She suggests that it accounts of less of the effect on siblings than other variables such as the family's general ability to cope with stress and general socioeconomic status. Due to the comprehensive scope of Grossman's report, it shall be described in more detail below.

Grossman conducted interviews with 83 college-age siblings of retarded children and 66 siblings of normal children, matched on academic-year level, number of siblings, sibling position by order and sex, and religious affiliation. Grossman judged that 45 percent of the subjects had benefited from the experience of having a retarded sibling and that 45 percent had been harmed. Those who were judged as having benefited were rated as having a "greater understanding of people, more tolerance of people in general and handicaps in particular, more compassion, more sensitivity to prejudice, and more appreciation of their own good health and intelligence" than their peers (p. 92). The subjects rated as harmed reported feelings of guilt, resentment, and a feeling of having been neglected by their parents in favor of the retarded child. According to Grossman the severity of the child's disability was important only in lower class families where siblings (again, especially sisters) shared the parents' responsibilities for caring for the child. Greater negative effects were associated with the severity of the child's physical disabilities and dependency than with the severity of the child's mental retardation. In upper-middle class families who had greater opportunity for community support and for hiring domestic help to aid in the care of the child, there generally was no differential effect of the severity of the child's handicap on the normal siblings. The exception was that boys appeared better able to handle and express their feelings if their siblings exhibited more severe physical disabilities. Since boys were relatively uninvolved with the child whatever his or her characteristics, a more disabled child may have posed even fewer problems in terms of role ambiguities. This, however, was obviously not the case for the girls. These data led Grossman to conclude that "it is not the handicap itself, but the way in which it is interpreted and responded to that determines its impact on the involved individual (p. 181)."

In 1972, Gath compared the behavioral and emotional adjustment of siblings of normal children with siblings of children with varying degrees of congenital abnormalities--Down's syndrome and cleft lip/cleft palate. She hypothesized that the siblings' development would be influenced by the nature, severity, duration, and prognosis of the child's condition. The cleft lip/clef palate group was included as a group of children whose handicap was clearly recognizable at birth but could be surgically corrected. Thus, though these families report problems associated with feeding during infancy and early childhood, the children's subsequent development is usually normal. Gath's sample contained 36 siblings of children with Down's syndrome, 35 siblings of children with surgically corrected cleft lip/cleft palate, and 71 siblings of normal children. Though Gath claimed that the subjects were matched on age, sex, family size, and ordinal position, she did not present data to substantiate this claim. Data were collected via parent and teacher behavior ratings on a standard questionnaire and were supplemented by parent interviews. The results of the behavioral ratings of deviancy showed no differences between any of the three sibling groups. Thus, Gath's results corroborated those of Grossman (1972) and together these studies disconfirm the contention of Farber (1959; 1960) that the nature and severity of the handicap plays the major influential role in determining the siblings' adjustment.

Implicit in the above discussion of the results of Grossman's (1972) study was the identification of another variable she considered most predictive of the nature of the effects of a handicapped child on his or her siblings. That variable is the family's socioeconomic status and was related to other important, relevant, family variables such as use of community resources, general health, size of family, employment etc. Because parents in the high SES group more often paid for outside care for the retarded child, these siblings (both males and females) were less directly influenced by the characteristics of the handicapped child. Grossman reported that siblings within this group closely reflected the attitudes and reactions of their parents to the handicapped child.

Men and women in the lower SES group differed significantly from one another as well as from the high SES students. This low SES group had achieved greater financial independence from their parents and were in less agreement with their parents' opinions and attitudes towards the handicapped child. Comparatively, these families received fewer community supports and assumed major responsibilities themselves for the care of the child. Much of this responsibility became that of the older sister but not of the brother. Thus, the sex difference within this group was much greater than within the high SES group where male and female responsibilities were more or less equivalent. Because of the greater contact these women had had with their handicapped sib, the more directly affected they were by the characteristics of the child. Grossman reported that the lower SES men appeared to be the least involved of any subject group with the child's handicap. They were more reticent during the interview, were the most difficult to recruit, and their reactions were not significantly related to any of the characteristics of the handicapped child.

The above reports on siblings certainly suggest few unanimous conclusions. However, unlike the research on the reactions of parents of disabled children some of the sibling researchers at least have identified benefits associated with being the sibling of a disabled child. It is interesting to note that the three researchers to do this (i.e., Caldwell & Guze, 1962; Graliker et al., 1960; Grossman, 1972) were also the only researchers whose procedures involved direct interviews and measures of the behavior of the siblings themselves. All other studies yielding an exclusively pessimistic picture of sibling development were based solely on the reports of parents and teachers, with no input from the actual siblings. Thus, it may be that the overwhelmingly pessimistic perspective of parents colors their judgments of their normal children's reactions. This discrepancy may be a product of inadequate sampling techniques. For example the subjects in Grossman's study of college students were volunteers. So not only does their college status set them apart from many of the families attending clinics who were involved in previous parent studies, their voluntary involvement suggests that she may have attracted a sample of siblings who were generally more open, expressive, and adjusted to their handicapped siblings than others.

The researchers discussed generally agree that the factors influencing a sibling's adjustment to the handicapped child include characteristics of the child (e.g., residence, severety and nature of the disability), characteristics of the siblings themselves (e.g., birth order and sex), and characteristics of the parents (e.g., education and income, attitudes, and expectations). Where researchers disagree is in the relative power of each of these variables and of their specific effects.

What is seriously lacking in all of the above research, however, is any explicit or implicit acknowledgement of the effects of the normal siblings on their handicapped brothers and sisters. Certainly the direction of effects is not so unilateral as to result in handicapped children who are totally uninfluenced by their normal siblings. Developmental research has shown that older siblings may serve as models (Lamb, 1976), caretakers (Whiting & Whiting, 1975) and teachers

(Cicerelli, 1976) of their younger siblings. Certain researchers have suggested that sibling relations set the stage for learning peer-related social skills (Hartup, 1976). Thus, it is disappointing that the relations between handicapped and nonhandicapped siblings have focused narrowly on the effects on the latter.

The area of research on sibling relations that does acknowledge the mutual reciprocity of sibling influences is the area concerned with intervention, as presented below.

Sibling Education and Treatment

Two types of programs for siblings of developmentally disabled children have appeared in the literature. Both focus mainly on the needs of adolescent siblings of retarded children. The first consists of a guided group discussion and the second entails a combination of a discussion group format and a group training program to teach the siblings to use behavior modification skills. The discussion group format operates from the assumption that handicapped children have negative effects on their siblings and that the group offers the siblings the opportunity to express these negative feelings. The behavior management programs operate under the assumption that normal siblings have a positive effect on their disabled brothers and sisters.

Sibling discussion groups.

Schreiber and Feeley (1965) organized a group of siblings (ages 14 to 17 years) of retarded children who were living at home. The goals for the group were: 1) to assist the siblings in identifying the nature of their emotional reactions to the retarded child and 2) to help the siblings identify strategies for understanding and dealing with their brothers and sisters, with inquisitive or teasing peers, and with their parents. The group was organized in repsonse to parent concerns over their normal children's feelings of being

> overburdened by the care of the retarded child, or his (her) expressions of hostility and resentment toward the retarded child, of responsibility for the retardation, of obligation to make up to the parents for what the retarded brother or sister couldn't give them, and of guilt for being the normal child (p. 221).

The groups met every other week over an eight month period. The evaluation by the group social worker was purely anecdotal, but some of the conclusions she made are informative. Among the authors' conclusions were that 1) what the adolescents needed was information about mental retardation and what they could do to help their families; 2) that the sessions assisted the adolescents in seeing some of the strengths, as well as the limitations, of their brothers or sisters; and 3) that the sessions helped the adolescents learn to communicate more openly with their parents.

Kaplan (1969) presented a description of a discussion group which was conducted for adolescent siblings of retarded children living at a residential school. The groups met on a weekly basis at the residential center, and provided the group members with a discussion program and contact with other retarded children. Again, Kaplan's report of the group's effect on the siblings was anecdotal, but her report of some of the concerns of the siblings expressed during the group meetings is of particular importance. Kaplan summarized that one of the most critical issues for the siblings was the issue of being similar to or different from the retaded child. As Kaplan stated, "The main task of siblings of defective children is to avoid identifying with them" (p. 205). Kaplan also reported that the siblings were very concerned about how the retarded child understood his or her condition, and how to manage the child's behavior.

Though the evaluations of these discussion groups were based on global clinical impressions, they represent at least an initial attempt at addressing the needs of siblings. Furthermore, the anecdotal reports were useful for the purposes of the present project insofar as they identify some of the problems and benefits associated with being a sibling of a handicapped child. Such information about siblings' concerns provided one perspective for outlining the goals and tasks of the present sibling workshop curriculum.

Behavior modification programs. In 1974 Weinrott presented a discussion of a training program in behavior modification for adolescent siblings of younger, retarded children. Eighteen siblings attended the six week training program at their retarded siblings' summer camp. The siblings participated in didactic workshops to learn the concepts and guidelines for the application of behavior modification principles. Thereafter, they worked first with retarded children other than their own brother and sister, and then worked on programs with their own siblings. Immediate feedback to the siblings' application of the teaching techniques was provided by training camp counselors. Further feedback was provided during sibling group meetings via the use of videotapes of selected teaching sessions.

Unfortunately, however, Weinrott did not conduct a systemmatic analysis of the effects of the program. It was his belief that parents and siblings would have been "put-off" by extensive evaluative measures, possibly discouraging their participation in the program. Two months after completion of the program, a questionnaire was mailed to parents requesting information about the effects of the training program on the sibling and on the general family interaction patterns. Parents reported that the siblings had moderately or vastly improved the quality of their interactions with the retarded child. Reportedly, their interactions changed to a focus on adaptive behaviors and shifted to teaching rather than custodial care. In two-thirds of the families, parents reported that siblings were spending more time with their brother or sister than they were prior to the program, though this had not been a goal of the sibling groups. Parents reported that they had begun to discuss more openly with the sibling the problems and strategies used to deal with the retarded child. In addition, in all but one family, parents mentioned that siblings were commenting on the parents' handling of the retarded child. The parents all reported that this "watchdog" role had been helpful in maintaining consistency between family members. Despite the optimistic parent responses to Weinrott's program, the present author is aware of no other follow-up investigation that has replicated his procedures or systematically analyzed their effects.

Without exception, the programs for siblings discussed above were designed for adolescents. What exists about preschool siblings of handicapped children is even more sparse. Bennet (1973) trained a 4 1/2 year old girl to teach her three year old hearing-impaired sister the use of plurals. Specifically, the behavior trained was the correct use of the plural allomorph /s/ in the context of forks. Though obviously limited in the range of targeted behaviors, this study does indicate that a preschool sibling can effectively teach specific skills to a younger handicapped child.

In another demonstration project, Cash and Evans (1975) examined the instructional behaviors (e.g., praise, prompting, punishment) used by three siblings (ages 3 to 6 years) to teach their younger retarded siblings (ages 1:8 to 3:1 years) to drop poker chips into a hole. Measures were taken of the frequency of the six instructional skills before and after the siblings watched a six minute training film emphasizing each of the skills. The comparison of the pre- and post- measures indicated that there were significantly more changes in an appropriate direction (e.g., increase in modelling and prompting, praise, and decrease in the use of punishment) following the training film. No data were presented on the behaviors of the handicapped pupils.

These intervention studies unanimously suggest that older siblings can function as effective teachers of their handicapped brothers and sisters. What is obviously missing, however, is an analysis of whether or not younger siblings can function effectively as teachers of their chronologically older but developmentally younger siblings. In fact, younger siblings were explicitly excluded form Weinrott's (1974) training program because they were considered "too near in ability to the camper to avoid role ambiguity, competition, or resentment on the part of either individual" (p. 365). The obvious assumption, then, is that there is something peculiar to the interaction of a younger, normal sibling with a handicapped brother or sister that mitigates against an effective and comfortable teaching interaction. Certainly there appear to be no data to support such a conclusion with this population. In fact, in Cicirelli's (1976) extensive study of the teaching interactions of four different sibling dyads, the role of the teacher was always assumed by the older sibling; only the sex of the partners was varied. Thus, again, the assumption was made that it is acceptable for older siblings to teach younger ones but not for younger siblings to teach older ones. Based on this assumption it is easy to question how children within a dyad of an older handicapped-younger nonhandicapped sibling respond when the skills of the younger child surpass those of the older one and would place that younger child in the more functionally appropriate role of teacher. Unfortunately, like so many other questions in the sibling literature, there are many assumptions and questions and very little data.

In addition to demonstrating the positive learning effects siblings can have on their handicapped brothers and sisters, these intervention studies suggest that the siblings themselves could benefit from learning about handicaps and receiving directive feedback regarding their interactions.

Implications of Previous Research for the Rationale and Design of the Present Project

Given the current political climate for more handicapped children to remain at home with their families, increasing numbers of siblings will be living under family situations quite different from those of most of their peers. As our services focus more and more on families of handicapped children, we will have to pay close attention to all family members.

However, there currently exist little empirical data in any area regarding the development of siblings of handicapped children, especially preschool aged siblings. In order to provide the most cost-effective and preventative strategies for educating siblings, they should be approached at as young an age as possible. Yet questions remain regarding 1) what age is as young, yet as ready for learning, as possible, and 2) what siblings should learn to prevent problems in future adjustment. It was assumed in the present research that the best way to determine what should be taught to young siblings was to examine the results of previous research and to verify the resulting curriculum with contemporary workers in the field. By identifying the responses of adolescent siblings to their experiences, one at least has the benefit of their hindsight (as subjective as that may be) as well as other outcome measures of adjustment in determining what they saw as the needed components to learn.

In this regard, results of the previous research suggest that certain strategies for intervention and communication are important to include in any sibling curriculum. The first important result was that siblings almost resoundingly wanted to receive as much factual information about handicaps as possible and often resented any attempts by parents to protect them from this information (Caldwell & Guze, 1960; Graliker et al., 1962; Grossman, 1972; Kaplan, 1969; Schreiber & Feeley, 1965). In order to accomplish such a goal, however, siblings within the group must increase the frequency of at least their exposure to conversations regarding members of their families other than themselves. Just what effect such conversations have on very young children is unknown. To avoid any potential harmful side effects of such conversations, topics in the present program varied from week to week and included special sessions devoted just to identifying the strengths and positive behaviors of the siblings themselves.

The remaining goal of the project was to increase the siblings' constructive expression and identification of their own negative feelings related to their families. This goal was based on a finding of Grossman (1972) that good adolescent adjustment was associated with the ability to openly communicate both negative and positive feelings to parents. The goal is also based on more general literature on social skill development that indicates that the children whom peers rate most highly on preference and popularity are those who offer praise to peers (also a goal of the present program) but are also able to defend their rights and solve their interpersonal problems unaggressively (Combs & Slaby, 1977).

Thus, the goals of the current sibling workshop curriculum reflect efforts to build in a prevention of the problems retrospectively identified by adolescent siblings. All curriculum goals based on previous research were field-tested prior to implementation and received unanimous support from the survey respondents (see section below on procedures). The group workshop model was chosen over a model of individual intervention because it was felt that this would be an enjoyable, yet cost-effective, way of providing educational and support services to a larger number of chidlren. Any cost-effective model is more likely to find favor among administrators and would more likely be pursued by teachers, and beneficial to a greater number of students in the long run.

The purpose of the present research, then was to assess the effects of the sibling workshop curriculum on such variables as the siblings' understanding of developmental disabilities and their verbalizations regarding themselves and all family members. Unlike previous studies, the target population was young siblings (ages 4 to 7 years) of children with a wide range of handicapping conditions.

CHAPTER II

METHOD

Subjects

Selection process. Subjects were recruited via telephone contact with pediatricians, agencies, and preschools serving handicapped infants and toddlers in a rural university town of New England. The goal was to identify 4 to 6 year olds who had a younger brother or sister with a demonstrable developmental disability. A total of eight families were located whose children met these criteria; six out of the eight contact contact people referred older sibling pairs or referred children who had already been identified by other professionals. Six of the eight children were located by the infant intervention team with whom the author was interning. All six of these children eventually participated as subjects in the project. Parents of the two remaining children declined participation because at least one of the parents felt that their "normal" child was unaware of the other child's handicap. Since these parents had not yet discussed the child's handicap with the sibling they thought that inclusion in a discussion group on this topic would cause the "normal" child to see a problem where (s)he now saw none. In both of these cases the handicapped child exhibited physical impairments serious enough so that neither child could yet walk, though both were over three years old. Thus, it must be kept in mind that the six families who participated in the project may have differed from other families with handicapped children on a number of relevant, but self-selected variables, such as the presence of communication within the family about the child's disabillity.

The general characteristics of the subject group are discussed below, followed by more detailed descriptions of the individual subjects.

General subject description. The subjects were six developmentally normal children (3 boys; 3 girls) between the ages of 3:9 years and 7:4 years (mean age = 5.4 years). All subjects were siblings of a developmentally disabled child. Five out of six of the subjects were older than the handicapped child. The difference in age between these siblings ranged from 1:2 to 5:0 years (mean age difference = 2.11 years). In one case the subject was younger than his handicapped sister by 2:9 years. Five of six of the subjects attended school in either preschool, kindergarten, or first grade classes. The sixth child did not attend a school program, spending the majority of his time at home with his mother and younger brother. All of the subjects came from white middle class families. In all six of the families at least one parent had completed at least two years of college. Five out of six of the subjects lived with both natural parents; one girl lived in a more extended family situation with her parents, brother, grandparents, and uncle; and one boy lived with his natural mother, step-father, and sister. Five out of six of the families were receiving or had received educational and support services for their handicapped child through the local early intervention team. The sixth and oldest handicapped child was attending classes in the local public school.

The chronological ages of the develpomentally disabled children ranged from 1:3 years to 3:8 years (mean age = 2.6 years) in those five cases where the subject ws the older of the two children. The age of the one handicapped child who was older than the subject was 7:7 years. The disabilities of the handicapped children varied in nature and severity and are described below in more detail under the section "Individual subject descriptions."

Subjects were assigned to one of two workshops groups based on compatible family schedules. Despite all attempts to balance the groups as to age and sex, the resulting group composition was one group of three boys, ages 3:9 to 4:10 years (mean age = 4.5 years), and one group of girls, ages 5:9 to 7:4 years (mean age = 6.4 years). Although these sex and age differences between the groups pose limitations on the conclusions to be drawn from the experimental analysis of the results, it is, at least, a fair representation of a reality in which children's extracurricular activities must fit into the entire context of the family routine.

In order to provide a more detailed description of each subject and his or her family situation the individual subject descriptions follow, organized according to the subject's group assignment.

Individual subject descriptions: Group 1.

Subject 1: Ricky. Ricky was a 3:9 year old boy living at home with his parents and younger brother, Peter. Ricky was not enrolled in a school program but attended a playgroup with his brother for approximately one hour per week. The playgroup was one offered by the early intervention team for handicapped and nonhandicapped infants and toddlers and their parents. Ricky also attended Sunday school classes for about one hour per week. Ricky spent the majority of his time at home with his mother and his brother and played most often with his older cousin who lived nearby. Ricky's development was normal though his mother reported concerns over disobedience and physical aggression with his brother and with other children. His mother described him as oppositional, stating that she and her husband found it hard to be patient and consistent with him.

The mother's report of his oppositional, aggressive behavior was substantiated during the first home contact made by the author to describe the project. At three different times during that one-hour visit, Ricky kicked, punched, and spit at the author without apparent provocation. These behaviors continued to be an issue throughout the project and are addressed in more detail in the Results and Discussion sections.

Ricky's brother, Peter, was 1:3 years old at the beginning of the project. Peter had a congenital heart problem and suffered a stroke at the age of 10 months. He underwent open heart surgery at one year of age. Due to the stroke and complications arising from the surgery, Peter had a left hemiplegia. The hemiplegia was evident in Peter's delayed fine and gross motor development while his linguistic, cognitive, and social skills were within normal limits on the Bayley scales and the

Michigan Developmental Profile. According to the mother, she and her husband explained Peter's disability to Ricky as the topic arose (e.g., when checkups occurred) but did not set aside any separate time for formal discussion of the problem. Ricky's mother said that she used the words "stroke" and "physical therapy" with Ricky and that he understood that Peter's left side "didn't work as well as his." At the age of 13 months Peter began receiving services from the early intervention team. An occupational therapist conducted weekly home visits in order to provide direct physical therapy services to Peter as well as to instruct his parents on how to conduct the exercises with him themselves. The home visits were scheduled at a time when both parents could be present to learn the techniques, as per their request. However, according to the home visitor and the parents, these visits were often interrupted by Ricky's attempts to involve himself in the play activities. Reportedly Ricky's interactions with his brother at these times would disintegrate quickly from being gentle to rough and would result in Ricky being excluded and, oftentimes, punished. Ricky's mother reported that the two children spent almost their entire day together and that these rough interactions occurred intermittently throughout most days. She also reported that they occasionally played positively in a parallel fashion with trucks and that they often watched TV together. In general, though, Ricky's parents were concerned about his adjustment to Peter's disability and the extra adult attention it involved.

Subject 2: Henry. Henry was 4:6 years old at the beginning of the project. He lived with both of his parents and his younger sister, Carolyn, aged 3:4 years. Henry was a healthy, physically active boy and attended preschool two monrings a week and swimming classes with his sister one afternoon each week. When he was not involved in these activities Henry spent his day with his mother and sister or playing alone outside. Henry's parents originally enrolled him in the preschool because there were very few children his age in the neighborhood and they wanted him to have more peer contact.

Henry's sister, Carolyn, was severely motorically involved due to cerebral palsy. Carolyn had very little voluntary control over any muscle group and was unable to sit unsupported or to care for any of her basic needs; her mother provided her with almost all of her care. Due to her severe motor impairment Carolyn did not speak and her social and play experiences were seriously limited. Carolyn's involvement with the early intervention team had ended three months prior to the onset of this research study when she entered public school in an integrated preschool class for handicapped and nonhandicapped children. The focus of her educational activities with both the early intervention team and preschool program was on physical development. Services had been provided by the infant team via weekly home instruction to Carolyn and her parents and via weekly center-based playgroups. The preschool program involved center-based instruction two mornings weekly. According to the original home visitor Henry tried to join in the activities she structured for Carolyn during the visit and she often included him in them. Henry's mother reported that he generally paid very little attention to Carolyn as she had so few skills necessary for the type of physical play he preferred. Mother reported that he occasionally read stories to Carolyn and played with his own toys with her nearby but that their interactions were few.

Carolyn's physical disabilities were apparent at birth. However, the parents waited about ten months, until Henry was about three years old, to try to explain his sister's problem to him. They used words such as "handicapped" and "slow" to describe Carolyn's development and estimated that they discussed her problems with Henry about once each day. Both parents reported trying to maintain an active schedule of family activities and trips with both children and tried to insure that Henry's activities would not be limited by his sister's disabilities. Neither parent had any concern regarding Henry's adjustment to his sister and her special needs and felt that he was sincerely pleased when Carolyn did something which was hard for her to do.

Subject 3: Daniel. Daniel was 4:10 years when this project began. He lived at home with his mother, his older sister, his stepfather, Bob. Daniel's mother was professionally involved with disabled children and with other community organizations providing services to the handicapped.

Daniel attended preschool Monday through Friday from 9:00 a.m. to about 5:00 p.m. According to his teacher, all of the children enrolled in his preschool class were developing normally. During school vacations he occasionally accompanied his mother to the integrated playgroups offered by the early intervention group. Thus, Daniel had comparatively great social contact with his age-mates and with handicapped children.

Daniel's sister, Susan, was 7:7 years at the onset of this project. She had Down's syndrome and was considered mildly retarded with more significant delays in the area of language development. She used simple sentences to communicate but was often difficult to understand due to articulation problems. Susan's self-care and social skills were good. She could play games independently and cooperatively with Daniel and often played with other neighborhood children. Unfortunately, this recently began to result in Susan being teased and called "retarded" by the neighborhood children. Susan attended a public school classroom, with special education and mainstream education services scheduled throughout the day.

Daniel's mother reported that because of the nature of her work she often used words such as "retarded" and "handicapped" around her house, but not directly in reference to Susan. Thus, she felt that Daniel was familiar with those words as he heard them used at home and perhaps, as used by the neighborhood children. However, she was doubtful that Daniel recognized his sister as being either retarded or handicapped. His mother reported that she had never formally discussed Susan's disability with Daniel because she was waiting for an indication from him that he was starting to question her development. Because Daniel was younger than his sister and there was no acute event associated with the onset of Susan's delays, his mother thought that this made it more difficult to decide if and when the topic should be discussed with Daniel. She was hoping that Daniel's participation in the present project would enable him to ask questions and form positive attitudes as he started to become more aware of his sister's disability and other people's reactions to it. Daniel's mother reported that he and Susan were constant playmates at home; they enjoyed puzzles, television, yard games, doctor, and most children's games. At the beginning of the research project, she had no worry about the nature of her children's interactions but was more concerned about how Daniel would feel as his skills started to surpass those of his older sister.

Individual subject descriptions: Group 2.

Subject 4: Kathy. Kathy was a healthy 5:9 year old girl living with both of her parents and her younger brother Johnny. She attended the morning session of kindergarten five days each week and took dance classes one afternoon a week. Other afternoons she spent either at home with her mother and brother or at a friend's hosue.

Kathy's brother was 1:8 years old and was multiply handicapped, possibly due to delivery complications. He was a double footling breech presentation and failed to establish sustained respiration after delivery. Johnny was intubated, resuscitated, and transferred to the intensive care unit on a respirator. In addition to his pulumonary failure Johnny subsequently suffered other neonatal problesm such as mild congestive heart failure, pneumonia, clonic tonic seizures, lethargy, and fever. His seizures were being treated medically, and at age 3:6 months he was transferred from the intensive care unit to a major city hospital for an extenive evaluation. There it was felt that Johnny's respiratory failure was due to an absence of sensitivity to carbon dioxide, possibly due to phrenic nerve damage. He was transferred back to the local intensive care unit where he remained until he was just over one year old. Due to the insistence and persistence of his parents, Johnny was finally brought home from the hospital at that time. Hospital staff trained his parents to provide his daily medical care. According to parents, they prepared Kathy for her brother's arrival by explaining his disability and the amount of attention it would entail and by answering her questions.

The early intervention team became involved with the family almost as soon as he arrived home. His educational program involved two weekly home visits, one by the nurse and the other by the physical therapist. His performance on the Bayley Scales and on the Michigan Developmental Profile indicated delays in all the major developmental areas. He exhibited particularly strong motor delays and this became the major focus of his educational plan. His bedroom was equipped with the necessary life-sustaining machinery and his condition required 24-hour nursing care. According to Kathy's mother, the family was socially active and traveled frequently before Johnny's birth. However, due to Johnny's dependency on the respirator they were no longer able to travel together as a family; their lifestyle and routine were adjusted to meet Johnny's needs. Kathy's mother had assumed the major responsibility for coordinating and delivering his care. She and her husband often were required to do the night nursing shift due to difficulties they encountered in hiring qualified, stable night nurses. As Johnny's birth changed his parents' lives, so too, it changed Kathy's. There was a constant flow of professionals and strangers through the house to observe or work with Johnny. Given this hectic routine along with Johnny's frequent setbacks in health, many of Kathy's activities were made contingent on how things were going with her brother. Her parents reported that they would try to explain to Kathy that they would take as good care of her if she had been the one who was sick and that everyone in the famliy had to make some adjustments and sacrifices for Johnny. Though they were extremely confident of Kathy's cognitive growth, they did express concern that her social and emotional development would suffer as a result of the attention and concern that surrounded Johnny at home. They tried to work around this by spending time with her alone whenever possible and by keeping her informed of what happenend with Johnny. They felt comfortable that Kathy really loved her brother; she was physically affectionate with him and often tried to play with him and entertain him with toys at home. Kathy's mother was concerned that her daughter became too excited and active in front of Johnny to the point where she feared that Kathy's active movements would accidentally harm Johnny or disconnect his respirator. Both parents were enthusiastic about Kathy's participation in the present project. They thought that contact and discussion with other children in similar situations would enable her to see that hers was not the only family who had to adjust to the disabilities of one family member.

Subject 5: Martha. At 7:4 years old Martha was the oldest subject participating in the project. She lived at home with her parents, her older, developmentally-normal brother, and her younger sister who had a profound hearing loss. Martha attended first grade classes and was sporadically involved in extracurricular activities such as basketball, church, and scouts. When she was a preschooler she attended a nearby preschool as a hearing student in a classroom designed to hearing-impaired youngsters. She also occasionally attended her own deaf sister's playgroups and lived right across from the early intervention center. In addition, her father worked with sensory impaired people at a local state facility. Thus, Martha had had a substantial amount of exposure to handicapped people.

The author began contact with Martha approximately six months prior to the present research project. This contact was initiated by Martha's mother when she learned through the early intervention team that they had a psychology intern who was interested in siblings of handicapped children. At that time Martha's mother and father were generally concerned about Martha's emotional development and specifically concerned about her adjustment to her younger deaf sister. Martha's teacher had reported to them that Martha was obsessed with her sister's disability, that she brought up and perseverated on the topic at inappropriate times during class. The teacher also had commented that she felt that Martha had a poor self-image and that emotional problems prohibited her from reaching her learning potential. She recommended to the parents that they seek psychiatric counsel. Understandably this seriously alarmed the parents so that they contacted the author requesting some advice. As a result of this, approximately eight interviews and feedback sessions were subsequently conducted with Martha and her mother at home.

During her initial interview alone Martha engaged in what could be considered socially inappropriate behavior. For example, she was very fidgety, her stories contradicted themselves, she lied about obvious events such as her age and where she attended school, and twice screamed into the interviewer's ear at a painfully loud volume. Martha complained that she didn't have friends and when she was obsrved interacting with her peers she first would pout and refuse to continue activities if she did not get her way and would then acquiesce to her friends' unreasonable requests. Most of her comments about herself were negative in content whereas her comments about her sister were generally neutral, though she did complain that she was no longer the center of her father's attention because of her sister. Simultaneously with these interviews, Martha was brought to a dermatologist for treatment of eczema. As the treatment of her eczema progressed, so did her behavior during her discussions with the author and during her observed interactions with her neighborhood friends. There were concurrent improvements in her teacher's comments about her performance in school. Due to the simultaniety of the treatments it was unclear as to whether the source of these social and academic improvements was the feedback she received from the interviewer or the successful treatment of her eczema. Regardless, after eight sessions over the course of four months, the author stopped visiting her at home. Three months later Martha's mother telephoned the author to ask that she come see Martha again, as she felt her daughter's progress had deteriorated. Because the author was then actively involved in recruiting subjects for the present project she explained that she would not have time to work with Martha individually, but that arrangements could be made to include her in one of the workshop groups. Martha's mother expressed interest in this possibility. When the author conducted a home visit to explain the project to Martha and her mother (separately) in greater detail, Martha's mother reported that Martha was doing well both socially and academically. The reason for the apparent contradiction between this and her report earlier that same week remains unclear. Thus, Martha became involved as a subject in the present project though she was one year older than the original age selection criterion and was from a three-child family.

Martha's sister, Sarah was 2:4 years at the beginning of the present project. She was born approximately three weeks post-mature. The umbilical cord was wrapped twice loosely around her neck and she suffered severe perinatal asphyxia. When Sarah was one year old, she began attending the integrated playgroups at the early intervention center as a nonhandicapped participant. However, shortly thereafter, her parents began to suspect that Sarah had a hearing problem. Numerous audiological examinations were conducted which yielded inconsistent results. A hearing loss was unmistakable, but the degree and range of the loss were more difficult to diagnose. It was eventually determined that Sarah had a profound bilateral sensorineural loss. By the time she was 18 months old she was receiving full program services from the early intervention team. This involved weekly home visits by the language specialist for direct instruction and parent instruction, as well as the continuation of her involvement with the integrated playgroups.

At the time of the beginning of this project it was unclear as to whether or not Martha's parents were specifically concerned about her adjustment to Sarah. They appeared to have more general concerns, though they did not provide consistent reports. However, the mother was enthusiastic about Marth'a participation as this would be an activity that was especially for her and through which Martha could possibly make new friends and learn about similar family situations.

Subject 6: Jane. Jane was 6:0 years old at the beginning of the project. She lived with her parents and brother. Her maternal grandparents and uncle lived on the second floor of the same house. Both of Jane's parents worked and so her grandparents assumed a major responsibility for her care during the day. Jane attended a morning kindergarten class and took dance lessons one day per week. In the past she had attended a few sessions of the integrated playgroups in which her brother was enrolled, and these contacts defined the majority of her interactions with handicapped children.

Jane was 2.2 years older than her brother, Scott. Scott's development was normal until age one year, when he contracted encephalitis. Scott was comatose for two weeks. When he regained consciouness, it was apparent that the incident resulted in a seizure disorder as well as loss of vision, hearing, language and mobility. At the time of this original hospitalization Jane stayed with her paternal grandmother while her parents stayed near Scott and the hospital. The parents described this time as an extremely hectic one in which they were unable to take much time with Jane to explain what had happened. They explained simply that Scott was "sick" but had no idea as to what Jane's grandmother had told her. According to Jane's father, his mother "could've told her anything." Scott was enrolled with the early intervention agency upon his return from the hospital and received the full range of their home-based and center-based services. At age 3 years Scott graduated this program and was enrolled in an integrated public preschool.

At the time of the current project Scott had regained many of the skills he had lost during the original brain damage. His vision, hearing, and mobility had returned to within normal limits. However, he continued to have seizures and his receptive and expressive language remained delayed. In addition to these developmental deficits, Scott was extremely hyperactive and distractible. In fact, these aspects of his behavior, rather than his developmental deficits, appeared to reflect his greatest area of need.

Jane's parents estimated at the beginning of this project that they discussed Scott's disabilities with her on the average of once to twice a month, mostly in regards to scheduling and seizures. Jane's mother felt that Jane understood the limitations in her brother's behavior. She was more concerned about Jane's emotional reaction to being put aside when medical emergencies occurred with Scott. She was interested in having Jane share these feelings and experiences with other children. She hoped that this would help her realize that she was not alone in this situation and that her parents were not deliberately ignoring her.

Experimenters

The experimenter was a fourth year female graduate student working towards a Ph.D. in psychology with a specialization in developmental disabilities. Her tasks in the current project included designing and implementing the curriculum for the sibling workshops; administering the role play assessment; contacting, communicating with, and training parents; transcribing and coding audiotapes; and training research assistants.

Four female and two male undergraduate psychology majors served as research assistants, receiving three academic credits for their involvement. Their responsibilities included assisting the experimenter during workshop activities; operating video and audio recording equipment during the workshops; transcribing and coding video and audio tapes; and transporting subjects to the workshop site.

Settings and Materials

All sibling workshops were conducted in the chldren's playroom of a university-based psycholgoical clinic. The playroom was 6.09 X 4.42 meters in size, with an adjoining bathroom of 1.93 X 1.52 meters. The playroom contained children's furniture, a one-way mirror, and various pieces of arts and crafts equipment. The arrangement of the playroom and these equipment appears in Figure 1.

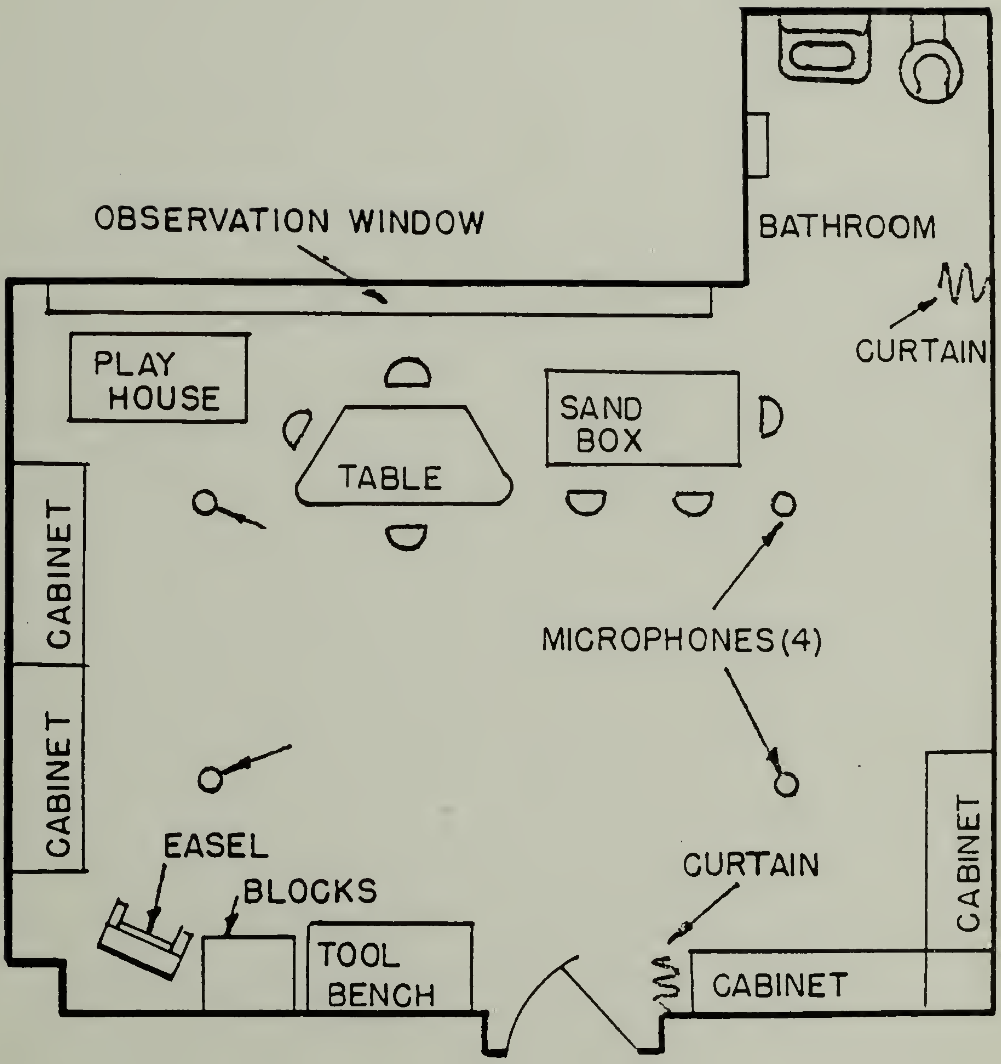

Fig. 1. Workshop Setting

The materials required to administer the role play assessment and to conduct the workshops are described in Appendix 1. Examples of the required materials include children's books and stories about handicapped children, puppets, human figure dolls, and toy dishes and cups.

Supplies and Equipment

The supplies required for conducting observations included appropriate data collection forms, one 90-minute cassette with prerecorded 15 second interval signals, 42 blank 90-minute cassettes, two tape recorders, one video camera, monitor, and deck, and five kitchen oven timers.

Measures of Behavior and Observation Procedures

Two general classes of the subjects' behavior were monitored throughout the course of the project in order to assess the effects of the workshop program. These were verbalizations and interaction with peers (i.e., other subjects) and their siblings. The present section provides a description of the specific measures of subjects' verbalizations and interactions; the rationale for the selected measures; the procedures used to collect, to record, and to code these data; and the procedures used to assess observer reliability. Measures of the subjects' behavior were recorded in three contexts: 1) in reponse to the role play assessment, 2) during family interactions at home, and 3) during the workshop meetings. Measures obtained in each of these contexts are discussed separately below.

Role play assessment. The purpose of role play assessment was to elicit subjects' verbalizations regarding developmental disabilities, their families, their handicapped siblings and themselves. The assessment consisted of ten sets of nine role play scenes related to topics covered in the workshop curriculum. (See Appendix 2 for the actual text and script of the role play scenes.) Each of the nine scenes contained a series of verbal prompts designed to elicit subjects' responses in the content areas listed below:

1) understanding of developmental disabilities
2) description of mother
3) description of father
4) description of handicapped child
5) reaction to positive behavior of mother
6) reaction to positive behavior of father
7) reaction to positive behavior of handicapped child
8) reaction of parents ignoring subject in favor of handicapped child
9) description of self (i.e., self-reference statements)

Each role play administration involved the delivery of the series of standard verbal prompts associated with the full set of nine role play scenes. The order of presentation of the nine scenes was randomized within each administration. The experimenter delivered the prompts in the context of play and structured to simulate family and peer interactions. Human figure dolls were used to represent the subjects' family members and relevant props were used to arrange the setting of the simulated interactions. The human figure dolls and the verbal prompts remained standard across all role play administrations, across all children. However, different toys and props were used each week in order to simulate weekly family "outings" to different places. The weekly sequence of these outings remained standard across subjects such that the simulated setting for the first role play session was the same for each subject, as was the setting for each subsequent session. The settings of the family trips were varied like this in order to maintain the subjects' interest in the role play over the repeated presentations of baseline and treatment.

With the exception of one baseline administration at the university per subject, all role play assessments were administered to subjects individually in a private room of their homes. The experimenter attempted to deliver the standard prompts in a manner as natural to the play as possible and provided no differential feedback to the subject regarding the nature of his or her response. If the subject did not respond within 10 seconds of the experimenter's prompt, the prompt was repeated. If the subject failed to respond within 10 seconds of the repetition, the next prompt was presented. One complete administration of the nine role play scenes took approximately 40 to 90 minutes depending on such variables as the length of the subjects' replies and the subjects' compliance.

The entirety of each session was audiotaped by a tape recorder visible to the subject. However, only the subject's responses to the standard verbal prompts were used in the data analysis. Verbatim transcriptions were made of the sequence of the experimenter's prompts and the subjects' responses. The transcriptions were done as accurately as possible, include phonetic transcriptions of unintelligible sounds. Completing one transcription required approximately two to three hours of time. The transcriptions and the audiotaped replay yielded two sets of measures--measures of verbal content and measures of paralinguistic behavior. These two sets of measures are described in detail below.

Role play measures of verbal content. The measures of verbal content were used as the primary data source for the evaluation of the effects of the sibling curriculum since it was the content of the subjects' speech to which the experimenter provided explicit differential feedback during the workshop sessions.

The verbal content of the subjects' responses to the prompts were categorized using the 25 content categories listed in Table 1. (Due to the length of this list, the definitions of each category along with the rules for coding the content appear in Appendix 3). Many of the subjects' responses contained a number of subphrases, each of which was coded separately. In addition some compound statements contained information that could be coded with two or more codes. In such cases both codes were used to categorize the satement.

Once the verbal categories had been assigned to each of the replies during all of the role play sessions these data were combined for analysis in Table 2 of the following five dependent measures: 1) percent accuracy of definitions of developmental disabilities, 2) percent positive and negative verbalizations regarding all family members

TABLE 1

ROLE PLAY ASSESSMENT:

Verbal Content Categories

Positive Verbalizations

(PD)	Positive Descriptions of Others
(PSR)	Positive Self Reference
(SC)	Shows Concern
(SK)	Shows Kindness-Plays
(SA)	Shows Appreciation
(PR)	Praise
(PE)	Positive Emotion
(OS)	Offers Solution
(AC)	Accepts

Negative Verbalizations

(ND)	Negative Descriptions of Others
(NSR)	Negative Self Reference
(IK)	Ignores Kindness
(EX)	Excludes Others
(AG)	Aggression
(BJR)	Blame-Jealousy-Resentment
(NE)	Negative Emotion
(WH)	Whines-Cries
(DIS)	Disobeys Family

General Verbalizations

(GD)	General Decriptions of Others
(GSR)	General Self Reference

Definitions of Developmental Disabilities

(AU)	Accurate Definition and Understanding
(PU)	Partial Definition and Understanding
(IU)	Inaccurate Definition and Understanding

Other

(NC)	Noncompliance
(NR)	No Response
(TA)	Talk

(except handicapped child), 3) percent positive and negative verbalizations regarding handicapped child), 3) percent positive and negative verbalizations regarding handicapped child, 4) percent positive and negative self reference statements, and 5) percent noncompliance. These dependent measures were computed by session for individual subjects as well as for subject groups.

Role play measures of paralinguistic behavior. Whereas the measures of verbal content assessed potential curriculum-related changes in what the subjects verbalized, the measures of paralinguistic behavior assessed how the subjects verbalized. These measures were included for two reasons. First, because the workshop intervention relied heavily on verbal material it was considered important to fully analyze multiple components of the subjects' verbal responses, since it is often how a person speaks as well as what the person says that influences a listener. For example, children are rated by "experts" as being socially assertive based on such paralinguistic behaviors as the duration and fluency of their speech (e.g., Bornstein et al., 1977; Reardon, Hersen, Bellack, and Foley, 1979). The second reason for including measures of paralinguistic behaviors was to provide additional information regarding the linguistic devleopment of the subjects.

Four of the six measures of paralinguistic behavior were adapted from similar measures used in previous research on measuring children's social and assertiveness skills (e.g., Bornstein et al., 1977; Reardon et al., 1979). However, two of the measures of affective quality (i.e., match and emotion) were designed specifically for the present research.

TABLE 2

ROLE PLAY ASSESSMENT:

Dependent Measures of Verbal Content

1. Percent Accuracy of Definitions of Developmental Disabilities: This was measured for the subjects' definitions of specific words requested by the experimenter (i.e., deaf, blind, handicapped, retarded), as well as for any statement made by the subject concerning developmental definitions (AU) and dividing by the total frequency of accurate, partial (PU), and inaccurate (IU) definitions.

2. Verbalizations Regarding Entire Family: This was measured by computing the frequencies of all positive verbalizations (PD, SC, SK, SA, PR, and PE), all negative verbalizations (ND, IK, EX, AG, BJR, and NE), and all general verbalizations (GD) regarding all family members except the handicapped child. The percent positive family verbalizations was computed by dividing the total positive family verbalizations by the combined total of positive, negative, and general family verbalizations, multiplied by 100. The percent negative family verbalizations was computed by dividing the number of negatives by the total number of positive, negative, and general family statements, multiplied by 100.

3. Verbalizations Regarding Handicapped Child: This was measured by computing the frequency of all positive sibling verbalizations (PD-HC, SC-HC, SK-HC, SA-HC, PR-HC, and PE-HC), all negative verbalizations (ND-HC, IK-HC, EX-HC, AG-HC, BJR-HC, and NE-HC), and all general verbalizations (GD-HCO). The percent positive verbalizations was computed by dividing the total of positives by the combined total of positive, negative, and general sibling verbalizations, multiplied by 100. The percent negative sibling verbalizations was computed by dividing the total negatives by the combined total of positive, negative, and general sibling statements, multiplied by 100.

4. Self Reference Statements: The percent positive self reference was computed by dividing the frequency of positive self referents (PSR) by the combined frequency of positive, negative, and general self referents (PSR, NSR, GSR), multiplied by 100. The percent negative self reference was computed by dividing the frequency of negative self referents by the combined frequency of positive, negative, and general self referents, multiplied by 100.

5. Percent Noncompliance: This was measured by computing the total session frequency of noncompliance statements (NC) and no response statements (NR) and dividing by the total frequency of responses throughout the session, multiplied by 100.

The six paralinguistic measures are defined in Table 3. These data weresummarized to yield individual subject and group means for each of the nine scenes within one role play session, means of each of the sessions, and means for each of the experimental phases (i.e., baseline and workshop).

Role play rater training and reliability. A total of 54 audiotapes of the role play sessions were transcribed and analyzed by the experimenter abd research assistants. Because of the complexity of the rating systems used to analyze the content and style of the subjects' responses, the experimenter trained only two of the assistants to conduct these ratings.

Initial training was conducted whereby the assistants coded single fictitious statements composed by the experimenter. The second phase of training involved coding compound statements. The third step involved coding selected individual statements heard within the context of other statements within a reply. And the final phase of training involved coding the entire set of responses to the scenes of two actual role play sessions. Training was maintained at each phase until the point-by-point agreement for coding verbal content and paralinguistic behaviors was 90% or better between the experimenter and each assistant and between the two assistants themselves.

Twelve of the 54 audiotapes (22.22%) were randomly chosen to be independently coded by two raters in order to assess inter-rater agreement for each of the measures of content and paralinguistic behavior. The inter-rater agreement on the verbal content measures ranged from

TABLE 3

ROLE PLAY ASSESSMENT:

Measures of Paralinguistic Behaviors

1. Percent and Mean Match Between Content and the Affective Tone of Response: This measure provided an index of the relation between what that subject said and how (s)he said it. A match (score = 1) indicated that the content coded for the response would be the same if it was read from the written page as if it were heard spoken by the child. A mismatch (score = 0) means that the inflection, tone, rate, and general quality of the subject's voice during the response seemed to change the actual meaning of the response. (Remember, content codes were assigned independent of voice quality.) This "match" measure might capture the discrepancies between content and quality which we typically label such things as insincerity and sarcasm.

   The subject's daily mean match score was computed by adding the total number of match scores and dividing by the total number of replies. The percent match score was computed by multiplying the mean match score by 100.

2. Emotional or Affective Quality of Voice: The subject's affect during each reply was scored on a 3 point scale (using only whole numbers) with 1 indicating negative emotions (sadness, anger, grief, disappointment, worry), 2 indicating more general affective states (interest, attention, clam, matter-of-factness), and 3 indicating positive emotions (happiness, enthusiasm, excitement, etc.).

   The daily mean emotion rating was computed by summing the scores assigned to each reply within one session and dividing by the number of replies.

   The percentage of positive, negative, and neutral scores was computed by dividing the frequency of ratings in each category by the total number of responses, multiplied by 100.

3. Duration of Reply: This is the time in seconds (to the 2nd place decimal) that the subject speaks to the partner. It is measured from the first sound the subject emits to the last sound of the last word of the response.

4. Latency of Reply: This is the time in second from the end of the examiner's prompt until the subject emits the first vocalization

TABLE 3 (continued)

of the reply. Maximum latency is 10 seconds after which the examiner repeats the prompt.

5. <u>Number of Words</u>: This is the total number of words the subject uses to reply. Words include vocalizations such as interjections (alas, oh) expletives (er, uh, ah, hm-hmm, ha) but do <u>not</u> include incomplete words (e.g., televi - for television, sto - for store, etc.).

6. <u>Percentage of Speech Disfluencies</u>: This is the number of speech disfluencies divided by the total number of words spoken per reply, multiplied by 100. Speech disfluencies include the following:

   a) <u>Unfinished phrases/false starts</u> - the subject starts to say something but does not finish the sentence. Count the total number of words in the unfinished phrase as a speech disfluency.

   <u>Repetitions of words or phrases</u> - count the number of times the word is repeated unnecessarily or the number of words in the unnecessarily repeated phrase.

   <u>Irrelevant sounds</u> - count the number of sounds made during the reply which have no bearing on the content. Onomatopoeic sounds should <u>not</u> be included (e.g., vroom to signify a car sound is to be counted as a word, not a speech disfluency).

   <u>Expletives</u> - count the number explectives in the response (e.g., guh, hmm, uh, er, duh).

   <u>Pauses</u> - a pause within the reply which lasts 4 seconds or more is to be counted as a speech disfluency.

82.61 to 93.75 percent, with a mean of 89.98 percent. Where raters disagreed as to the content code, the disagreements were of two types. Disagreements occurred only within major verbalization areas (i.e., positive, negative, or general verbalizations, definitions, and other) and never across these major areas. The second most frequent disagreement occurred with compound or ambiguous statements wherein only one of the raters used more than one code to categorize. The selection of which of the discrepant codes to use in the data analysis was determined randomly.

The inter-rater agreement on the "match" variable ranged from 78.57 to 95.65 percent (mean = 91.16%) and on the "emotion" variable ranged form 71.87 to 100 percent (mean = 87.07%). The raters' duration and latency scores were considered in agreement if the scores differed by no more than .5 seconds. The point-by-point agreement for duration ranged from 65.22 to 96.88 percent (mean = 85.35%) and for latency ranged from 81.42 to 100 percent (mean = 93.88%). It should be noted here that the half-second criterion for agreement used in the present study is more conservative than the inter-rater difference of ± 1 second accepted in the previous research form which these measures originated (e.g., Bornstein et al., 1977). The agreement on the number of words per reply ranged form 89.47 to 10 percent, with a mean agreement of 93.15 percent. Agreement for the number of speech disfluencies per statement ranged from 73.68 to 90.91 percent (mean = 84.93%).

Workshop observations. The second context for data colleciton was within the weekly meetings of the two groups of subjects. Five of the total of twelve workshops were videotaped from behind the one-way mirror. These videotapes were used by the experimenter to review the activities and to provide continuous training to observers throughout the project. After the failure of one observation system the system described below was adopted. Unfortunately this system could not be implemented until after the first meeting of the first experimental group. Therefore, data are missing from that first session.

The purpose of the workshop observations was to monitor selected aspects of the subjects' verbal and nonverbal behavior in relation to curriculum topics and to one another. Two observers were assigned to record for each workshop and were situated behind the one-way mirror. Using a partial interval (15 second observe - 15 second record) observation technique they recorded the presence or absence of events representing six major variables: 1) the general topic of the discussion and activities, 2) the verbalizations of the target child indicated on the data sheet, 3) to whom the child spoke, 4) whether the subjects' verbalization was appropriate to the context, 5) the body orientation of the subject, 6) the eye contact of the subject, 7) the subject's facial expression, and 8) the occurrence of physical interactions between the subject and another child or adult. The behavioral subcategories of each variable are listed in Table 4 and the complete definitions appear in Appendix 4. The goal in collecting data on this number of behaviors within a single interval was to examine whether there was any temporal relation between the topic or verbalization areas and other possible

TABLE 4

WORKSHOP OBSERVATIONS:

Categories of Observed Behaviors

1. General Topic Area

Sibling of Target Child	(ST)
Family of Target Child	(FT)
Sibling of Non Target Child	(SNT)
Family of Non Target Child	(FNT)
Developmental Disabilities	(DD)
Other	(0)

2. Verbalization of Target Child

a.	Content:	ST	FT	SNT	FNT	DD	0
b.	To Whom:	Child (CH)		Adult (AD)		Group (GR)	
c.	Context:	Appropriate (AP)			Inappropriate (IN)		

3. Body Orientation: Towards (+) Away From (-)

4. Eye Contact: Towards (+) Away from (-)

5. Facial Expression:

Positive	(PS)
Negative	(NG)
Neutral	(NT)

6. Physical Interactions

Aggression	(AG)
Affection	(AF)
Imitation	(IM)

7. Interaction With Whom: Child (CH) Adult (AD)

behavioral indicators of attention to and/or comfort with these areas (e.g., eye contact, facial expression).

After the subjects entered the playroom with the experimenter and put aside their coats and belongings the experimenter signalled the observers to begin the recording system. Within the observation the assistants activated the playback of a two-hour audio cassette on which the experimenter indicated successive, numbered 15-second intervals for observing and recording. The intervals on the observers' data sheets were prenumbered. The tape recording indicated the number of the interval and whether the observer should observe or record during that period (e.g., observe 1 - record 1, observe 2 - record 2, and so on). This system was used in order to minimize the possibility of an observer losing his or her place on the recording sheet.

The data collection form (see Appendix 5) was set up so that the first initial of one subject's name appeared in the left margin of each interval. This indicated to the observers which subject was the one targeted for observation during that interval. Observers were instructed to not communicate during the process and to continue the observations until the experimenter and subjects left the playroom at the end of the workshop.

Workshop observer training and reliability. Prior to using the observation system during the ongoing workshops, the assistants were required to demonstrate mastery of the system in simulated settings. Namely, they were required to memorize behavioral definitions to be able to identify and generate written and role-played examples and non-examples of each behavior. However, it was not until a videotape of the second workshop was available that training could continue with more complex and realistic stimuli. Using the actual data sheets and the interval cassette, the experimenter and assistants recorded the subjects' behaviors from the videotape. The recordings were initially reviewed for agreement following each interval, then after five intervals and finally after 25 intervals. This procedure was continued until each observer's ratings agreed with those of the experimenter and the other assistant on 23 out of 25 intervals over 3 trials of 25 intervals. Agreement was assessed on a behavior-by-behavior basis within each interval so that inadequacies or problems with particular behavioral definitions could be identified. The observers met this criterion following two two-hour sessions recording with the experimenter.

In addition to this procedure for calibrating observer accuracy, another system was used to assess interobserver reliability during the actual workshops. During 80 percent of the workshop intervals the two observers were recording the behavior of different subjects. During the remaining 20% of the intervals they were observing the same child. The number of Reliability intervals was balanced across subjects within the groups. The interobserver agreement for each measure appears in Table 5. As shown in the table the percent agreement between observers averaged well over 85.00% for all measures except two--"facial expression" and "Talk to whom?" Because the agreement was so poor on these two behaviors they were excluded from any further data analysis.

TABLE 5

WORKSHOP OBSERVATIONS:

Interobserver Agreement Scores

Variable		% Agreement Range	% Agreement Mean
Topic		82.35-100.00	94.93
Talk:	Content	85.71-100.00	94.44
	To Whom	63.33- 85.71	76.00
	Context	90.00-100.00	98.33
Body Orientation		96.29-100.00	98.09
Eye Contact		84.00- 96.77	89.13
Facial Expression		51.61- 80.00	62.55
Physical Interaction:			
	Type	85.36-100.00	96.23
	With Whom	92.00-100.00	97.48

Home observations. The activities of the sibling workshops were designed to increase the subjects' cognitive and communicative skills regarding issues related to developmental disaiblities and their families. Though the intervention procedures were applied only during the workshop periods, it was critical to monitor whether there was any associated impact on the subjects' behavior in other settings, especially home. Since a workshop program such as the present one had not been tested in any research known by the experimenter it was especially important to monitor as many potential positive or negative changes associated with the program as possible. Of particular importance would be any collateral changes in the quality and/or quantity of the subjects' interactions with their siblings at home. In order to monitor any generalized and collateral effects, the observation procedures described below were implemented by the mothers of five of the subjects throughout both phases of baseline and treatment.

Each parent conducted observations of two aspects of the subjects' behavior--the frequency and quality of their interactions with the handicapped child, and the nature of their verbalizations regarding their family members and themselves. The observation procedures for each of these aspects of the subjects' behavior are discussed below.

Sibling interactions. Parents were instructed to conduct a 30-minute momentary time sample (10-minute intervals) of the siblings' interaction at home, three days per week, during each week of baseline and treatment. Each mother was instructed to maintain consistency in their selected observaiton times and days and to avoid conducting observations during weekends, when many families' activities are less predictable than during the week.

Parents recorded their observations on data forms provided by the experimenter (see Appendix 5). Parents used their own kitchen oven timers or alarms to time consecutive ten minute intervals. At the end of the interval the parents observed their children and recorded two things: 1) whether or not they were interacting and 2) if they were interacting, whether the affective quality of that interaction was positive or negative. Definitions for the occurrence-nonoccurrence of an interaction and for the positive or negative quality of the interaction are presented in Table 6.

The dependent measures yielded by these observations are described in Table 7. Since the observation conditions (frequency, time, observer, etc.) differed so between subjects, these measures were compiled for individual data only.

Subject verbalizations. Parents also collected data on the nature of selected aspects of the subjects' verbalizations at home. The types of statements targeted for observation were: 1) positive and negative emotions to family members, 3) showing concern for family members, 4) expressing aggression to family members, 5) expressing resentment or jealousy towards sibling, and 6) discussing or asking questions regarding developmental disabilities. The definitions of these verbal categories match the definitions of the same content categories for the role play data (see Appendix 3).

TABLE 6

HOME OBSERVATIONS:

Definitions of Interaction Behaviors

Interaction Occurrence: Parents checked this category if they observed any form of verbal or nonverbal interaction at the end of the interval. This included any of the following behaviors: conversation or vocalizations between children; one child vocalizes or speaks to the other; any physical contact such as leaning against, hugging, kissing, tickling, biting, kicking, pushing (does not include simply brushing against one another in passing), use of a mutual toy, eye contact between children or one child is looking at the other. If the children were in separate rooms of the house, "occurrence" was checked under the following conditions: they were talking across the rooms; one child was looking for the other or calling the other's name; they were playing a game together which required distance between partners (e.g., hide-and-seek, telephone).

Interaction Nonoccurence: This category was recorded if the parent did not observe any of the behaviors defined above as an "occurrence," or if the children were in the same room of the house but were engaged in completely independent activities. Examples of this would include one child was sleeping while the other plays alone; the children were on opposite sides of a room playing with different toys, with neither any eye contact nor vocalization between them.

Interaction Quality: Parents recorded whether an observed interaction was positive or negative in quality, from the perspective of the children's apparent emotional pleasure or displeasure in the interaction.

Negative Affect: This was scored as occurring if the parent observed any of the following behaviors during the observed interaction: Crying--one or both of the children was (were) crying; physical aggression or teasing--one or both of the children was (were) pushing, hitting, biting, kicking, pinching, spitting at, grabbing or breaking the toy of the other; or verbal aggression or teasing--one child or both was (were) screaming, yelling at, cursing at, growling at, name-calling, or taunting the other.

Positive Affect: Positive affect was scored in the absence of any of the behaviors of the negative affect category, especially if the parent observed the children playing a game together, smiling, laughing, tickling, hugging, or in any other way displaying affection to one another.

TABLE 7

HOME OBSERVATIONS:

Measures of Sibling Interactions

Daily percent occurence of interactions: This was computed by the daily number of occurrences divided by the total daily number of observations, multiplied by 100.

Percent positive interactions: This was computed by the daily frequency of positive affect ratings, divided by the total daily frequency of positive and negative affect ratings, multiplied by 100.

Parents were instructed to collect verbalization data on the same three days of their observations of the children's interactions. However, the verbalization data were to be recorded on a frequency basis, i.e., whenever their child verbalized within a target area at any time the parent was with them that day. Parents were instructed to indicate the occurrence of a particular type of statement with a check in the appropriate box on the data form provided by the experimenter. (See Appendix 5 for sample data sheets). These data then formed the basis for the dependent measures of the individual subjects' home verbalizations, as defined in Table 8.

Parent-observer training and reliability. Training was conducted with individual parents in their own homes. Training with the momentary time sampling involved straight-forward practice with the experimenter until the parent agreed with the experimenter on at least 90 percent of 15 consecutive observations spaced between 30 seconds and two minutes apart. All parents reached criterion within one hour. Following initial acquisition the experimenter conducted two reliability sessions with each of the parent-observers; one during the baseline and one during the workshop phase. Each reliability session consisted of 20 trials spaced 2 minutes apart. Interobserver agreement remained high throughout. Agreement was calculated on a point-by-point basis for each measure (i.e., occurrence and quality of interaction) separately. As a group the parents' percent agreement scores ranged form 80 to 100 (mean = 89.00%) for the quality of interaction and from 80 to 100 (mean = 94.00% for the occurrence or nonoccurrence measure.

TABLE 8

HOME OBSERVATIONS

Dependent Measures of Verbalizations

1. Percent positive and negative verbalizations regarding entire family: This was measured by computing the daily frequencies of all positive verbalizations (descriptions, emotions, shows concern) expressed about or to a family member other than the handicapped child, and of all the negative family verbalizations (descriptions, emotions, aggression, resentment). The percent positive family statements was computed by dividing the former daily total by the total frequency of positive and negative verbalizations, multiplied by 100. The percent negative family statements was computed by dividing the total daily frequency of negatives by the number of negatives and positives, multiplied by 100.

2. Percent positive and negative verbalizations regarding handicapped child: This was measured with the above formula applied only to those statements regarding the subject's sibling.

3. Percent positive and negative self reference statements: This was measured by computing the daily frequency of positive self statements (descriptions and emotions) or of negative self statements and dividing by the combined total, multiplied by 200.

Greater difficulty was encountered in training and assessing the reliability of the measures of verbalization content. Initial training was conducted using a prerecorded cassette of 25 fictitious statements spoken by the experimenter. The parent coded each statement with immediate feedback from the experimenter. This was continued until the parent's code agreed with the experimenter's code of 18 out of 20 novel verbalizations, without immediate experimenter feedback.

In order to assess the parents' in-vivo recording skill the experimenter recorded any relevant verbalizations made by the subject during the reliabilty sessions previously described. Since no restrictions were placed on the subjects as to where they should be in the house, the subjects frequently were out of hearing distance. Thus there were only a few instances in which the experimenter was able to check reliability with the parent. Parents were not told until after the session that the experimenter had recorded verbalization, as well as interaction, data. Out of the total of ten reliability sessions conducted in this fashion, the experimenter recorded a total of only 8 relevant verbalizations. Seven out of these eight, or 87.5 percent, were also recorded by the parents, and the assigned codes matched for 6 out of these 7 (85.71% agreement).

It should be noted here that neither of Martha's parents felt they were able to conduct observations of Martha at home due to what they felt was an already hectic routine. Therefore, there are no systematic data reflecting Martha's behavior at home. Another point to mention is that the experimenter had reason to question the reality of the data submitted by Kathy's mother. Data were missing for a number of observation intervals, the dates on the observations overlapped from one set she submitted to the next, and she was unable to find her observations to submit for two weeks into baseline. In addition, when plotted, the data indicated that Kathy was interacting with her brother on 100% of the trials over a four week period. Because of the questionable validity of these data, they were not included in later analysis and discussions.

The remaining four of the six parents submitted their data to the experimenter routinely. Two of them submitted at least the number of observation forms appropriate to the number of weeks their child was participating, whereas the other two submitted fewer observations than planned, being short by 8 and 6 observations each over the course of baseline and treatment.

Experimental Design

A single subject experimental design, a multiple baseline across subject groups (Hersen & Barlow, 1975), was used to evaluate the effects of the workshop program on the subjects' behavior. The general guidelines and rationale for use of this design are presented below, followed by a description of its specific use in this project.

The multiple baseline across subject groups involves the simultaneous introduction of baseline conditions to two or more independent groups of subjects, followed by the sequential application of the treatment across groups. The experimenter monitors the same behaviors across all subjects. Experimental control is demonstrated when a change in behavior appears after the onset of treatment of the subjects in the first group while the ocncurrent measurement of the behavior of the second, untreated gorup, remains relatively constant. Thus, the extended baseline of the second group provides information regarding the natural course of the subjects' behavior without treatment (Hersen & Barlow, 1975). The decision for the transition to different experimental phases (i.e., from baseline to treatment), is determined empirically. The change from baseline to treatment for the first group usually occurs after the baseline data for all subjects have stabilized. The change in phase for the extended baseline group occurs following the demonstration of a change in the rate of the behavior of subjects in the first (treatment) group. Because all subjects eventually receive treatment, use of this design avoids the ethical problems associated with the use of a no-treatment control group. Furthermore, the design allows for replication of program effects across subjects within each group as well as across groups.

In the present project the six subjects were assigned to one of two independent groups of three. In accordance wih the multiple baseline design, one variable, verbal responses on the role play test, served as the primary focus for the evaluation of treatment effects. Given the relative lack of information on siblings of handicapped children, coupled with the exploratory nature of the sibling curriculum, it was critical to assess the potential effects of this intervention on multiple classes of relevant behaviors and settings.

The baseline condition for Group 1 consisted of two adminstrations of the role play assessment after which the workshop program began. The baseline condition for Group 2 continued for an additional two presentations of the role play assessment followed by the six week curriculum program.

The subjects met with the experimenter twice during each week of the baseline and the workshop phases. During baseline the two meetings were for the administrations of the role play assessments. During the workshop phase one meeting was for the role play assessment and the other meeting was for the workshop groups. Thus the frequency of contact with the experimenter remained as constant across experimental phases as possible.

Procedures

Pilot projects. Prior to the recruitment of subjects and implementation of the workshop program, two aspects entailed in the program required preliminary field testing and validation. The first was the role play assessment and the second was the sibling workshop goals. These are discussed briefly below.

Pilot test for the role play assessment. The role play scenes were piloted prior to their use in this project for three major reasons. First, because this research represented the first use of the role play scenes it was necessary simply to assess their effectiveness in eliciting children's verbal responses before using them as an assessment tool. Second, the pilot test also provided the experimenter with practice in administering the scenes. This facilitated systemmatic delivery across subsequent weeks of baseline and treatment. The pilot test also provided a means for determining whether or not the different imaginary settings for the family outings had any potential effect on the content or paralinguistic measures of the subjects' responses.

Two boys and two girls ranging in age from 3:6 to 6:10 years (mean age = 4.11 years) acted as pilot subjects. The pilot administrations were videotaped in an observation laboratory at the university. The verbal prompts for each role play scene were delivered twice during each administration to allow for comparisons across repeated presentations. Following some minor alterations in the phrasing of the prompts and in the arrangement of the role play materials during the interactions with the subjects, the procedures for the role play assessment were finalized. (More specific results of the pilot test are available from the experimenter upon request.)

Validation of the goals of the sibling workshop curriculum. Though the selection of the curriculum goals was based on suggestions from the previous research, the sparcity of this research, coupled with the potential adoption of this program for use by others, placed a demand for additional support for the chosen curricula. This was accomplished by soliciting written feedback from 11 professionals working in a capacity related to special education and/or developmental disabilities. The group was composed of ten women and one man, representing the following occupations: one special education coordinator, one director of an infant intervention service, one pediatrician, five special education preschool teachers, two directors of integrated special education preschool services, and one pediatric nurse. This was not a random sample of professionals, however. The experimenter had had at least prior telephone contact with seven of them, had worked as an intern for another one, and had never spoken or met with only three of them.

The workshop curriculum was broken down to seven component goals and experiences associated with participating in the program. Using the questionnaire presented in Appendix 5 respondents were asked to judge if each component of the curriculum was: 1) essential, 2) useful but not essential, 3) unnecessary, or 4) potentially dangerous to the child.

The frequency of each rating (1-4) for each component of the curriculum appears in Table 9. These results indicate that all of the components were judged as either (1) essential or (2) useful and that most raters thought all of them were essential. Only one respondent added any comments in the "other" category. These comments are included in Table 9.

Thus, the curriculum goals culled from the review of previous research were supported by the opinions of the 11 professionals who responded to this questionnaire.

Preliminary arrangements with subjects. The author contacted parents initially by telephone in order to provide a brief description of the goals and activities of the sibling workshop program. If the parents expressed interest in involving their child in the program a visit was scheduled to meet the family at their home. This visit lasted

TABLE 9

CURRICULUM VALIDATION SURVEY RESULTS

Skills and Goals	Frequency of Ratings			
	1	2	3	4
1. Learning factual information about commonly discussed disabilities.	11	0	0	0
2. Knowing other children have disabled siblings and similar family situations.	11	0	0	0
3. Discussing the strengths and weaknesses of brothers and sisters and handicapped children, in general.	10	1	0	0
4. Discussing negative emotions and problems associated with having a handicapped sibling.	10	1	0	0
5. Increasing exposure (through pictures and books) to different handicaps and adaptive equipment.	10	1	0	0
6. Increasing discussion of strengths of the participants (i.e., "self-image").	11	0	0	0
7. Practicing alternative responses (generated by teacher and children) to potentially distressing family situations (e.g., hospitalization, changing family plans, hearing sibling teased by peers.	9	2	0	0
8. Other: (added by respondents)				
a. Learning facts about sibling's specific disabilities.	1	0	0	0
b. Encouraging open communication with parents and other siblings.	1	0	0	0
c. Involvement in activities and discussions unrelated to the disabled child.	1	0	0	0

approximately one hour during which the experimenter answered questions and obtained the parents' written informed consent. (The letter of consent and consent form appear in Appendix 6). Once parents provided consent the experimenter gathered basic background information via a standard interview with a standard questionnaire (See Appendix 5). Once the questionnaire was completed the experimenter spent approximately 30 minutes playing and talking alone with the subject. Following this time the experimenter and the parents discussed all scheduling and transportation matters involved in the project.

A second home visit was conducted within one week of the first. The purpose of this visit was: 1) to begin observation training with the parent, 2) to interact again with the subject, and 3) to answer any remaining questions.

Baseline phase. Parents of children in both Group 1 and Group 2 began recording data on the subjects' verbalizations and interactions with the handicapped child at home using the observation systems outlined above. The experimenter administered the role play assessment twice weekly to each subject during each week of baseline. In all cases one of these baseline assessments was videotaped at the university in a private observation lab containing a one-way window. Following the videotaped session the experimenter brought each subject to see the playroom in which the workshops were to be held. This was done in the hopes of making each child feel as comfortable as possible during the first meeting with the others. All other role play assessments were administered at the subjects' private homes and were audiotaped.

Subjects were instructed that these role play sessions would help the experimenter know the types of lessons that should be covered during the upcoming workshops.

Workshop phase. The parent observation procedures and the role play administrations continued during this workshop-treatment phase. The role play sessions were conducted two days following the workshop sessions. Thus, workshop conditions differed from those of baseline in the introduction of the sibling workshop program.

The workshop meetings were conducted once weekly for six consecutive weeks. Each workshop lasted between one and one-half to two hours. Aside from the experimenter and subjects, one research assistant was present at the first three workshops for each group. Thereafter, that assistant was needed to conduct observations from behind the one-way mirror.

Parents were informed of the general goals and activities of the weekly meetings. However, they were not provided with a detailed account of their child's verbalizations or participation in the group. Parents were encouraged to not push their child into revealing more information about discussion than the child spontaneously offered. The subjects were told that what they said or did during the group would be held confidential, but that they were free to discuss any specifics with their parents or friends if they so chose.

The workshops: Daily schedule and teaching techniques. Though different activities were planned for achieving the different weekly curriculum objectives, the general sequence of activities within each weekly meeting was relatively constant across weeks. Each meeting followed the general schedule outlined below:

1) a 10-minute general discussion of what the subjects had done during the preceding week,

2) a 15-minute introduction by the experimenter of the activities and goals of the meeting,

3) a 34 to 45 minute period for rehearsal and feedback of the verbal and social skills targeted by the curriculum goals,

4) a 15-minute free-play period, during which subjects chose their own activities and the experimetner prepared snacks,

5) a 15-minute snack time, and

6) a 10-minute period during which the experimenter summarized the day's lesson and provided specific feedback to each subject regarding his or her behavior that day. It was during this closing period when the experimenter presented an attendance incentive to each subject. These incentives were personalized cotton tee-shirts of the subject's favorite color. During this period the experimenter pressed one letter of each subject's name onto his or her tee-shirt so that by the end of the workshop program each child brought home a shirt with his or her name across the front, as a present for attending and participating in the program.

The experimenter used a combination of training procedures to encourage general child-to-child communication during the meetings and to increase their use of the specific targeted verbal and social skills. These procedures involved the use of modelling, coaching, role-playing, rehearsal, and behavior-specific feedback. The effectiveness of these techniques has been documented for teaching social skiills to normal children (Chittenden, 1942; Rathjen, Hiniker & Rathjen, 1976; Spivack & Shure, 1974) and to children with particular behavior problems, such as social withdrawal (Combs & Slaby, 1977; Ross, Ross & Evans, 1971) and unassertiveness (Bornstein et al., 1977).

Following the introduction of the workshop goals, the teacher modeled examples of the targeted behaviors (e.g., identifying strengths) within the context of simulated role play interaction with puppets and dolls. The subjects were then encouraged to and praised for assuming the role of one of the character sin the interaction. The experimenter repeated variations of these tasks until each of the subjects practiced the appropriate responses with feedback.

Following these rehearsals with dolls and puppets, discussion began in order to illustrate and practice the skills in the context of more realistic characters such as specific family members. The teaching techniques were then applied to enacting situations at home in which the subjects might practice their new skiills. Wherever possible the experimenter used other children to model appropriate responses (e.g., "Now, Kathy, what do you think would be a way for this girl to answer the question"? or "Martha, what would be another way"? "Those are both good; let's all practice Kathy's and Martha's answers and see what happens"!). In addition, the experimenter encouraged children to give one another feedback on their responses (e.g., "Ricky, what was something good about Henry's answer? How could he make it even better"?).

Though the teaching techniques remained fairly consistent across workshops, different activities were scheduled weekly in association with the different curriculum goals. These specific activities and materials are described in the curriculum manual appearing in Appendix 7.

CHAPTER III

RESULTS

Numerous measures of behavior were collected in each of three contexts--during the role play sessions, during the group workshops, and during family interactions at home. All of the measures will be discussed below as they relate to the five major questions and issues under investigation. Again, these five questions are as follows:

1) Is the sibling curriculum successful in teaching young children about developmental disabilities?

2) What effect does teaching children about disabilities and having them discuss their handicapped siblings and familes have on the children's verbalizations and concepts about themselves, their families, and their siblings?

3) What effect does the workshop program have on the paralinguistic characteristics of the subjects' discussions about handicaps, their families, and themselves?

4) What is the relation between the subjects' behavior during the workshop sessions and their behavior during the role play sessions?

5) Was there a change in the subjects' behavior with their families at home related to the workshop program?

The most sensitive measures of the effects of the sibling workshops resulted from the analyses of the individual subjects' behavior. However, since the experience of being in a sibling discussion group was central to the research process, averaged group measures also provide important information regarding the effects of the sibling workshops. For these reasons, the following presentation of the results will include a discussion of both the individual, as well as the group, trends.

Issue 1: Understanding of Developmental Disabilities

Perhaps the most straightforward goal of the sibling curriculum was to increase the subjects' understanding of developmental disabilities. Achievement of this goal was assessed by comparing the subjects' baseline and intervention accuracy when discussing developmental disabilities in general and when defining four commonly used labels: deaf, blind, handicapped, and retarded.

All of the subjects became more accurate in the factual aspects of their statements regarding developmental disaiblities as they proceeded through the curriculum (see Figure 2). Subjects in Group 1 achieved their highest percentage of accurate statements, 75%, following the last workshop (role play session 8). The subjects in Group 2, the girls, achieved 100% accuracy following the third workshop (role play session 7). As evident in Figure 2, the subjects in Group 1 entered the program with a more limited understanding of the different handicapping conditions and left the program at an increased level of accuracy equivalent to the level at which Group 2 subjects began.

In addition to being more accurate, Group 2 subjects generally spoke more about handicaps than did Group 1 subjects. During the role play scene designed to elicit comments regarding disabilities, Group 2 responses averaged between 13.63 and 22.67 words and between 5.60 and

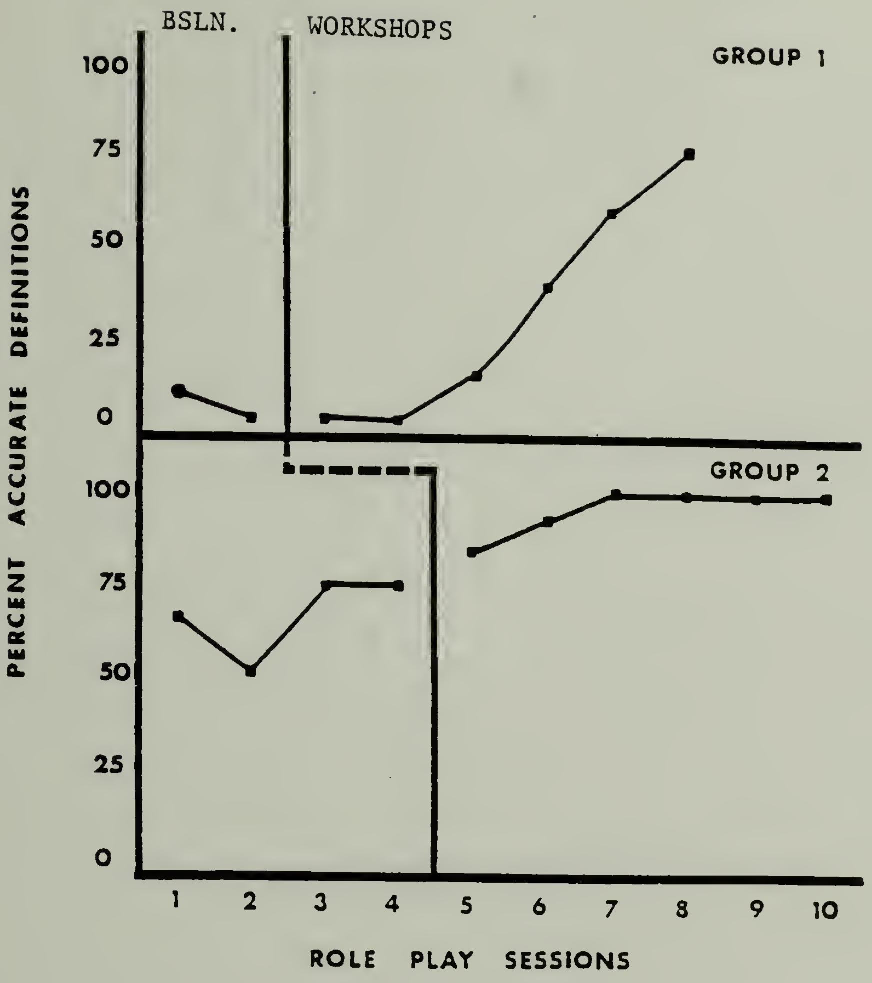

Fig. 2. Percent Accurate Definitions of Developmental Disabilities: Group Data

11.48 seconds in duration per statement. The Group 1 boys used approximately half as many words (range = 6.53 - 11.84 words) and seconds (range = 1.03 - 8.38) to respond to those same prompts.

The individual data appearing in Figures 3 and 4 show more precisely what words the subjects defined during the baseline and workshop phases. What is consistent across subjects is that all of them provided accurate (A) definitions of the words "blind" and "deaf" by the end of the curriculum. Four of the six subjects accurately defined the word "handicapped," and five of the six accurately defined the word "retarded" by the end of the proejct. Only three of them (Group 2 girls) defined the word "retarded" on two or more consecutive sessions. Thus, the children most easily acquired definitions of those words that were linguistically the most simple and conceptually the most concrete and specific (i.e., "deaf" and "blind").

One additional point should be made regarding these data. That is, that there were only two subjects (Kathy and Jane) whose week-by-week definitions only improved in accuracy. With each of the other subjects occasional decreases in accuracy occurred from one week to the next. The Group 1 boys became increasingly and consistently more accurate following the fourth workshop (role play session 6). Martha's somewhat erratic performance during baseline stabilized throughout the workshop phase, when her level of accuracy was the highest for all of the words.

In summary, then, all subjects participating in this program became more accurate in their definitions of different disabilities, as

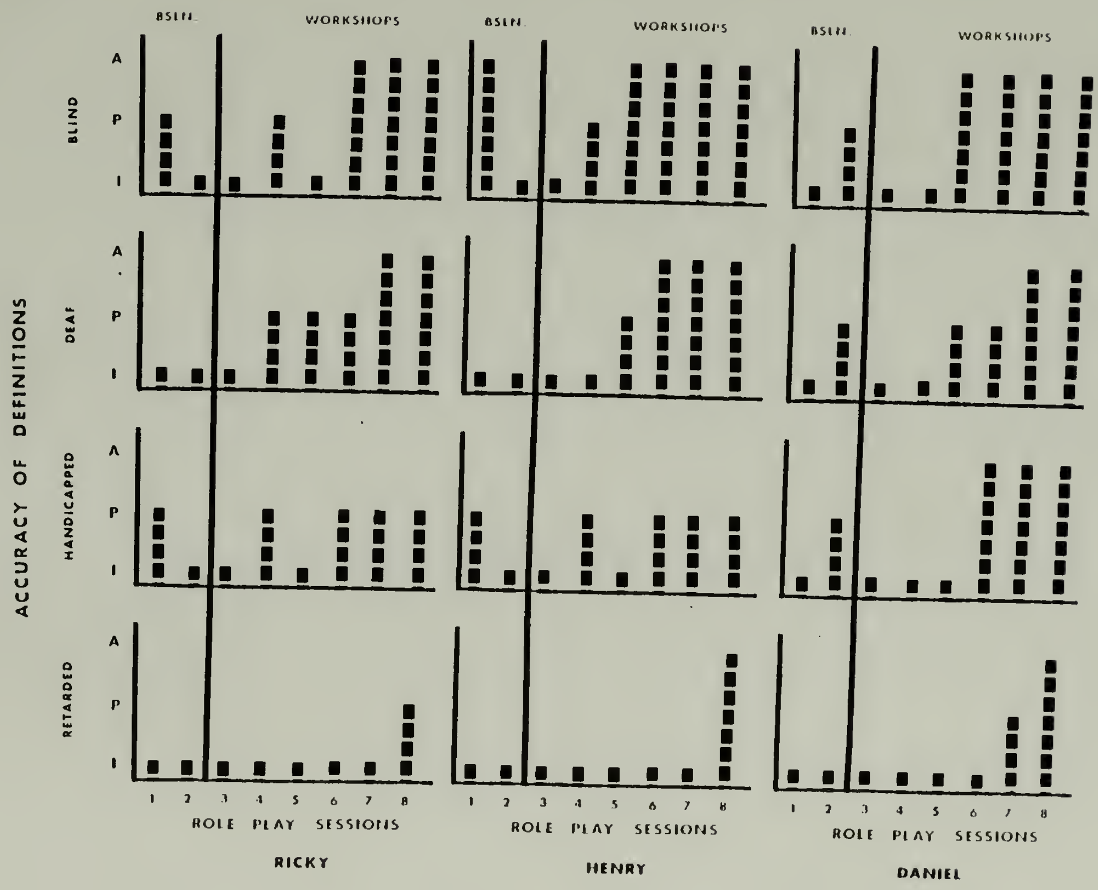

Fig. 3. Occurrence of Accurate (A), Partial (P) or Inaccurate (I) Definitions of Developmental Disabilities--Individual Data: Group 1

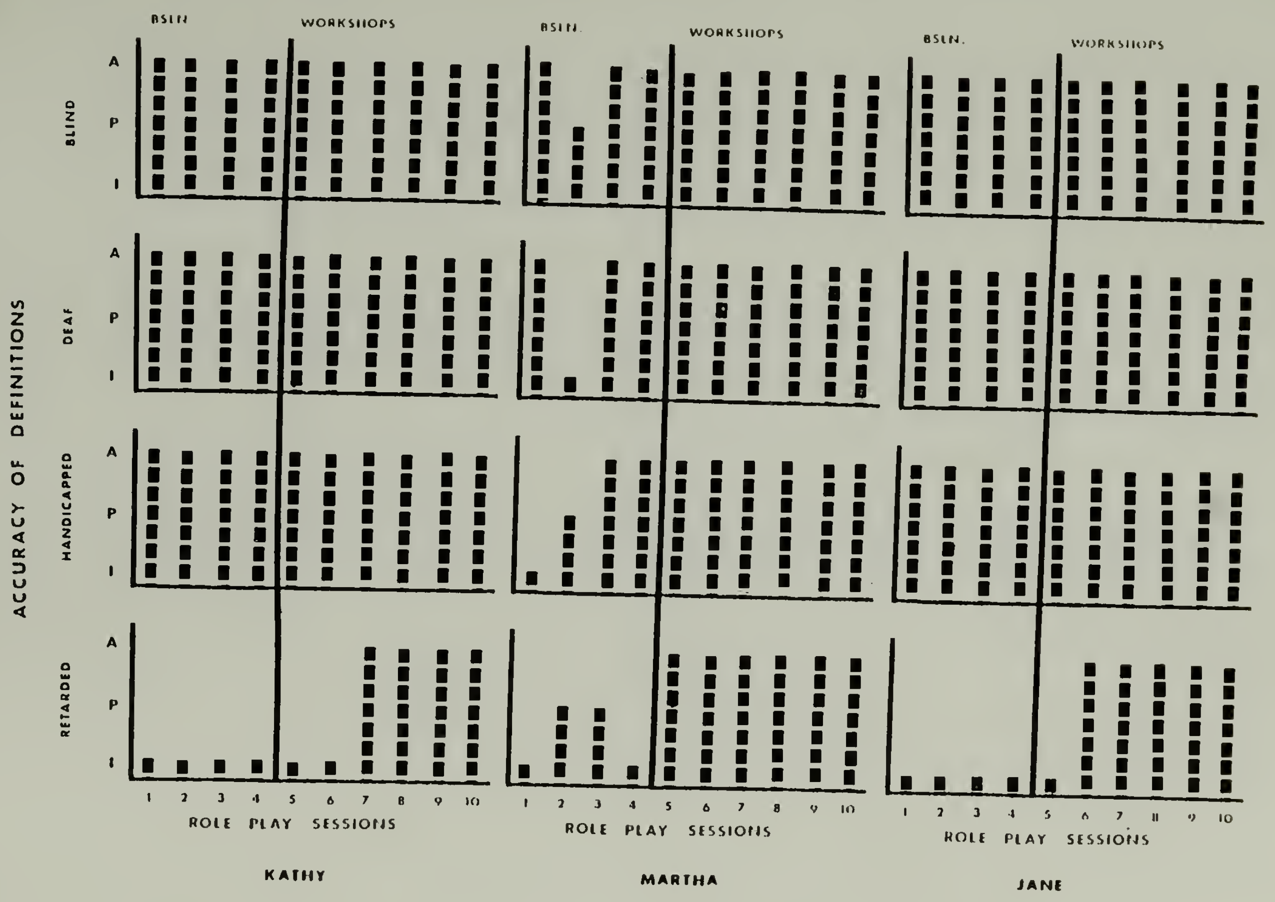

Fig. 4. Occurrence of Accurate (A), Partial (P) or Inaccurate (I) Definitions of Developmental Disabilities--Individual Data: Group 2

well as more accurate in the factual aspects of their general conversation regarding developmental disabilities.

Issue 2: Effects of the Curriculum on Verbalizations Regarding Entire Family, Handicapped Sibling, Self; and Noncompliance

By nature of the curriculum content, the subjects' participation in the research project entailed increased exposure to discussions related to developmental disabilities as well as increased discussion of their brothers, sisters, and parents. As shown above, these discussions produced an increased knowledge of developmental disabilities. Yet, what effect did they have on the children's verbalizations and concepts about their families, their handicapped siblings, and themselves? Measures of the content of the role play data address this question and are presented below.

Verbalizations regarding entire family. For both groups of subjects the workshop program was associated with an increase over baseline levels in the percentage of positive verbalizations made regarding their family members and family activities. During the workshop phase there was no overlap with baseline percentages of positive family verbalizations. This positive effect was more stable and was of a greater magnitude for Group 2 than for Group 1 subjects. In addition, for Group 2, there was a consistently lower level of negative verbalizations during the workshop phase, as compared to the baseline phase. These data are presented in Figure 5.

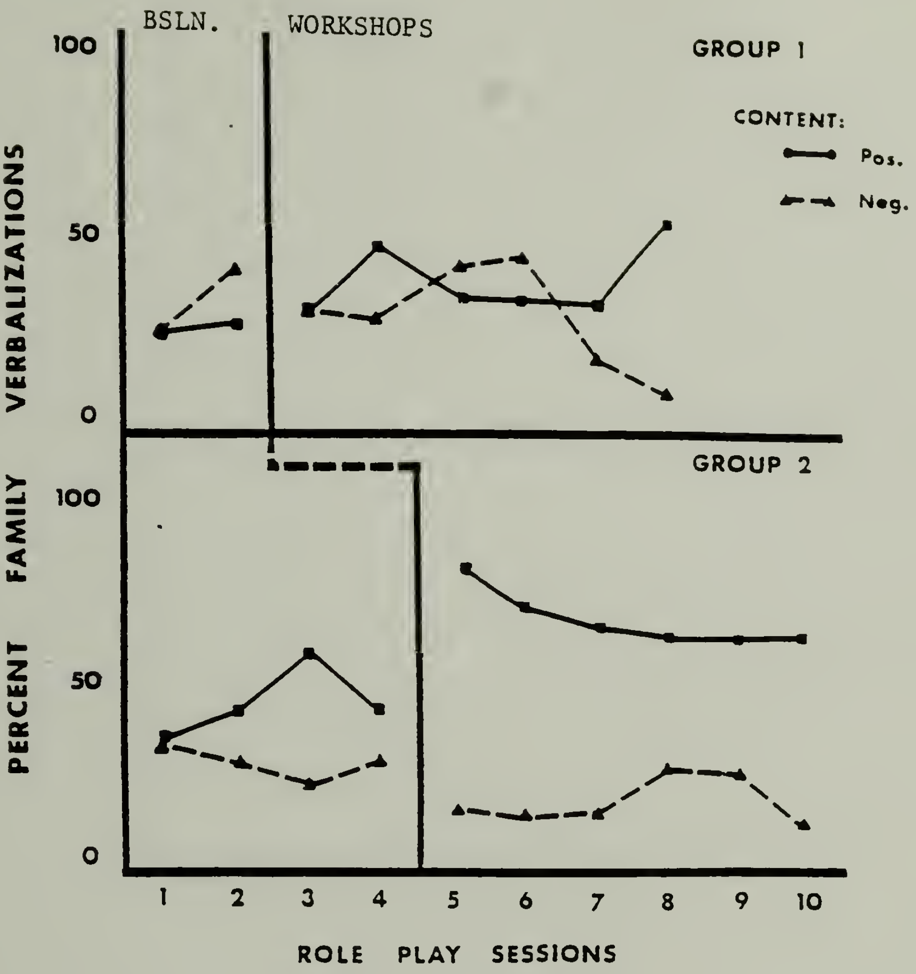

Fig. 5. Percent Positive and Negative Family Verbalizations: Group Data

The Group 1 baseline indicates that the percentage of negative family verbalizations (range = 23.76 - 41.18%, mean = 29.61%) was higher than that of the positive verbalizations (range = 23.76 - 25.49%, mean = 25.34%). Following the onset of the workshops the Group 1 percentage of positive family verbalizations increased to a range of 30.77% to 55.74%, with a mean of 39.23%.

The Group 2 baseline indicates that between 33.73% and 57.18% (mean = 40.65%) of their family verbalizations were positive and between 18.75% and 30.185 (mean = 26.52%) were negative in content. During the workshop phase the positive verbalizations rose to a range of between 30.77% to 55.74% (mean = 39.72%).

Inspection of the individual data in Figure 6 indicate that during baseline, three subjects (i.e., Ricky, Henry, and Jane) produced a greater frequency of negative than of positive statements about their families. Following the onset of the workshops, Henry and Jane showed a dramatic change to a frequency of positive family statements that greatly exceeded the frequency of their negative statemnts. For the third child, Ricky, there was a consistent increase in positive statements following the workshops, but only an erratic, though decreasing, percentage of negative statements. The three other subjects (i.e., Daniel, Kathy, and Martha) produced a greater percent of positive than negative verbalizations during the baseline phase. For Kathy and Martha this difference between positive and negative verbalizations became even more pronounced following the workshops. However, the data for Daniel do not reflect a clear advantage of positive over negative statements after the

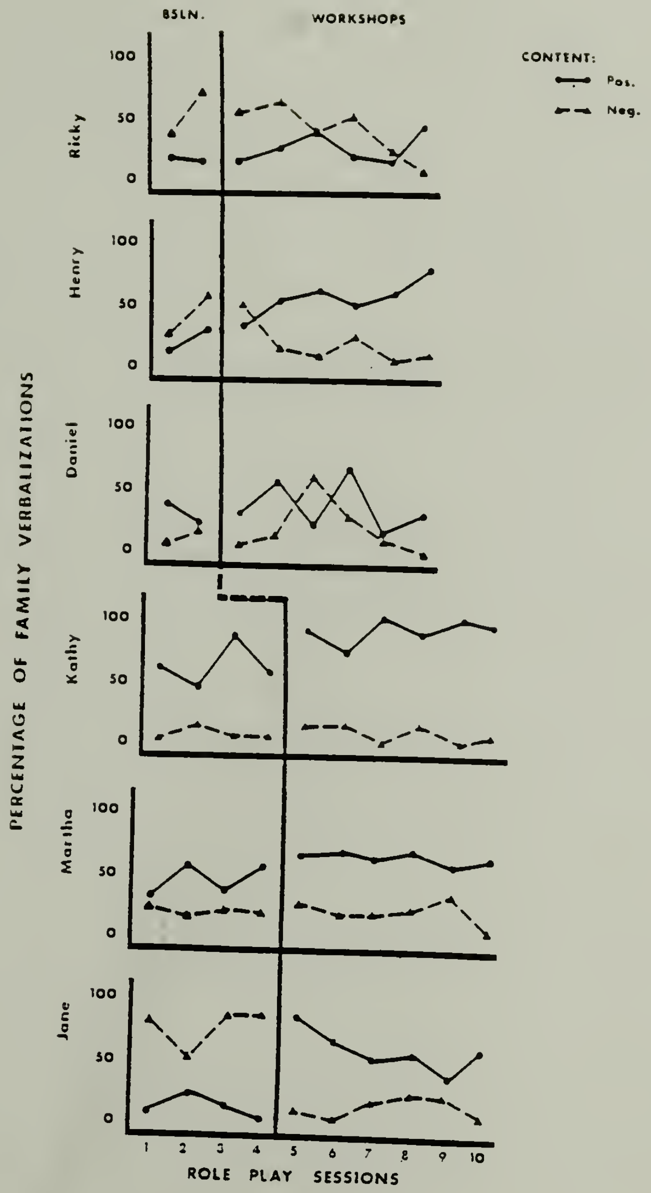

Fig. 6. Percent Positive and Negative Family Verbalizations: Individual Data

onset of the workshop. One source of these inconsistent data must now be discussed as it appears to have influenced a number of Daniel's measures of behavior.

During the weekend between role play sessions 5 and 6, Daniel's stepfather left the family. (The experimenter did not learn about this until after session 6.) Because the role play test was used to assess curriculum-related changes in children's concepts and verbalizations about themselves and their families, it is difficult, in Daniel's case, to separate the effects related to the sibling curriculum from those related to the change in his family status. Thus, though the impact of the curriculum on Daniel cannot be clearly determined from his data, the fluctuations in the measures of his behavior (described below) lend support to the role play test as an indicator of children's family concepts.

Daniel's data indicate that the frequency of positive family statements remained greater than that of negative statements until Session 5, when the percentage of negatives rose to 54.17% with a concomitant decrease in his positive family verbalizations to 25.00%. Session 5 was the session that preceded the family break-up; Daniel's stepfather left the home two days afterward. During that fifth session Daniel's negative verbalizations about his family concerned the relationship between his mother and his stepfather, Bob. Specifically, he complained that Bob made his mother cry and that she became very angry with him. Because the fifth session preceded the separation by only two days, the general climate in Daniel's house may have been particularly negative and tense. This will become more plausible later as additional data are presented showing that concurrent with the negative change in Daniel's parents' relationship came an increase in the frequency of his negative statements about his sister and himself. It was not until after the termination of the project that the experimenter learned that Bob had returned to the family at a time coinciding with Session 7. As will be seen in all of Daniel's verbal content data, it was Session 7 when the pattern of his behavior began to take more positive turn. By the last session, the percentage of positive verbalizations again exceeded the percentage of negative verbalizations in three content areas--family, handicapped child, and self.

To summarize, five out of six of the subjects responded to the curriculum with an increase in their percentage of positive verbalizations regarding their families. Four of these five children showed a concomitant decrease in the percentage of negative verbalizations. The results for the sixth child, Daniel, are unclear and may more strongly reflect the individual changes in his family life during the workshops than the impact of the curriculum material itself.

Verbalizations regarding handicapped child. The data for the subjects' positive and negative verbalizations regarding their handicapped siblings is similar to the pattern of their statements regarding other family members. These data appear in Figure 7. For both groups the workshop phase was associated with an increase in positive sibling statements with an inconsistent decrease in negative sibling statements.

For Group 1 the baseline of their negative sibling verbalizations (range = 28.12 - 31.82%, mean = 29.62%) generally exceeded that of their positive verbalizations (range = 18.18 -28.12%, mean = 24.07%). During the workshops this range of positive statements increased to between 25.00% to 51.72%, with a mean of 41.32%. For Group 2 girls there was a general increase in positive statements from the baseline phase (range = 31.11 - 56.81%) to workshop phase (range - 40.54 - 78.12%), though daily percentages during the workshop phase overlapped with baseline on two occasions.

As with the measures of the subject's family statements, three subjects showed higher baseline rates of negative than positive verbalizations regarding their handicapped sibling. Martha and Henry showed an increase in positive statements and a decrease in negative statements during the workshop phase whereas Ricky began to show this pattern only during the last two role play sessions. The three other subjects (Daniel, Kathy, and Martha) produced a greater proportion of positive than negative statements about their siblings during baseline. An increase in positive statements occurred with Daniel and Martha, though both subjects showed an increase over baseline in their percentage of negative verbalizations following workshops 4 and 5. Kathy maintained her high percentage of positive sibling verbalizations through baseline and treatment. (See Figure 8 for individual data.)

Consistent across the groups (see figure 7) and across four of the six subjects, was an increase in the percentage of negative sibling verbalizations following the fourth workshop (i.e., role play session 6

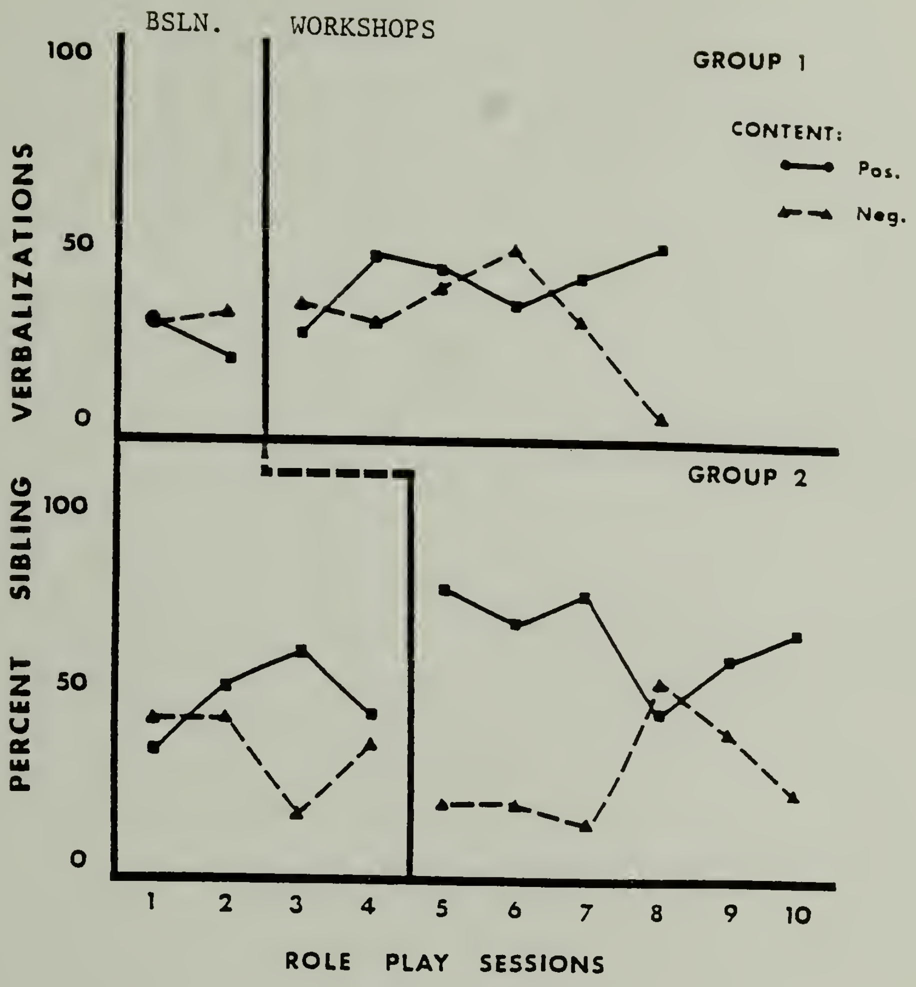

Fig. 7. Percent Positive and Negative Sibling Verbalizations: Group Data

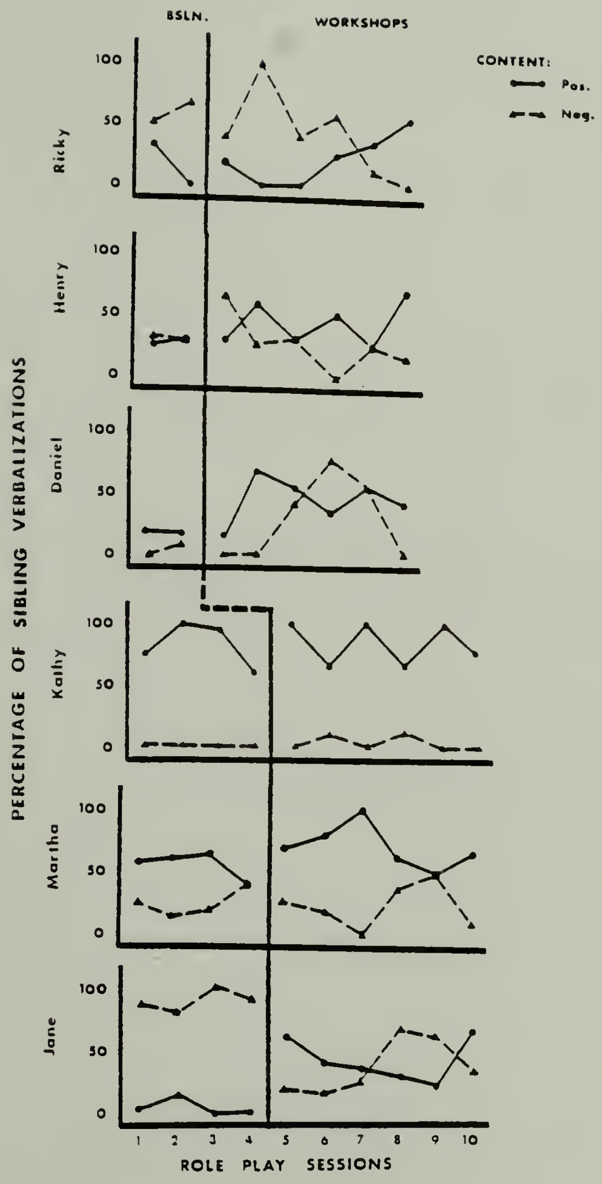

Fig. 8. Percent Positive and Negative Sibling Verbalizations: Individual Data

for Group 1 and session 8 for Group 2). In both cases this rise was followed by a sharp decline in the percentage of negative verbalizations during the subsequent two last weeks of the workshops. The goal of that fourth workshop was to identify and express negative emotions in a constructive manner. Thus, the increase in negative statements may have appropriately reflected the curriculum for that week.

Self-reference statements. There was an increase over baseline in the mean percentage of positive self-referents for all of the subjects, though for some children it was not a huge change, nor was it a consistent, incremental change. When the data are summarized for each group, as in Figure 9, the more general changes became apparent.

For Group 1 the baseline percentage of negative self-referents (range = 10.53% - 33.33%, mean = 17.86%) exceeded that for the positive self-referents (range = 0% - 7.89%, mean = 5.36%). During the workshop phase the percentage of negative statements decreased slightly (range = 7.69% - 29.41%, mean = 17.33%) and the positive statements increased (range = 5.88% - 38.46%, mean = 16.67%). Though there was an improvement in terms of the direction of change, the percentage of negative self-statements exceeded positive self-statements for three of the six sessions during the work phase. For this group most of their comments about themselves were general in nature (overall range = 66.67% - 94.12%, mean = 68.93%).

For Group 2 the baseline percentage of negative self-referents (range = 6.67% - 24.24%, mean = 17.83%) was generally, but not

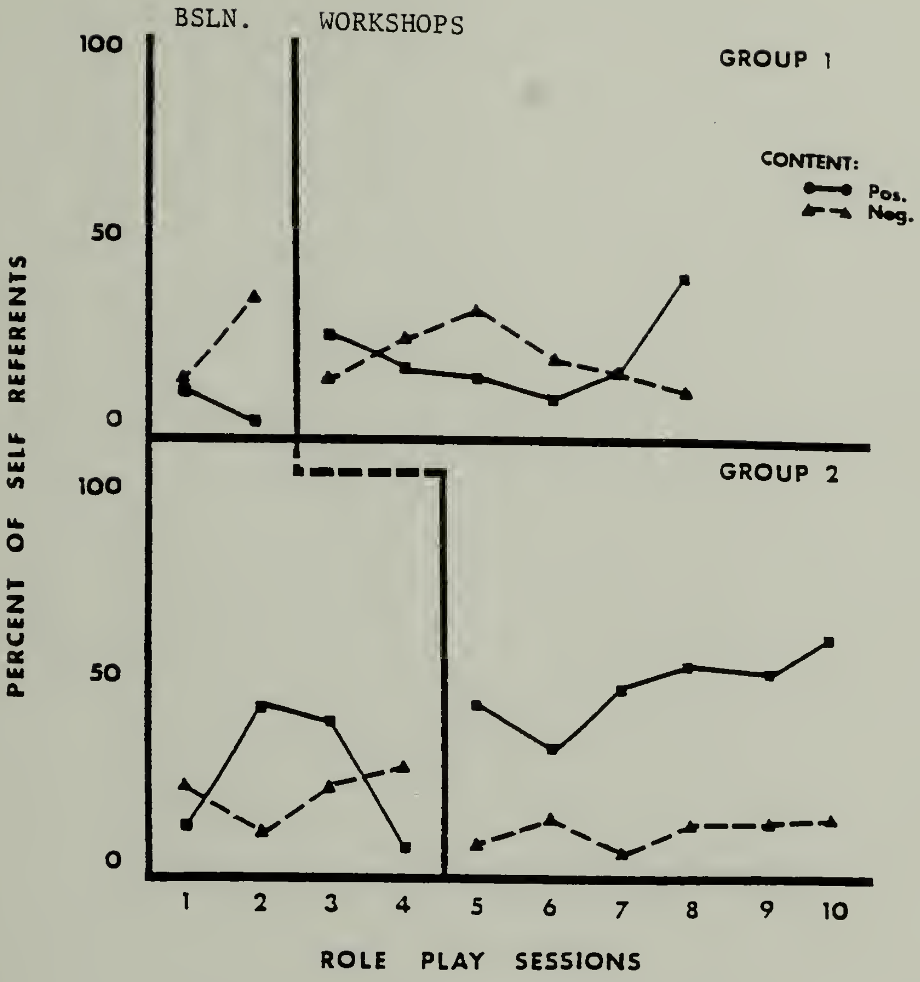

Fig. 9. Percent Positive and Negative Self Reference Statements: Group Data

consistently, lower than that of the positive statements (range = 3.03% - 40.00%, mean = 19.75%). Like Group 1, the workshop phase for Group 2 was associated with an increase in positive self-referents (range = 29.73% - 57.89%, mean = 48.61%) and a decrease in negative self-statements (range = 1.89% - 7.02%, mean = 5.98%). However, unlike Group 1, there was a clear superiority for the positive over the negative statements throughout the workshop phase.

The individual data in Figure 10 show that four of the six subjects (i.e., Henry, Kathy, Martha, Jame) responded to the workshops with a clear increase in positive self-referents and a decrease in negative self-referents. The data for Daniel and Ricky are not as clear. Daniel showed a decrease in the percentage negative self-referents immediately following the onset of the workshops. However, this pecentage increased during role play session 5, that session immediately preceding his stepfather's separation from the family. With Ricky the rate of negative self-referents fell consistently below the rate of positive self-referents only after session 5. Subsequent role play sessions would have been useful in determining the stability of this change in Ricky's verbalizations.

<u>Noncompliance</u>. One of the greatest differences between the subject groups was in the rate and nature of their noncompliance during the role play sessions. These rates are presented for the groups in Figure 11 and for the individuals in Figure 12.

For Group 1 boys, there was an increase in their verbal noncompliance rates that began in the baseline phase and continued through to the

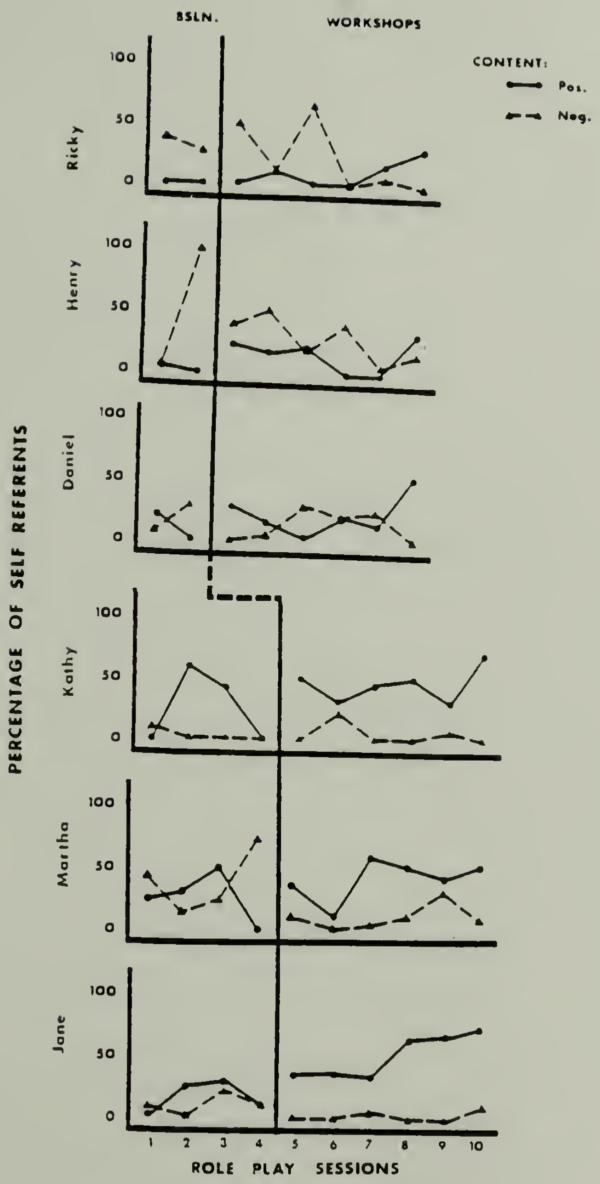

Fig. 10. Percent Positive and Negative Self Reference Statements: Individual Data

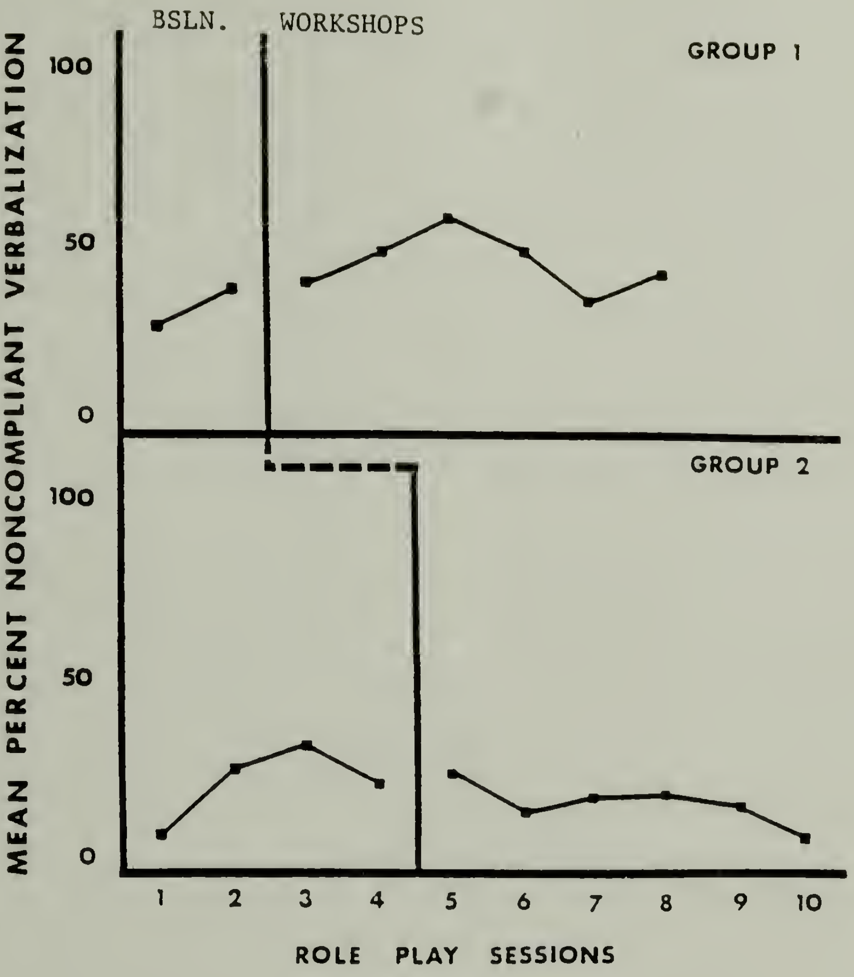

Fig. 11. Mean Precent Noncompliant Statements: Group Data

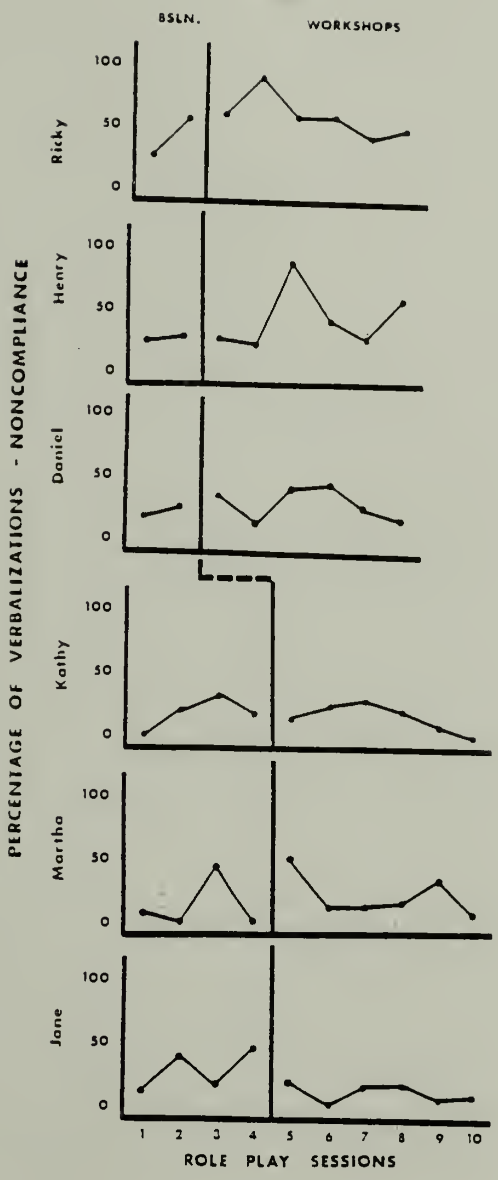

Fig. 12. Mean Percent Noncompliant Statements: Individual Data

sixth role play session. During baseline their verbal noncompliance rates were between 25.81% and 36.90% (mean = 31.07%), indicating that almost one-third of their statements were off-task. During the workshops almost 50% of their statements were noncompliant (range = 34.12 - 58.18%, mean = 43.36%).

The girls of Group 2 exhibited an overall lower frequency of noncompliance than the boys, with a decrease from baseline during the workshop phase. Their baseline noncompliance rates ranged from 5.49% to 31.25% (mean = 19.32%) and dropped to a range of between 4.84% to 23.44% (mean = 14.38%) during the workshop phase.

For most of the children the noncompliance rates represent statements in which the children simply complained about the games (e.g., "How come we never pay my games"?) or suggested creative variations to the role play scenes (e.g., "How would we play with the matchbox cars too"?). With persistence the experimenter was generally able to redirect the subjects back to the tasks. However, such was not always the case with Ricky, especially during the first five role play sessions. Ricky's noncompliance ranged from verbal responee refusals (e.g., "I'm not telling.") to physical aggression directed toward the experimenter. A serious episode of physical aggression occurred during the fifth role play session. It was, in part, precipitated by the experimenter firmly retaining a toy that Ricky had tried to grab out of her hand. The experimenter insisted that he ask for the toy but Ricky responded by biting, kicking, scratching, punching, and crying. The experimenter terminated the session with a stern reprimand that such physical outbursts would not be tolerated. Ricky never repeated this physical aggression with the experimenter again, though his rates of verbal noncompliance remained relatively unaffected. As shown in Figure 12 these rates ranged from 29.63% to 52.00% during baseline, and from 43.48% to 87.50% during the workshop phase. It is interesting to note that for Ricky the highest percentage of negative self-referents (see Figure 10) occurred during session 5 when he became physically aggressive and noncompliant. Sessions subsequent to that one were characterized by a change in a more positive, decreased, direction.

The above analyses were based exclusively on the measures of verbal content yielded by the subjects' role play responses. The results demonstrate that children as young as 3:9 years old can learn about developmental disabilities and that this increased knowledge may have no negative effect on the children's verbalizations and concepts about themselves, their handicapped siblings, and their other family members.

However, content is only one characteristic of speech; many other characteristics of speech affect the listener. Because there was such a heavy reliance on verbal material in the present study, it is important to study all of its components fully. By examining other paralinguistic aspects of the children's replies we can better determine whether their participation in the sibling program affected more than the content of their speech.

The data most appropriate to this analysis are those from the Peabody Picture Vocabulary Test (PPVT) and the measures of paralinguistic behavior yielded by the role play assessment. In addition to providing a more complete picture of the effects of the curriculum, these measures also provide information regarding some of the linguistic characteristics of the subjects that were associtaed with the most positive and powerful changes in verbal content. Each of these measures is discussed in the section below.

Issue 3: Effects of the Curriculum on Paralinguistic Behavior

Peabody Picture Vocabulary Test (PPVT). The PPVT was administered during the baseline period only as a measure of language comprehension, in order to obtain further descriptive information regarding the language abilities of the subjects.

The results for the administration of the PPVT are presented in Table 10. In general, boys showed a larger difference than the girls between their chronological age and their age-equivalence (or M.A.) scores. However, the actual raw scores and M.A. scores were generally higher for Group 2 than Group 1. Thus, the PPVT indicates that the girls performed better than the boys on this measure of language comprehension, as would be expected from their chronological age.

Measures of paralinguistic behavior. Six measures were used to monitor the paralinguistic characteristics of the subjects' role play responses. The first two measures, "match" and "emotion," deal with affective qualities of the subjects' voices. The remaining four measures are similar to other measures of linguistic complexity used in developmental

TABLE 10

RESULTS OF PPVT ADMINISTRATION

Subject	C.A.	Raw Score	Percentile Score	M.A.
Group 1				
Ricky	3:9	49	77	4:11
Henry	4:6	54	80	6:1
Daniel	4:11	57	79	6:3
Group 2				
Kathy	5:9	52	30	5:5
Martha	7:4	61	54	7:1
Jane	6:0	61	79	7:1

research (e.g., Dale, 1975). These four measures are latency, duration, number of words, and percent speech disfluency. Individual and group results for each measure are presented below. Table 11 displays the between-group differences in mean baseline and treatment means and for all paralinguistic measures. Tables 12 and 13 display the within-group changes across phases for Group 1 and Group 2, respectively. Reference will be made to these three tables throughout the remainder of the present section.

Match. As shown in Table 11, during baseline the two groups differed significantly in the mean match score assigned to their role play responses. It will be recalled that a score of 1 represented a response judged to "match" or to be consistent in the content and the emotional quality of the subject's voice. A score of 0 represented the case of

TABLE 11

PARALINGUISTIC ROLE PLAY BEHAVIOR: COMPARISON OF GROUP 1 AND GROUP 2 ON BASELINE AND INTERVENTION MEANS

Variable	Subject Group	Baseline Mean	Workshop Mean
Match (Scores 0, 1)	1 2	.86 .94	.91 .89
Emotion (Scores 1, 2, 3)	1 2	1.99 1.99	1.98 2.03
Duration (in seconds)	1 2	5.09 9.24	5.87 9.99
Latency (in seconds)	1 2	1.44 1.42	2.42 1.58
Number of Words	1 2	9.56 18.18	9.71 18.54
Percent Speech Disfluencies	1 2	14.55 6.35	11.17 6.40

TABLE 12

PARALINGUISTIC ROLE PLAY BEHAVIOR: COMPARISON OF BASELINE AND INTERVENTION MEANS GROUP 1 SUBJECTS

Variable	Experimental Phase	Subject Means			Group Average
		Ricky	Henry	Daniel	
Match	Baseline	.63	.91	.97	.86
	Workshop	.92	.92	.91	.91
Emotion	Baseline	2.26	1.80	2.02	1.99
	Workshop	2.04	1.88	2.02	2.04
Duration	Baseline	2.91	4.53	7.29	5.09
	Workshop	5.42	5.15	7.37	5.87
Latency	Baseline	1.20	1.12	1.98	1.44
	Workshop	2.71	1.79	2.38	2.42
Number of Words	Baseline	5.28	9.62	12.52	9.56
	Workshop	7.86	9.71	12.25	9.71
Percent Speech Disfluencies	Baseline	38.71	5.28	8.56	14.55
	Workshop	19.47	5.28	6.99	11.17*

TABLE 13

PARALINGUISTIC ROLE PLAY BEHAVIOR: COMPARISON OF BASELINE AND INTERVENTION MEANS GROUP 2 SUBJECTS

Variable	Experimental Phase	Subject Means			Group Average
		Ricky	Henry	Daniel	
Match (scores 0, 1)	Baseline	.92	.92	.99	.94
	Workshop	.97	.81	.91	.89
Emotion (scores 1, 2, 3)	Baseline	2.04	1.94	1.96	1.99
	Workshop	2.10	2.05	1.95	2.04
Duration (in seconds)	Baseline	10.17	7.85	9.24	9.24
	Workshop	11.53	9.84	8.63	9.99
Latency (in seconds)	Baseline	1.98	1.12	.99	1.42
	Workshop	1.79	1.53	1.39	1.58
Number of Words	Baseline	15.92	16.06	22.76	18.18
	Workshop	15.46	19.13	20.80	18.54
Percent Speech Disfluencies	Baseline	5.78	5.04	8.13	6.35
	Workshop	7.17	4.62	7.82	6.39

discordance between the content and effect of the response. Thus, the closer the mean score was to 1, the higher the feruqency of match scores. The baseline difference between the group indicates that there was a higher matching rating for the responses of the Group 2 subjects. During the workshop phase the Group 1 subjects' mean had increased to close to one and the Group 2 subjects' mean had decreased to a level below that of the boys in Group 1. Thus, the groups responded differently during the different experimental phases.

Figure 13 displays the group daily mean percentage of replies judged as representing a match. For Group 1 the baseline percentages were 82.65% and 93.88% match (mean = 88.26%) and for Group 2 the baseline percentages ranged between 85.48% and 98.24% match (mean = 93.80%). The Group 1 percentage of match scores increased to between 85.94% and 94.32% match (mean = 91.12%). The Group 2 percentage decreased to a range of between 81.25% and 95.18%, with a mean of 91.51%. The absolute percentage levels are high for both groups during both phases; thus the actual phase differences are of doubtful clinical significance.

Figure 14 displays the daily percentages of match for the six individual subjects. There appear to be phase-related mean differences for four of the six subjects: Ricky, Daniel, Martha, and Jane. Ricky was the only subject of these four whose change during the workshop phase was an increase in the percentage of match responses. During the first role play session Ricky exhibited a "nervous laugh" when he responded to many of the experimenter's prompts. It differed from a typical or genuine laugh in that it rarely corresponded to anything

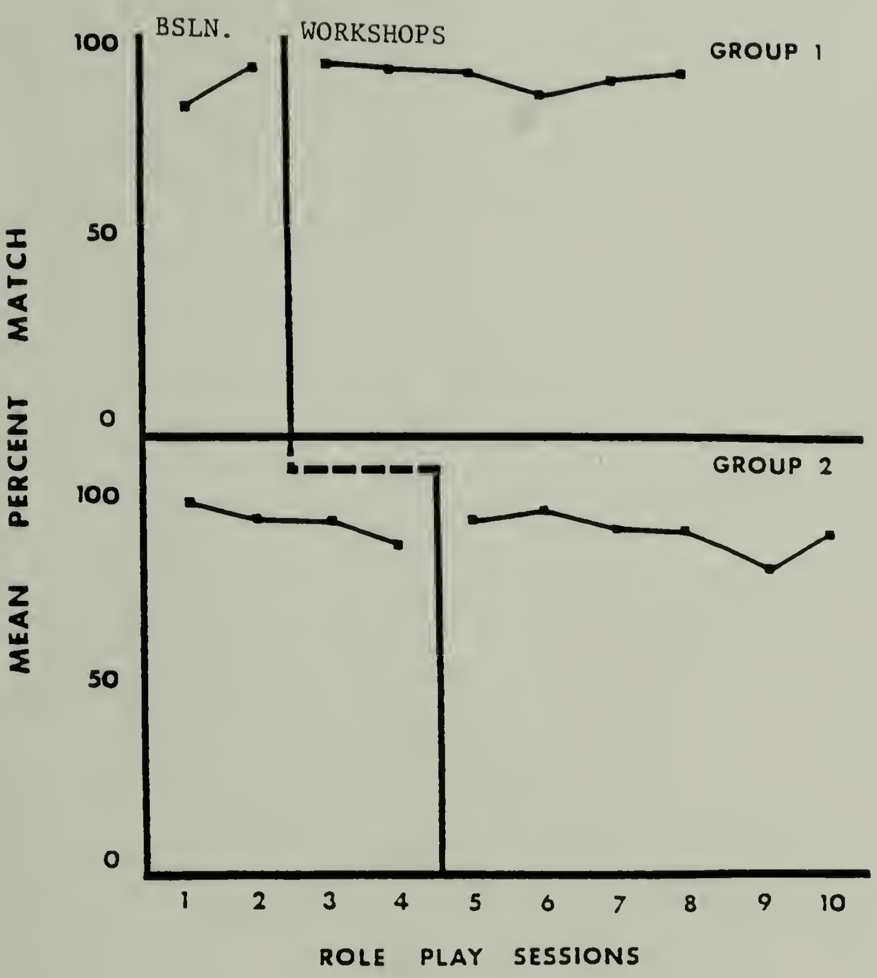

Fig. 13. Mean Percent Match Between Verbal Content and Affect: Group Data

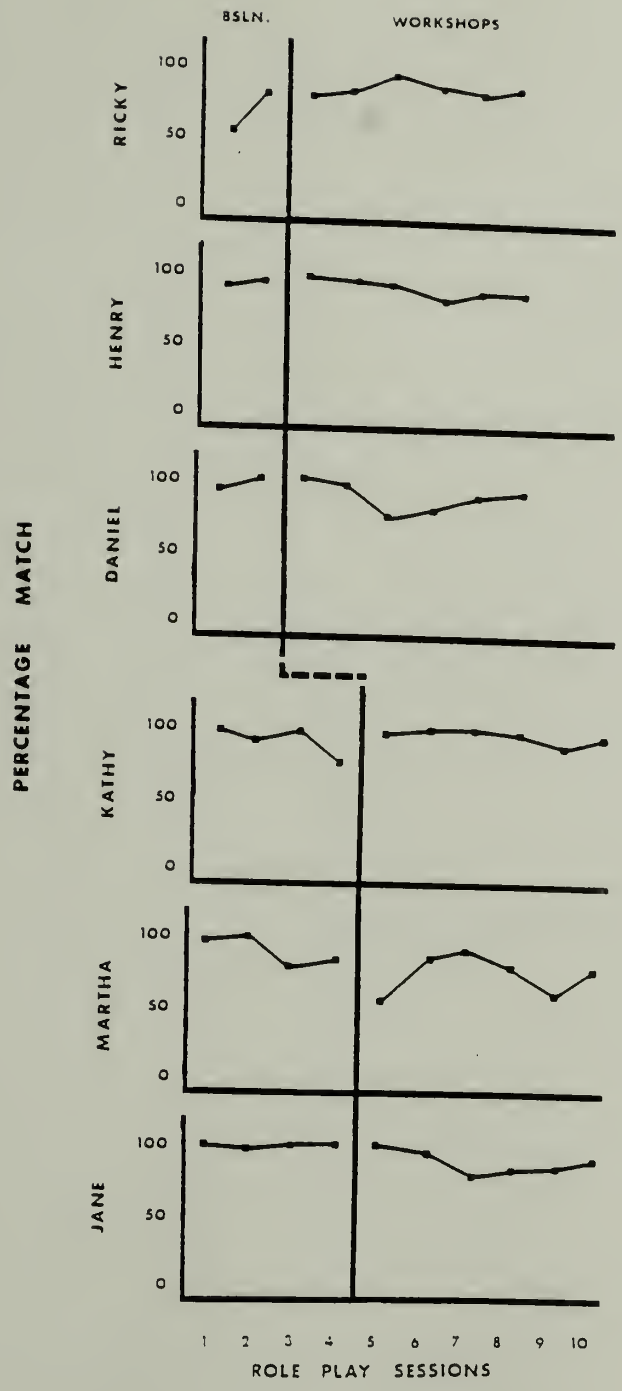

Fig. 14. Mean Percent Match Between Verbal Content and Affect: Individual Data

funny that was said. Thus, Ricky's respones during that session were judged as representating a match only 55.55% of the time. Perhaps as he became more familiar with the experimenter throughout the project, his nervous laugh decreased in frequency and brought about greater consistency (or match) between the content of his speech and his tone of voice.

For each of the other three children showing changes between their baseline and workshop mean match scores, the changes was in the direction of a decrease during the workshop phase. For Daniel the decrease coincided with session 5 which immediately preceded his stepfather's leaving. His percentage match scores increased steadily during subsequent sessions. Jane's decrease coincided with the third workshop during which the subjects were to identify positive emotions and strengths of their family members. Jane's percentage of match replies remained lowest through all role play sessions following that workshop. Martha's decrease during the workshop phase cannot be easily linked to one particular session. Both her baseline and workshop performances were somewhat erratic with her match scores during the workshop phase being generally lower.

Emotion. The emotion variable provided a rating of the emotional or affective quality of the subjects' voices, as independent of the content or the reply as possible. A score of 1 represented unpleasant affect; 2 represented neutral or a matter-of-fact affect; and 3 represented pleasant affective tone. None of the differences in the mean scores across or within groups appear important. Figure 15 demonstrates the percentage of replies rated in each category for the two groups and Figures 16 through 18 present these data for the individual subjects. Obviously, most replies, regardless of group assignment or experimental phase, were rated as being neutral in emotional tone.

Latency. As shown in Table 11 the mean latency scores differed between groups more during the workshop phase than during the baseline phase. The mean latency scores increased during the workshop phase for both groups (see Tables 12 and 13).

The latency scores for Group 1 were consistently higher than the latency measures for Group 2 (see Figure 19). The baseline range for Group 1 was 1.41 to 1.47 seconds (mean = 1.44 seconds) and for Group 2 was between 1.28 and 1.52 seconds (mean = 1.42 seconds). The same relation was true for the workshop latency scores. The Group 1 latencies (range = 16.9 - 2.51 seconds, mean = 2.42 seconds) were consistently longer than those of Group 2 (range = 1.23 - 2.08 seconds, mean = 1.58 seconds). Thus, the girls in Group 2 responded more quickly to the experimenter's prompts than did the boys in Group 1. These individual data apear in Figure 20.

Duration. Not only did Group 2 subjects generally begin speaking sooner than Group 1, they also spoke for a longer period of time once they started. As shown in Table 11, the mean durations for Group 2 were almost twice as long as the mean durations for Group 1 during both experimental phases. The margin of difference between the groups remained stable across the phases as the durations increased for each subject

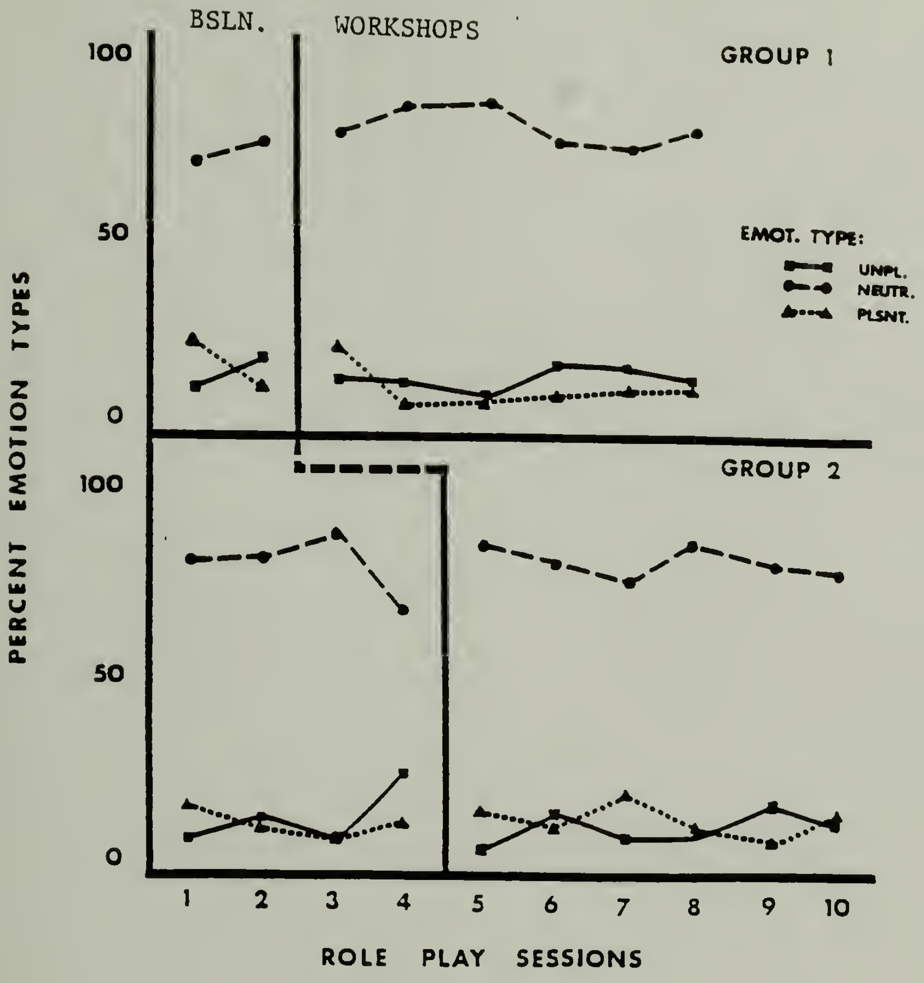

Fig. 15. Percent Unpleasant, Neutral, and Pleasant Affect Scores: Group Data

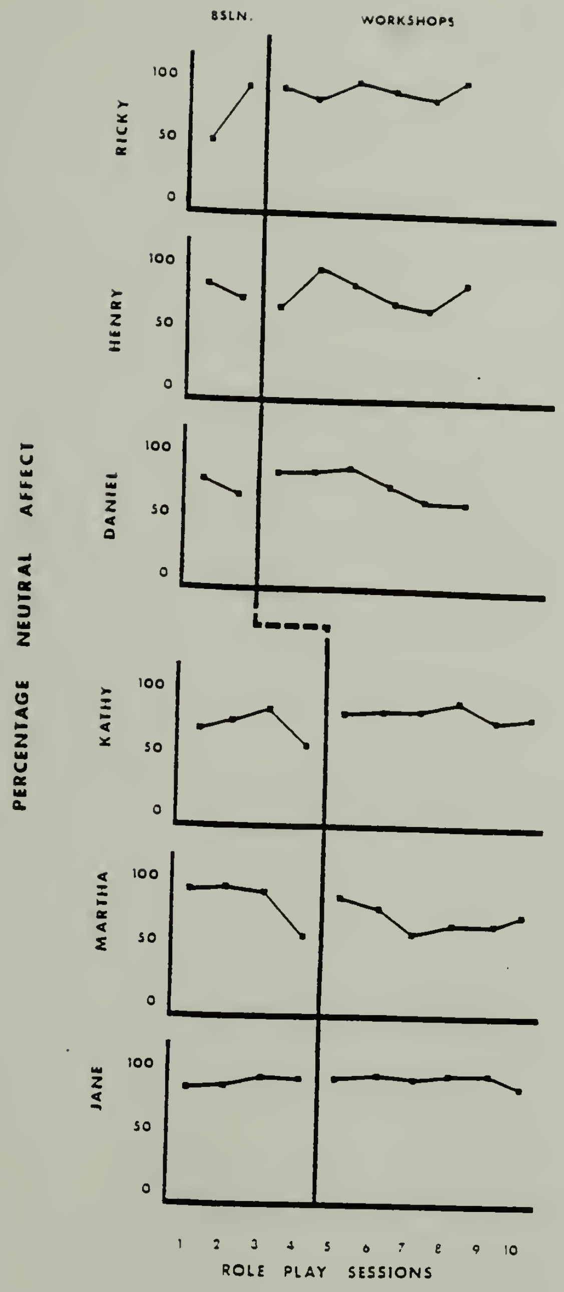

Fig. 16. Percent Neutral Affect Scores: Individual Data

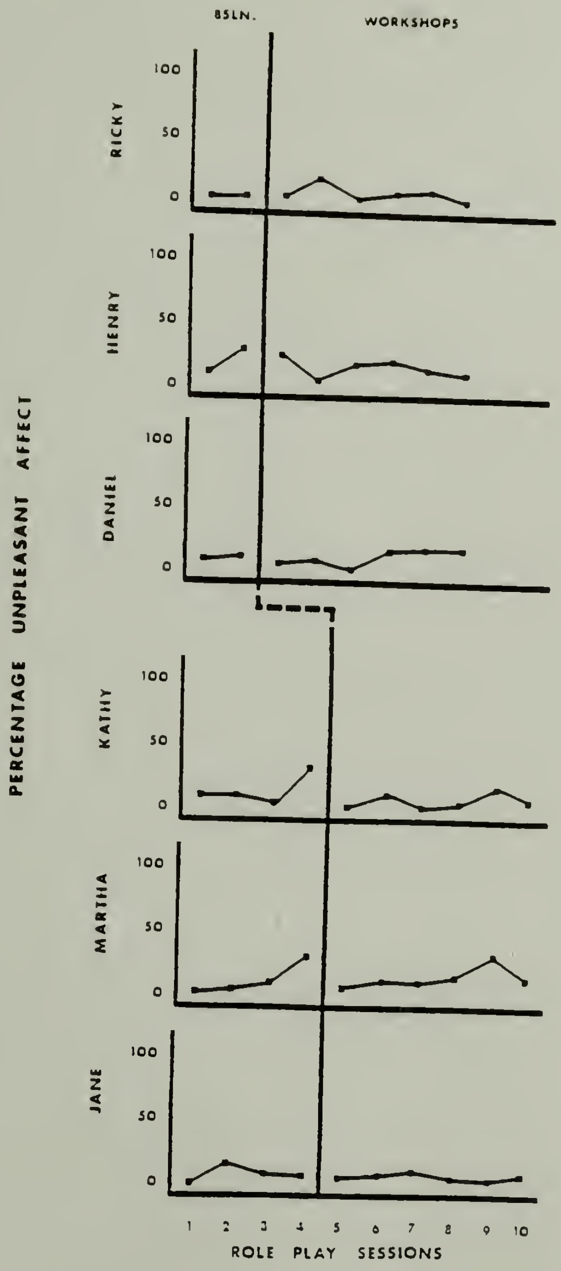

Fig. 17. Percent Unpleasant Affect Scores: Individual Data

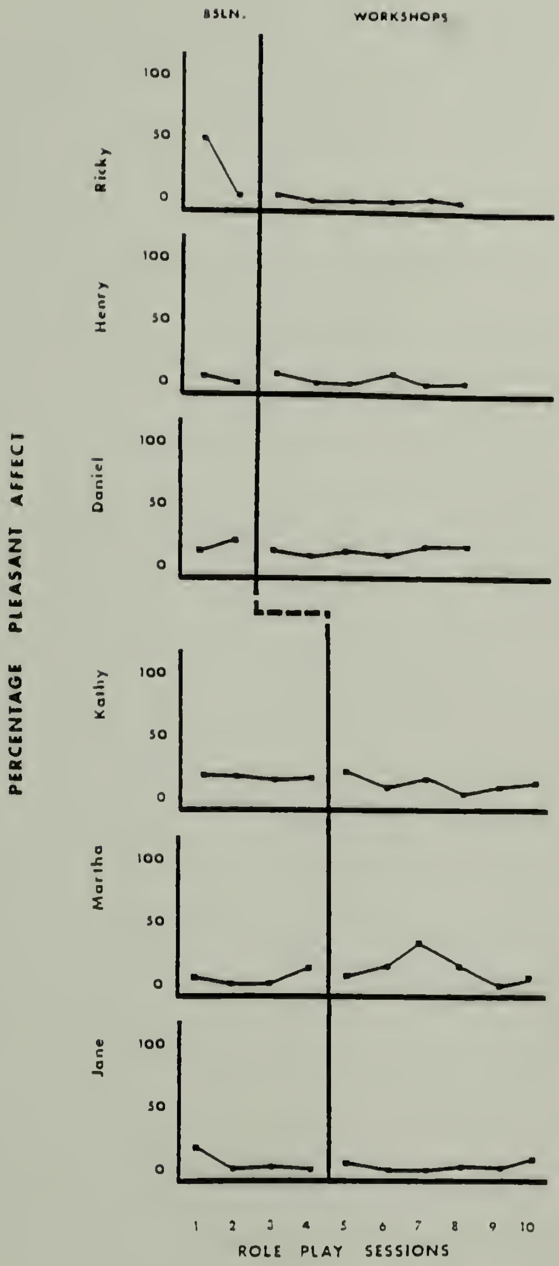

Fig. 18. Percent Pleasant Affect Scores: Individual Data

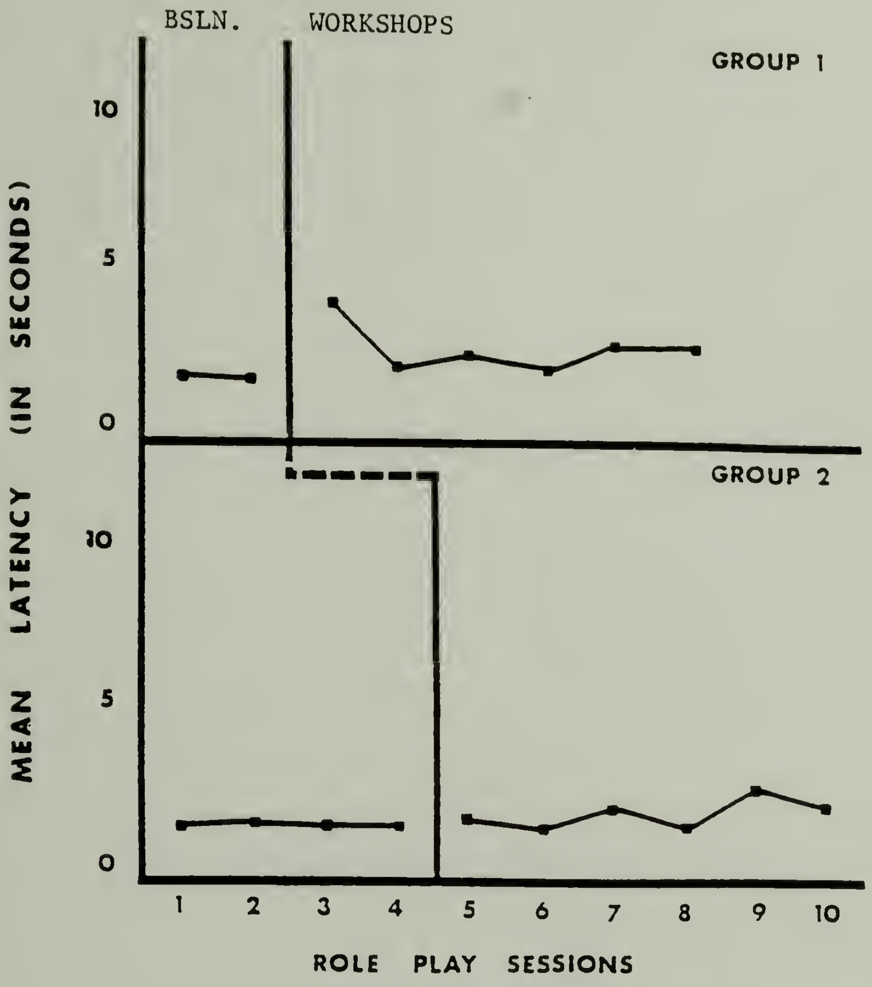

Fig. 19. Mean Latency of Reply: Group Data

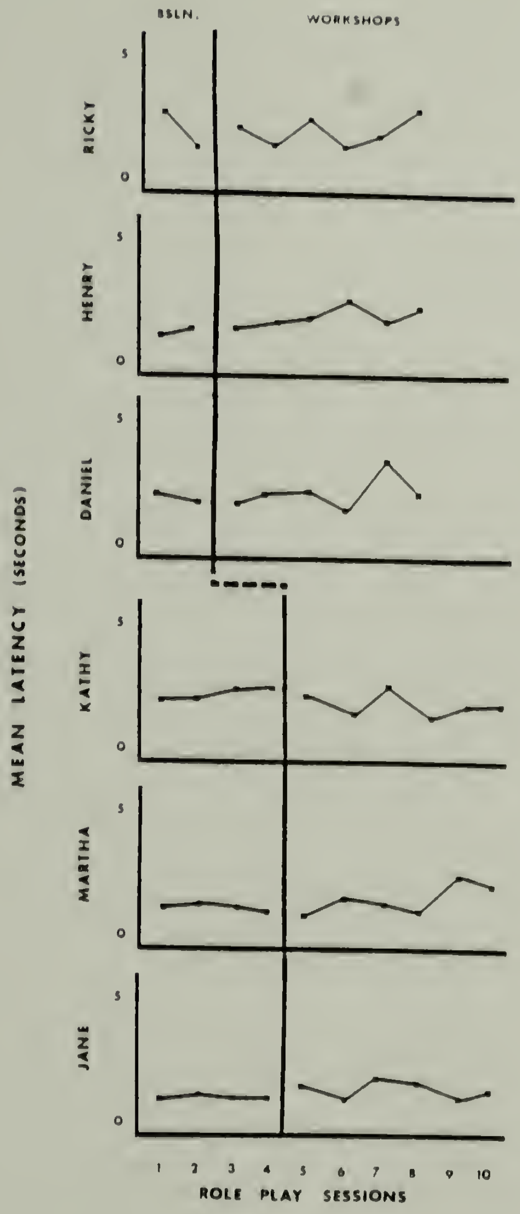

Fig. 20. Mean Latency of Reply: Individual Data

group. The daily group mean durations appear in Figure 21. The baseline duration for Group 1 ranged between 4.46 and 5.75 seconds (mean = 5.00 seconds) and for Group 2 was between 8.26 and 10.11 seconds (mean = 9.24 seconds). During the workshop phase the mean durations for Group 1 ranged from 4.66 to 7.41 seconds (mean = 5.87 seconds); the mean durations for Group 2 ranged from 7.71 to 12.38 seconds (mean = 9.99 seconds).

The individual subject durations appear in Figure 22. As can be seen in the individual data five of the six subjects showed an increase in the duration of their role play replies from baseline to workshop. Only Jane showed a slight decrease in the duration of her replies (see also Tables 12 and 13).

Number of words. Logically, the duration of subjects' replies was positively related to the number of words used in those replies. Thus, group differences similar to those for the duration measure existed for the current measure. Namely, Group 2 subjects exceeded Group 1 subjects in the mean number of words they used per response (see Table 11). As shown in Figure 23, the within group rates remained rather stable across the experimental phases for both groups with the exception of an increase for Group 2 during the last role play session. During baseline Group 1 subjects averaged between 8.76 and 10.41 words per reply (mean = 9.56 words) and Group 2 subjects averaged between 14.69 and 22.39 words (mean = 18.18 words). The workshop average for Group 1 increased from 7.53 to 12.01 words (mean = 9.71 words) and for Group 2 from 11.65 to 37.35 words (mean = 18.54 words). Thus, the girls of Group 2 used more

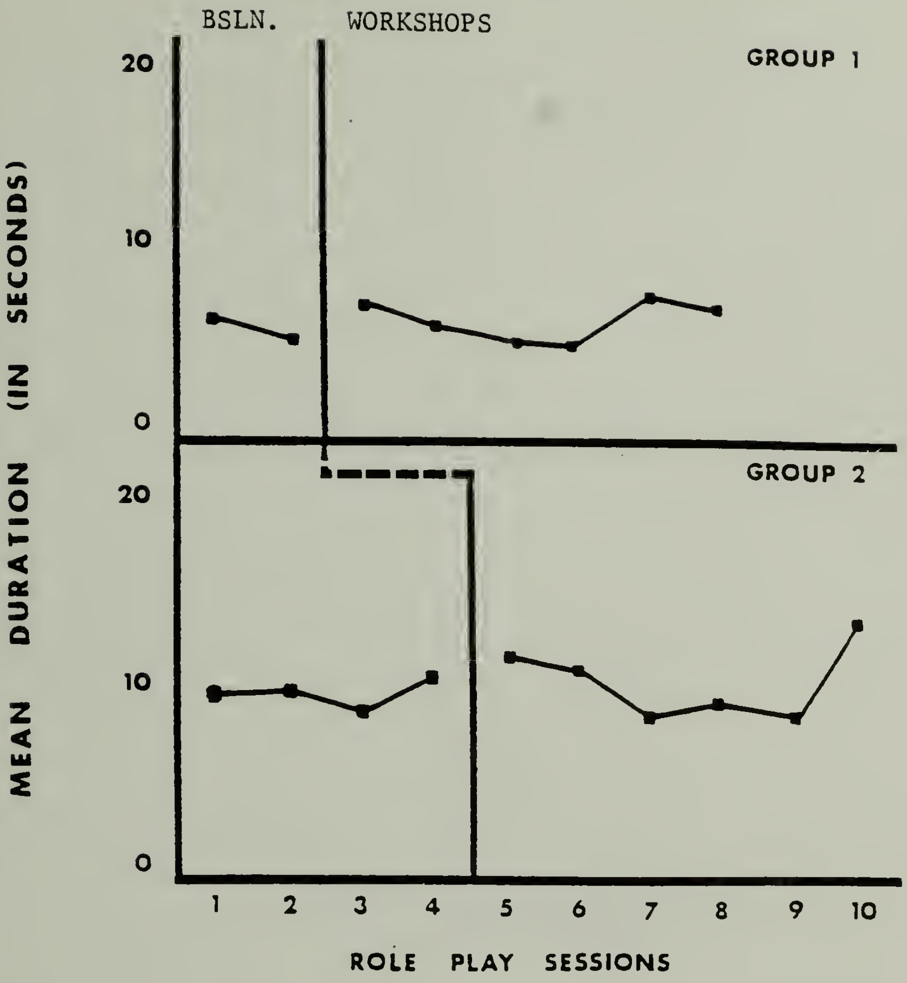

Fig. 21. Mean Duration of Reply: Group Data

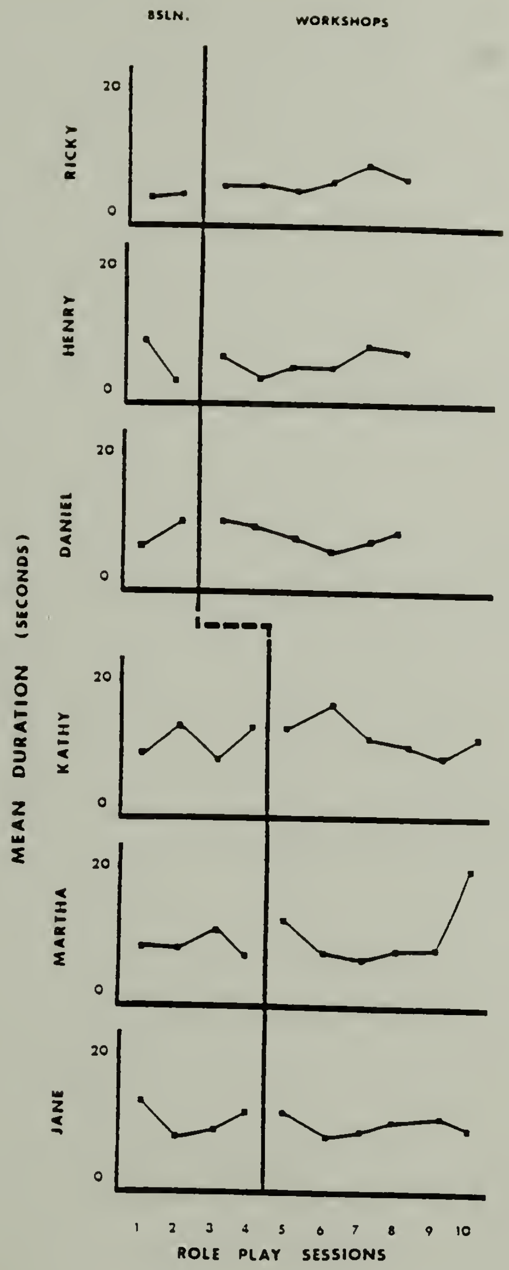

Fig. 22. Mean Duration of Reply: Individual Data

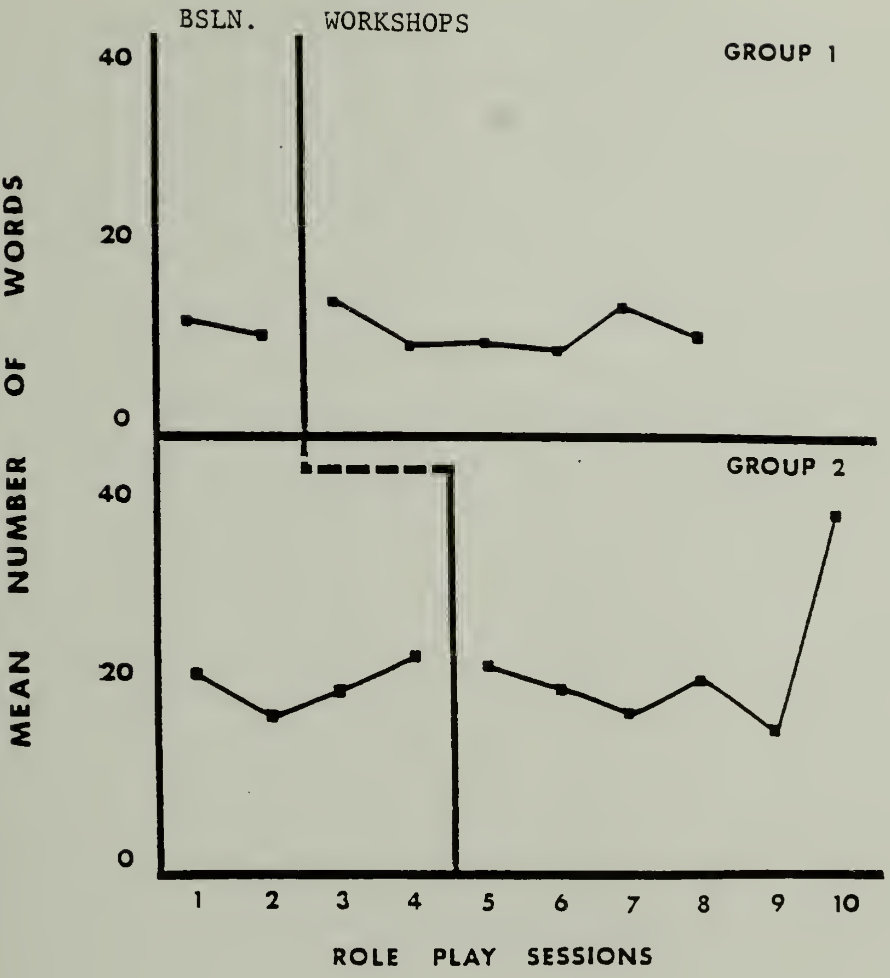

Fig. 23. Mean Number of Words Per Reply: Group Data

than twice the number of words, on the average, as the boys of Group 1 to respond to the role play prompts.

As shown in the individual data presentations of Table 12 and 13 and Figure 24, two of the boys and one of the girls increased the mean number of words from the baseline to the workshop phase. Daniel was the only boy to show the decrease between phase means and Martha was the only girl to show an increase. An interesting note in Jane's data is the dramatic increase in the mean number of words she used per reply during the last role play session. During that session Jane averaged 61 words per response, a remarkably high rate when one considers that there was no concomitant increase in the duration of her replies during the same session.

Percent speech disfluencies. The proportion of speech disfluencies for reply produced by Group 1 subjects was twice as high as the proportion of disfluencies in Group 2's replies (see Table 11). The baseline and workshop averages remained relatively stable for Group 2 but decreased during the workshop phase for Group 1. The daily group data are presented in Figure 25. During the baseline Group 1 averaged between 13.35 and 15.78% disfluent speech (mean = 14.55%). Group 2 averaged between 4.02 and 7.53% disfluent (mean = 6.35%). The workshop phase was accompanied by a decrease for Group 1 (range = 8.61 - 11.86%, mean = 11.17%) and a slight increase for Group 2 (range = 5.32 - 9.67%, mean = 6.39%). The workshop phase was accompanied by a decrease for Group 1 (range = 8.61 - 11.86%, mean = 11.17%) and a slight increase for Group 2 (range = 5.32 - 9.67%, mean = 6.39%).

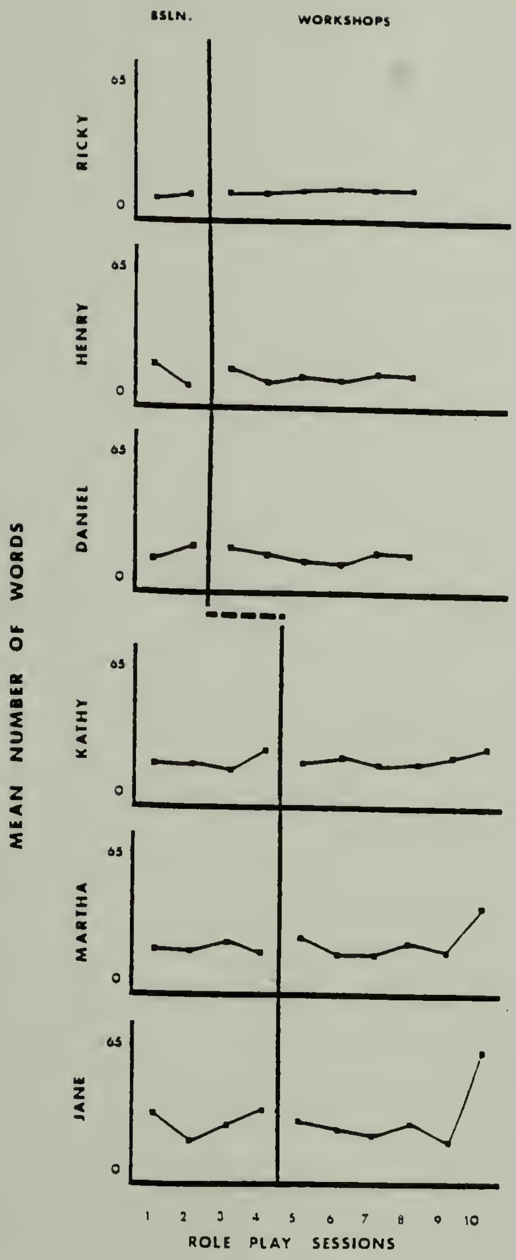

Fig. 24. Mean Number of Words Per Reply: Individual Data

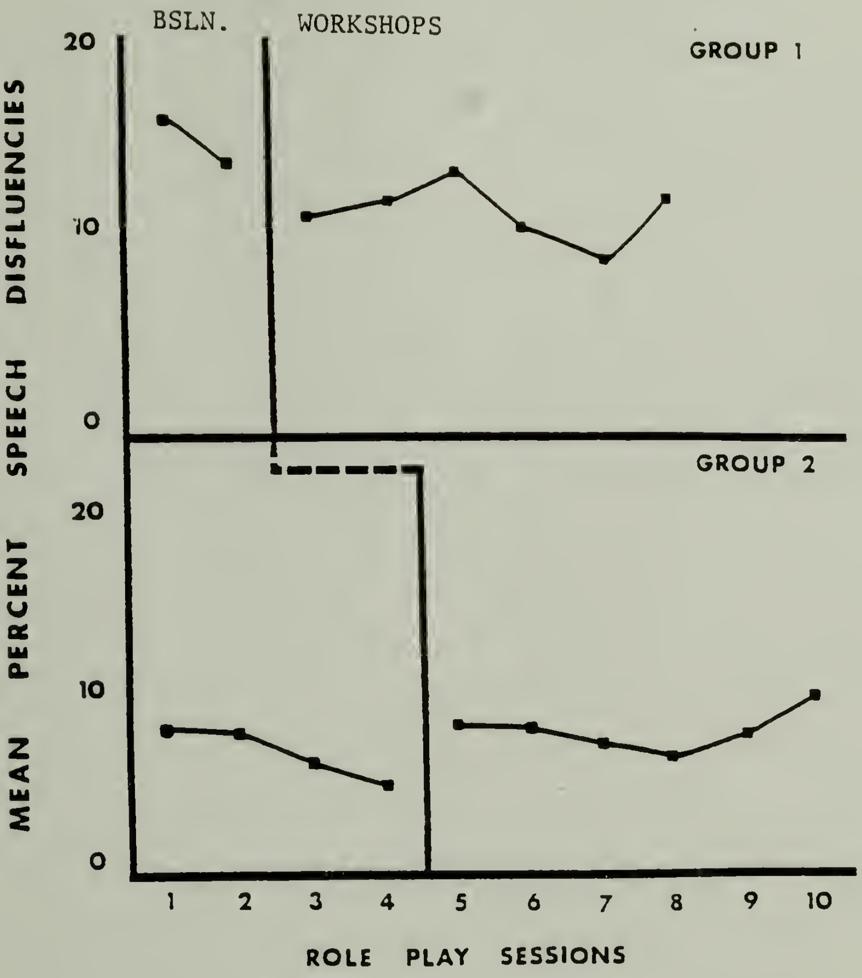

Fig. 25. Mean Percent Speech Disfluencies Per Reply: Group Data

Tables 12 and 13 present the individual mean changes in disfluencies from the baseline to workshop phase, and Figure 26 illustrates these changes on a session-by-session basis. Five out of six of the subjects became more fluent during the workshop phase. This improvement was greatest for Ricky. Thus, with the increase in the number of words and duration of each reply described above was a concurrent increase in the fluency of the subjects' speech after participation in the workshop.

The above analyses demonstrate that the measures of paralinguistic behavior remained relatively stable across experimental phases within subjects and within groups and differed substantially between subject groups. Associated with the curriculum-workshop phase was an increase in the latency, duration and number of words of the subjects' replies along with a decrease in the percentage of speech disfluencies. Thus, as the subjects learned more about developmental disabilities and were involved in peer discussions about their families, selves, and handicapped siblings, there was an increase in the quantity and the fluency of their speech during the role play sessions. These effects were stronger and more consistent with the boys in Group 1 than with the girls in Group 2. There was a duration and latency increase (from baseline to workshop) for all of the boys and for two of the girls. There was an increase in the mean number of words per reply for two of the boys but for only one of the girls, and there was a decrease in the percentage of speech disfluencies for all of the boys but for only two of the girls. In addition, two of the boys showed an increase in their match scores while two girls showed a decrease. The possible sources of

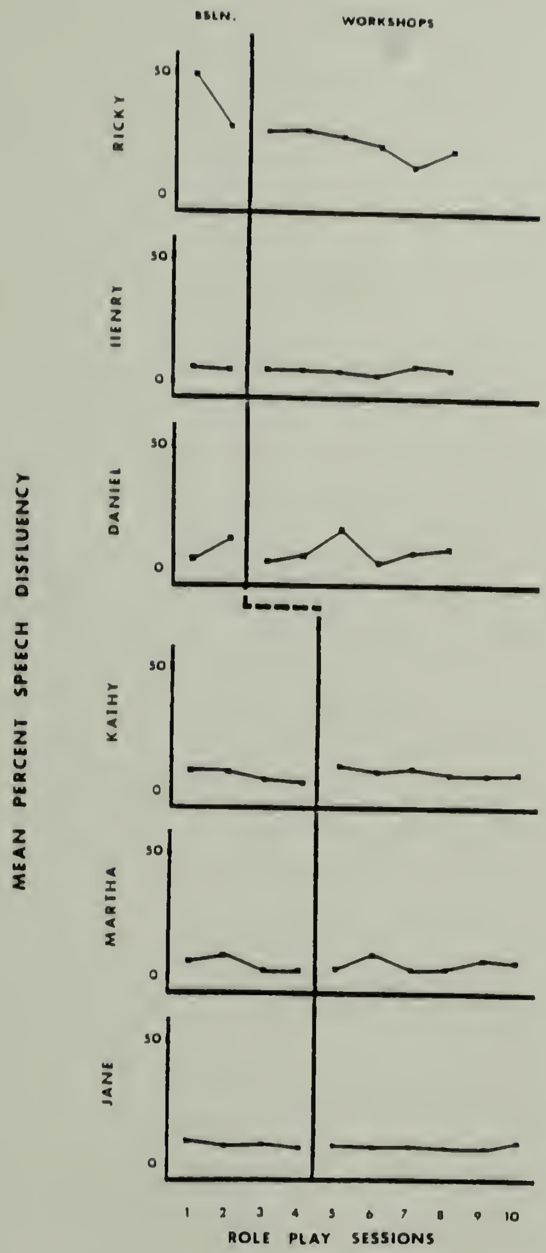

Fig. 26. Mean Percent Speech Disfluencies Per Reply: Individual Data

these changes will be discussed later in the Discussion section. However, here it is important to note that while the curriculum had the greater effect on the content of the girls' speech, it appears to have had the greater impact on the quality or style of the boys' speech.

Issue 4: Workshop Behavior

The curriculum presented in the method section details the activities planned and implemented by the experimenter for each group meeting. However, what the experimenter, or any teacher for that matter, plans as a curriculum does not necessarily correspond to the actual behavior or the students within the setting. Therefore, the purpose of the present section is to document certain aspects of the subjects' behavior during the workshop sessions.

Two general classes of behavior will be presented. The first involves those behaviors whose frequency and intensity of occurrence were likely to vary as a function of the different curriculum topics (e.g., percentage occurrence of discussion about disabilities). As such, these data are not amenable to graphic presentation. The second class is of those behaviors that occur weekly, regardless of the curriculum content, but whose frequency or intensity may be only partially controlled by content (e.g., eye contact).

Curriculum-dependent behavior. Though many discussion topics could have been monitored, three major topic areas were germaine to this project and were selected for data collection. These were conversations regarding 1) siblings, 2) other family members, and 3) developmental disabilities. All other topic categories were recorded as "other," regardless of whether or not they were curriculum-related (e.g., self-reference). Table 14 shows the weekly percentage of workshop observations in which at least one of these issues was the topic. It will be recalled that the observation system was designed and implemented only after the first workshop with Group 1. Thus, no data appear for their first session.

Workshop 2. The goal for this workshop was to have the subjects tell one another about their brothers' and sisters' disability and to read together about different types of handicaps. Table 14 indicates that these topics (i.e., siblings, development disabilities) were brought up roughly equivalent amounts of time during each group. The differences between the groups were evident in how the subjects reacted to the topics being raised.

Prior to the second workshop the experimenter had already discussed handicaps with each subject in the context of the individual role plays. Within that context each one of the subjects had referred to their brother's or sister's disability in some way. A few children labeled their sibling as being "handicapped" while others described them in terms of having trouble doing certain things specific to their disability. For example, during the first baseline role play Daniel described his sister as "talking funny" elaborating that he could not understand her and that maybe she was deaf. Jane said her brother had "brain damage" because he had a fit (a seizure) when he was younger.

TABLE 14

WORKSHOP OBSERVATIONS: PERCENT OCCURRENCE OF SELECTED TOPICS

		Workshop Session and Focus					
Subject	Group	1 General Conversation	2 Discuss Disabilities	3 Identify Positives	4 Identify Negatives	5 Positive Self	6 Review
Siblings	1		24.02	12.22	0	1.00	2.78
	2	4.89	30.32	3.90	3.52	8.43	4.15
Family	1		2.62	3.33	0	3.50	4.44
	2	14.66	5.38	12.77	3.52	5.62	8.81
Developmental Disabilities	1		17.03	7.78	41.11	0	14.44
	2	0	14.42	0	17.00	1.12	15.54
Other	1		61.13	77.78	58.88	96.00	78.33
	2	78.19	58.92	85.11	81.82	92.69	73.57

*It was possible for more than one topic area to occur within one interval. Thus, total daily percentages for each group could exceed 100 percent.

Henry said his sister was sick, that she couldn't walk or talk or climb trees like other kids, and that she needed a therapist. Ricky said that he had a good hand but that his brother had a "bad kind of hand that don't work good like mine." So, at some level, each of the subjects had acknowledged that something was different about his/her brother's or sister's behavior. Therefore, it was totally unexpected when, during the second workshop, all of the boys in Group 1 denied that their sibling had a disability. The topic of disabilities was approached first generally and then more specifically to the problems with which the subjects were most familiar. When the experimenter used an example from Henry's own description of his sister's movements, Henry denied that that was what his sister was like and added that she moves, eats, sits, and walks like everyone else. He then demonstrated appropriate walking for everyone. Then, in turn, Daniel and Ricky denied that their siblings had any trouble. Therefore, the experimenter returned to the topic of disabilities but remained more general than personal.

When this same topic was raised with Group 2, their response was completely different. The topic precipitated a detailed discussion between the girls as to what had happened to their siblings. They needed only a few introductory questions from the experimenter to continue to speak. The experimenter interrupted the conversation only when the subjects used words particular to their siblings' handicaps that the other children were unlikely to know (e.g., "trachea," "seizures").

Tables 15 and 16 present the percentage of the subjects' verbalizations that fell into each of the content areas recorded during the workshops. Inspection of the means indicates that 17.31% of Group 1's and 17.64% of Group 2's verbalizations were about their own siblings (ST). However, only 7.68% of Group 1's, as opposed to 13.36% of Group 2's verbalizations contained content related to developmental disabilities.

Workshop 3. The goal of Workshop 3 was to increase the subjects' expression of positive emotions. Because of the events of the preceding workshop with Group 1, the experimenter attempted to review some of the discussion topics with them. Thus, Table 14 reveals that siblings and developmental disabilities were topics during 12.22% and 7.78% of the Group 1 observations and only 3.90% and 0% of the Group 2 observations. Tables 15 and 16 show that Group 2 girls talked slightly more about one another family (FT) and sibling (SNT). However, most of the verbalizations during the third workshop concerned the curriculum topic of expressing positive emotions or other unrelated topics.

One interesting event during the workshop occurred at the end of free time, after the curriculum-related work had been completed. Henry approached the experiementer with the book about mental retardation that she had started to read the previous week. He opened it up and started to ask questions about deafness, blindness, and about his sister's mobility problem. The two other boys were playing loudly nearby with other toys. The experimenter ignored them and worked alone with Henry and the book for about four minutes after which the other two children

TABLE 15

WORKSHOP OBSERVATIONS: PERCENTAGE OF SUBJECTS' VERBALIZATIONS WITHIN MAJOR CONTENT AREAS: GROUP 1 DATA

		Workshop Session and Focus					
Subject	Content Areas*	1 General Conversation	2 Discuss Disabilities	3 Identify Positives	4 Identify Negatives	5 Positive Self	6 Review
Ricky	ST		23.53	5.40*	0	0	
	FT		0	0	0	3.22	5.88*
	SNT		0	0	0	0	0
	FNT		0	0	0	0	0
	DD		5.88*	0	33.33	0	11.76*
	0		70.58	94.59	66.67	96.77	82.35
Henry	ST		15.38*	0	0	0	4.76*
	FT		0	0	0	4.76*	4.76*
	SNT		7.69*	0	0	0	0
	FNT		0	0	0	0	0
	DD		7.69*	17.86	50	0	23.81
	0		69.23	82.14	50	95.23	66.67
Daniel	ST		13.64*	4.65*	0	0	0
	FT		0	0	0	2.68*	3.57*
	SNT		0	0	0	0	0
	FNT		0	0	0	0	3.57*
	DD		9.09*	0	22.22	0	3.57*
	0		77.27	95.35	77.78	97.14	89.01
Group 1 Average	ST		17.31	3.70	0	0	1.64*
	FT		0	0	0	3.45	4.92*
	SNT		1.92*	0	0	0	1.64*
	FNT		0	0	0	0	1.64*
	DD		7.69	4.63	29.85	0	13.11
	0		73.08	92.67	70.15	96.55	80.30

* indicate that the percentages were based on less than four recorded episodes of talk within that content area.

** Code Interpretations: ST = Sibling of Target Child, FT = Family of Target Child, SNT = Sibling of NonTarget Child, FNT = Family of NonTarget Child, DD = Development Disabilities, 0 = Other.

TABLE 16

WORKSHOP OBSERVATIONS: PERCENTAGE OF SUBJECTS' VERBALIZATIONS WITHIN MAJOR CONTENT AREAS: GROUP 2 DATA

		Workshop Session and Focus					
Subject	Content Areas*	1 General Conversation	2 Discuss Disabilities	3 Identify Positives	4 Identify Negatives	5 Positive Self	6 Review
Kathy	ST	4.76*	13.56	2.63*	1.96*	4.65*	5.00*
	FT	19.05	1.69*	2.63*	1.96*	2.32	5.00*
	SNT	0	1.69*	0	0		
	FNT	9.52*	1.69*	0	0		
	DD	0	18.64	0	9.80	2.32	10.00*
	0	66.67	62.71	94.74	86.27	90.69	80.00
Jane	ST	4.76*	22.97	2.56*	0	2.94*	22.22*
	FT	19.05	0	5.13*	0	4.76*	0
	SNT	0	5.40	0	0	0	0
	FNT	4.76*	0	0	0	0	3.45*
	DD	0	14.86*	0	17.02	0	10.34*
	0	71.43	56.76	92.31	82.98	91.17	44.83
Martha	ST	3.03*	15.15	0	0	11.11	3.44*
	FT	15.15	4.04	3.85*	0	0	6.89*
	SNT	0	2.02*	1.92*	0	1.58*	0
	FNT	3.03	3.03*	1.92*	0	0	0
	DD	0	9.09	0	17.81	0	13.79
	0	78.78	66.67	92.31	82.19	87.39	75.86
Group 2 Average	ST	4.00	17.64	1.55*	.58*	7.14	5.88
	FT	17.33	2.15	3.87	.58*	.71*	4.41*
	SNT	0	3.02	.77*		2.14*	0
	FNT	5.33	1.72	.77*		0	1.47*
	DD	0	13.36	0	15.20	.71*	13.23
	0	73.33	62.50	93.02	83.62	85.29	75.00

* indicate that the percentages were based on less than four recorded episodes of talk within that content area.

** Code Interpretations: ST = Sibling of Target Child, FT = Family of Target Child, SNT = Sibling of NonTarget Child, FNT = Family of NonTarget Child, DD = Development Disabilities, 0 = Other.

approached. Within about one minute Henry's attention was diverted and the three began to play together with another game.

Workshop 4. The goal of the fourth workshop was to increase the children's identification of negative emotions and to discuss solutions to potentially distressing situations at home. Table 14 demonstrates that the majority of the subject Group 2 topic was in the "other" category, whereas with Group 1 there was also more time devoted to disabilities (41.11% of the observations). Tables 15 and 16 reflect this same distribution of topic time in the subject's own verbalizations. The boys of Group 1 spoke more of developmental disabilities during this fourth workshop than during any other preceding or following session.

Throughout the second half of this session the experimenter had difficulty obtaining the attention of and control over the Group 1 subjects. They were rough with one another during free play, did not comply with the experimenter's requests, and were generally disobedient and loud. These behaviors had been disruptive to previous sessions but were particularly disruptive that day. As a consequence, the experimenter did not give the subjects their tee-shirt letters as she had after the other sessions, and communicated to them how they would have to behave the following weeks in order to get it.

Workshop 5. After reviewing the videotape from the fourth workshop, it became apparent that the boys became most disruptive and noncompliant when the experimenter required verbal responses while giving them nothing to do with their hands. The videotape revealed that it was often their hand movements that would interrupt the experimenter during the workshop. They would wave them about, flick their fingers, stick them in their ears and nose, and then imitate the hand movements of the other children. This was not a problem with the girls as they sat more calmly and talked.

As a result of analyzing the videotape, the activity for the fifth workshop involved more physical activity, the children were painting, coloring, pasting and talking at the same time. By keeping their hands busily involved in the task, there was less opportunity for distraction. In addition, prior to beginning the work the experimenter requested each boy to be an assistant to her so that whenever another child disobeyed they should remind that child of what it was the teacher wanted. These strategies, along with having withheld their tee-shirt letter during the previous session, had a combined effect of making the fifth and sixth workshops with Group 1 much more pleasant and task oriented.

The goal for the fifth workshop was to increase the children's positive statements about themselves. The topic distribution, as shown in Table 14, reveals that 96.00% of the Group 1 observations were scored in the "other" category, with 1.00% in "siblings" and 3.50% in "families." The Group 2 topics were distribvuted 92.69% in "other," 8.43% in "siblings" and 5.62% in "families." A similar topic/content distribution is evident in Table 15 and Table 16 of the subjects' verbalizations What these data reveal and what was apparent during the workshops is that the girls occasionally defined their own positive qualities on the basis of the positive things they did for their families and siblings. With the boys this was rarely the case.

Workshop 6. The goal of the last session was to review all of the previous work and this was done through the board game, described in Appendix 7. Again, the experimenter enlisted all of the boys as "teacher's helpers" in order to maintain conduct. The fact that hte board game provided a useful review of all topics is indicated by the distribution of topic percentages in each of the categories of Table , for both subject groups. A similar distribution appears for this workshop in Tables 15 and 16 of the subjects' verbalizations.

Curriculum-independent behaviors. This section deals with those behaviors that the subjects had the opportunity to display regardless of the curriculum topic. Though these behaviors may not be truly "curriculum-independent," it is likely that the curriculum topic would influence only the frequency and intensity of their occurrence. These behaviors are presented for the groups in Figure 27 as the percentage of observations in which the following occur: 1) subject verbalizations, 2) verbalizations out of context, 3) positive nonverbal behavior, and 4) physical interactions between subjects. Individual data for the first three of these measures are presented in Figure 28 and Figure 29.

As shown in Figure 28, Group 2 verbalized at a rate slightly lower than that of Group 2 until workshops 5 and 6 when the rates overlapped. For Group 1 the verbalization rate ranged from 22.71% to 43.50% (mean = 35.85%) and for Group 2 it ranged from 28.19% to 56.72% with a mean of 44.18%.

Though the rates of verbalization were comparable across the two subject groups they differed dramatically in the percentage of the

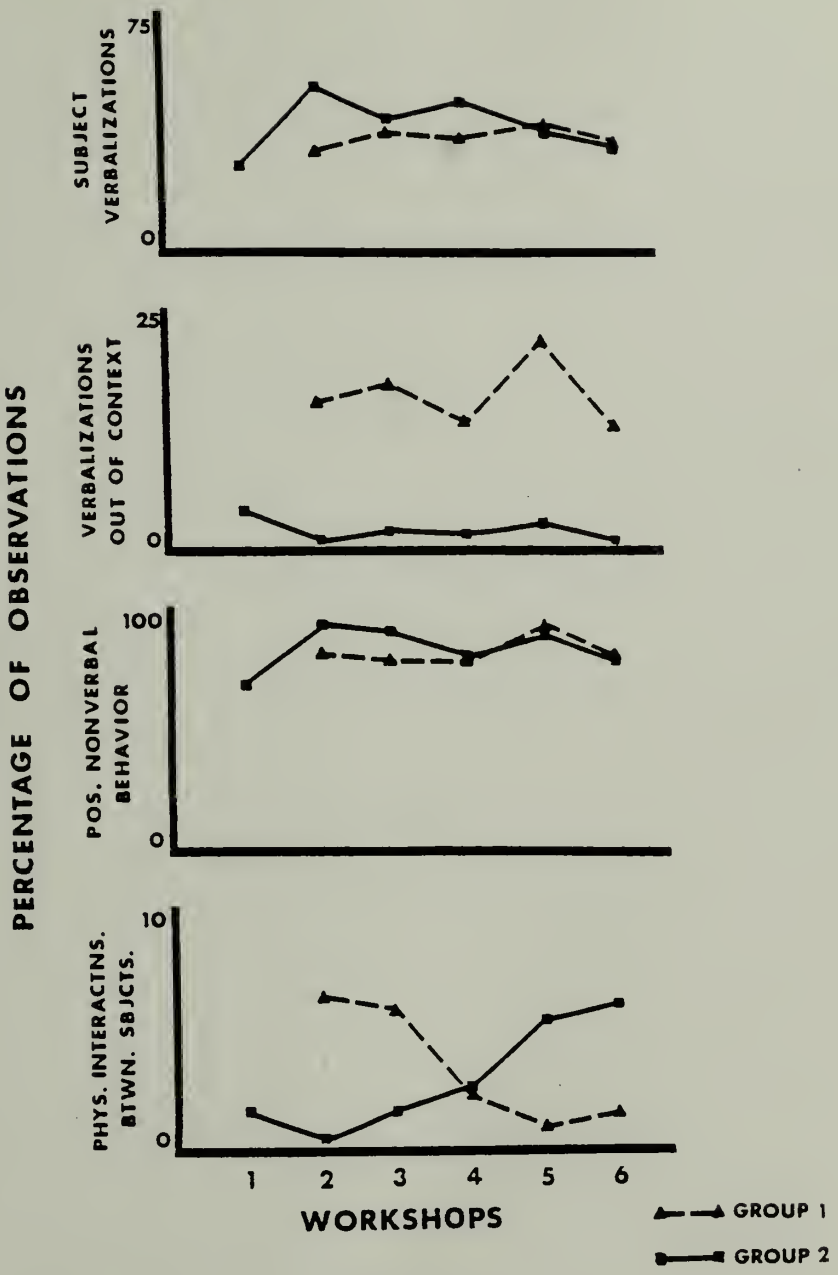

Fig. 27. Percentage of Workshop Observations of Curriculum-Independent Behaviors: Group Data

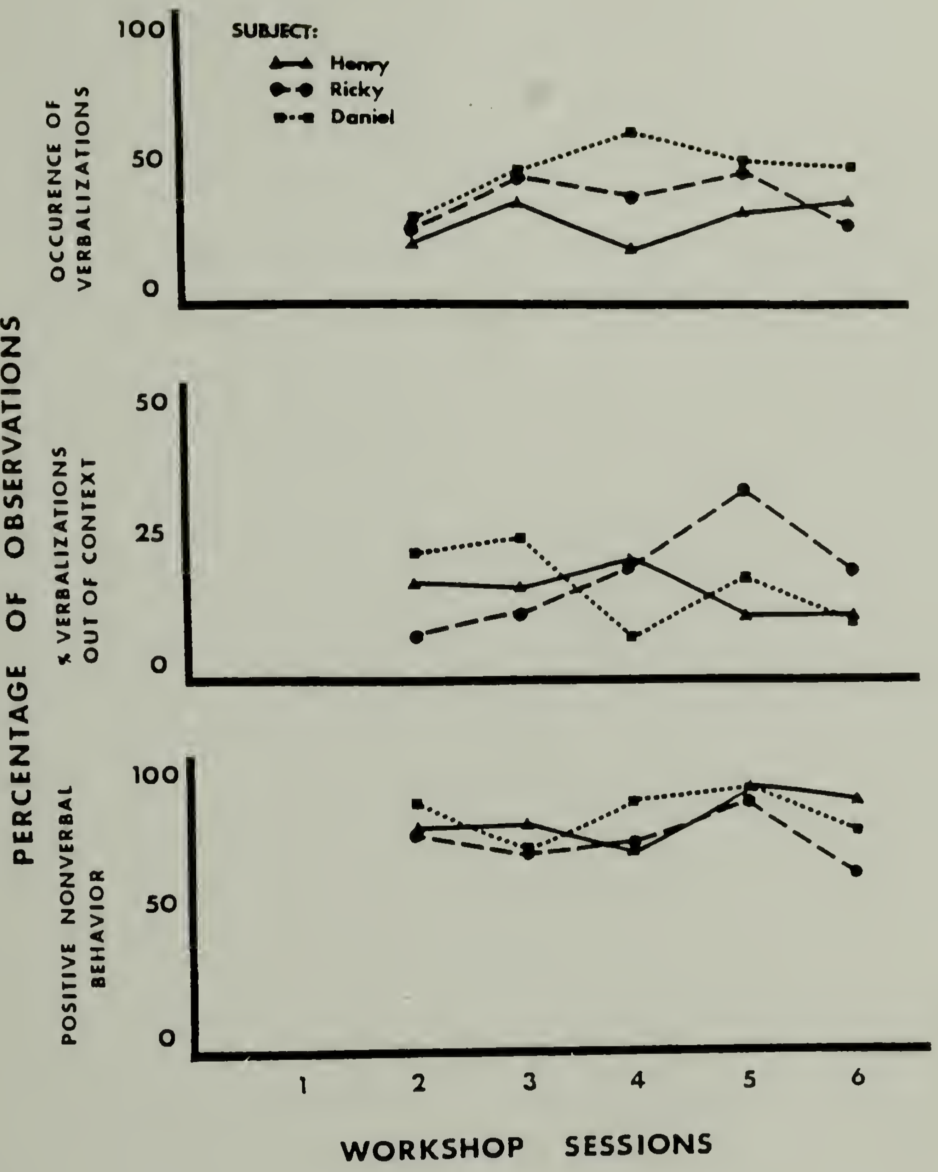

Fig. 28. Percentage of Workshop Observations of Curriculum-Independent Behaviors: Individual Data--Group 1 Subjects

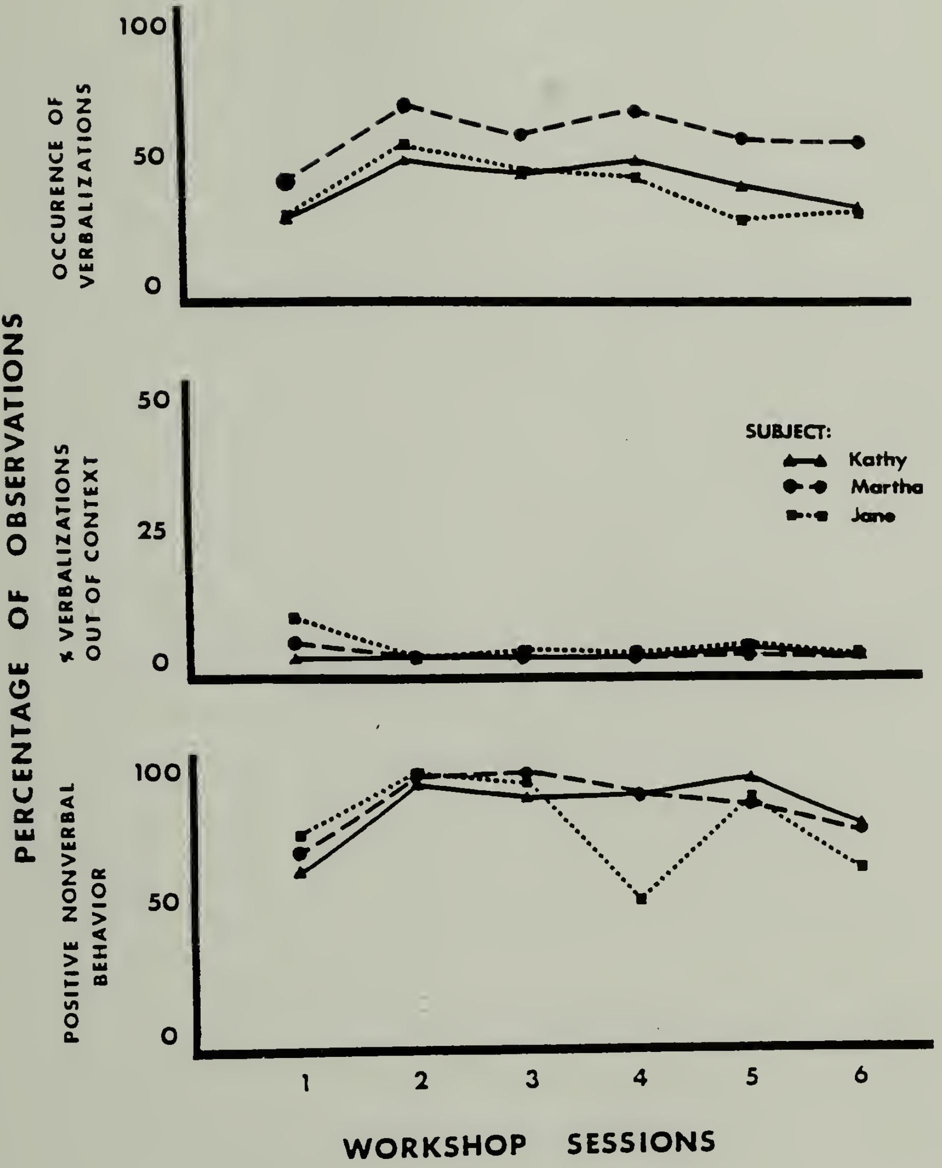

Fig. 29. Percentage of Workshop Observations of Curriculum-Independent Behaviors: Individual Data--Group 2 Subjects

verbalizations that were out of context, or off-task. For Group 1 between 13.43 and 22.99% (mean = 16.58%) of all of their comments were made at what was judged as an inappropriate time. For Group 2 this percentage was quite low and ranged from 0% to 4.00% with a mean of .98%. What is interesting to note is that the group rate of inappropriate verbalizations reached its peak for Group 1 during the fifth workshop, i.e., the workshop in which their hands were kept busy and the experimenter used them as peer monitors. Thus, as their physical noncompliance decreased, their verbal noncompliance increased. The percentage of intervals in which the subjects were involved in appropriate, positive, nonverbal behavior was quite high. These data also appear in Figure 27. For the subject to be considered engaging in positive nonverbal behavior (s)he had to be physically facing the group or task activity and had to have eye contact with the group or task. For the most part, all of the subjects were facing and looking in an appropriate direction during the workshops. For Group 2 the percentage of intervals with positive nonverbal orientation ranged from 67.29% to 95.75% (mean = 83.36%). For Group 1 it ranged from 75.56% to 95.52% (mean = 81.34%) and showed an increase during Workshop 5 when the attempts were made to better cotrol their behavior.

The last set of data presented in Figure 27 are the percentage of intervals in which the subjects physically interacted with each other in an affectionate, aggressive, or imitative manner. For Group 1 their rates started out at a high point of 6.55% and decreased steadily with each workshop to a rate of .50% during the last workshop. What seems remarkable is that with Group 2 the inverse occurred. The girls of Group 2 began the workshops with a low rate (during Workshop 2) of 1.12% interactions and increased steadily to a high rate (6.16%) almost identical to the original high rate shown by Group 1 boys. The two curves present almost perfect mirror images of one another. Of additional interest in this regard is that with the first group, the experimenter noted in her log that the rate of the boys' physical interactions was distracting to implementing the curriculum. She made it a secondary goal to decrease their own interactions and to increase their attention and interaction with her during curriculum time. The opposite was characteristic of her notes regarding the girls' physical interactions. Her notes show statements such as "they're almost too good," "I wish they would horse around with each other more." So, what was perceived as a nuisance with one group was seen almost as a goal with the other. These impressions may have been influenced by the fact that 98% of the boys' interactions were aggressive or imitative whereas 100% of the girls were imitative or affectionate, in nature, and were complemented by a repertoire of verbalizations that remained on-task.

The measures discussed above of the subjects' behavior during the workshops provide important information regarding the degree of exposure and practice the subjects had within critical content areas subsequently assessed in the role play scenes. The results form the workshop observations show that the curriculum was generally easier to implement with Group 2. Subjects in Groups 2 verbalized more within the relevant content areas than did subjects in Group 1 and thus received more practice with the target behaviors tested in the role play assessment. This difference between the groups, then, may partially account for the differences observed between their role play responses. This possibility will be discussed more fully in a later section.

Issue 5: Home Observations

As stated previously the home observations were conducted in order to monitor any negative or positive side effects attributable to the subjects' involvement in the workshop program. Towards this end, parents recorded the following behaviors via a momentary time sampling procedure: 1) percent occurrence of sibling interactions and 2) percent occurrence of positive sibling interactions. Using an event recording system parents also collected data regarding the subjects' positive and negative verbalizations in the following areas: 1) regarding the handicapped child, 2) regarding other family members, and 3) self-reference.

Because home conditions varied from subject to subject and because parents differed in the number of observations they conducted, it would serve no purpose to combine data within subject groups. Therefore, all home observation data will be presented graphically for individual subjects only.

The experimenter trained five parents (all mothers) to collect data at home. As stated previously, the experimenter had reason to believe that one mother was submitted fabricated data, and so the data for this subject will not be presented here. The four remaining mothers unanimously reported that the momentary time sample observations of their children's interactions were easy to conduct and that it was more difficult to categorize the subjects' verbalizations as they occurred throughout their contact with them. For those instances when a parent submitted only one type of data for a given observation day, inavariably she omitted the verbalization data. Thus, the figures to be presented for each subject may show a different number of home observations for the verbal and interaction measures.

Sibling interactions. Figure 30 displays the percentage of daily home observations in which each of the four observed subjects interacted with their siblings. In no case does there appear to be a change attributable to their participation in the sibling workshops. With the exception of Henry, each of the subjects show a consistently erratic pattern across experimental phases.

Figure 30 also displays the percentage of these interactions that were judged as positive. There were not any phase-related changes for Henry; there was a possible increase in positive interactions during the workshop phase for Ricky and Jane, and a possible decrease during the workshop phase for Daniel. Henry's data are based on only one interaction for each of the three days presented. The 100% occurrence of positive interactions is therefore deceptively high. Ricky's interactions with his brothers were more consistently positive during the workshop phase than during the baseline phase. Jane's interactions became more positive during the last half of the workshop phase (sessions 12-16) in which 100% of her interactions were judged as positive. Daniel's high,

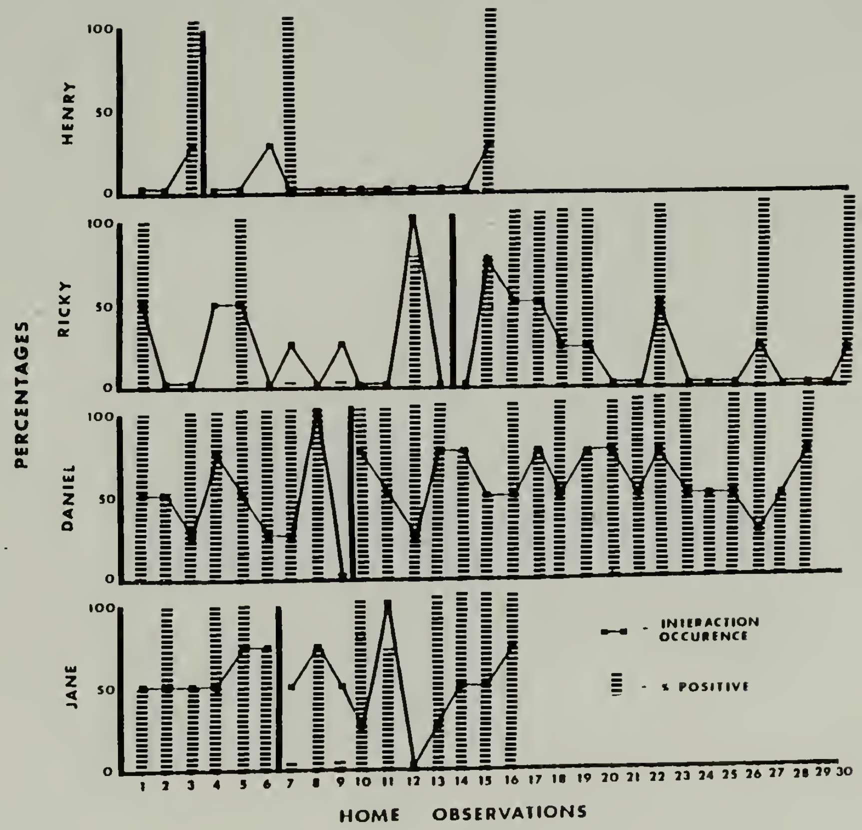

Fig. 30. Percent Occurrence of Interactions and Percent Positive Interactions Between Siblings at Home

stable, baseline percentage of positive interactions became less stable during the workshop phase, though still constituted the majority of his interactions.

Verbalization data. The verbalization data appear separately for each of the four subjects in Figures 31 through 34. With each of the subjects the parents' data indicated that the subject had not stated something in every category (i.e., family, handicapped child, and self-reference). Rather than graphing such information erroneously as zero percentage of verbalizations, no data point was graphed at all. This resulted in the occurrence of disconnected data points throughout the figures.

The data for only one subject, Jane, show a change in the content of her verbalizations that coincides with the onset of the workshop program. Jane's data appear in Figure 34 and represent a change in a more positive direction. The majority of her verbalizations at home during baseline were negative in content in all three areas--family, sibling, and self. Her comments about her handicapped brother were 100% negative. There was a dramatic reversal immediately following the first workshop wherein 100% of her statements were categorized as being positive. The percentage of positive self-referents remained close to 100% throughout the workshop phase, whereas her comments about her brother became less positive towards the end of the season. A similar, though less powerful, deterioration was also seen in her family statements. It

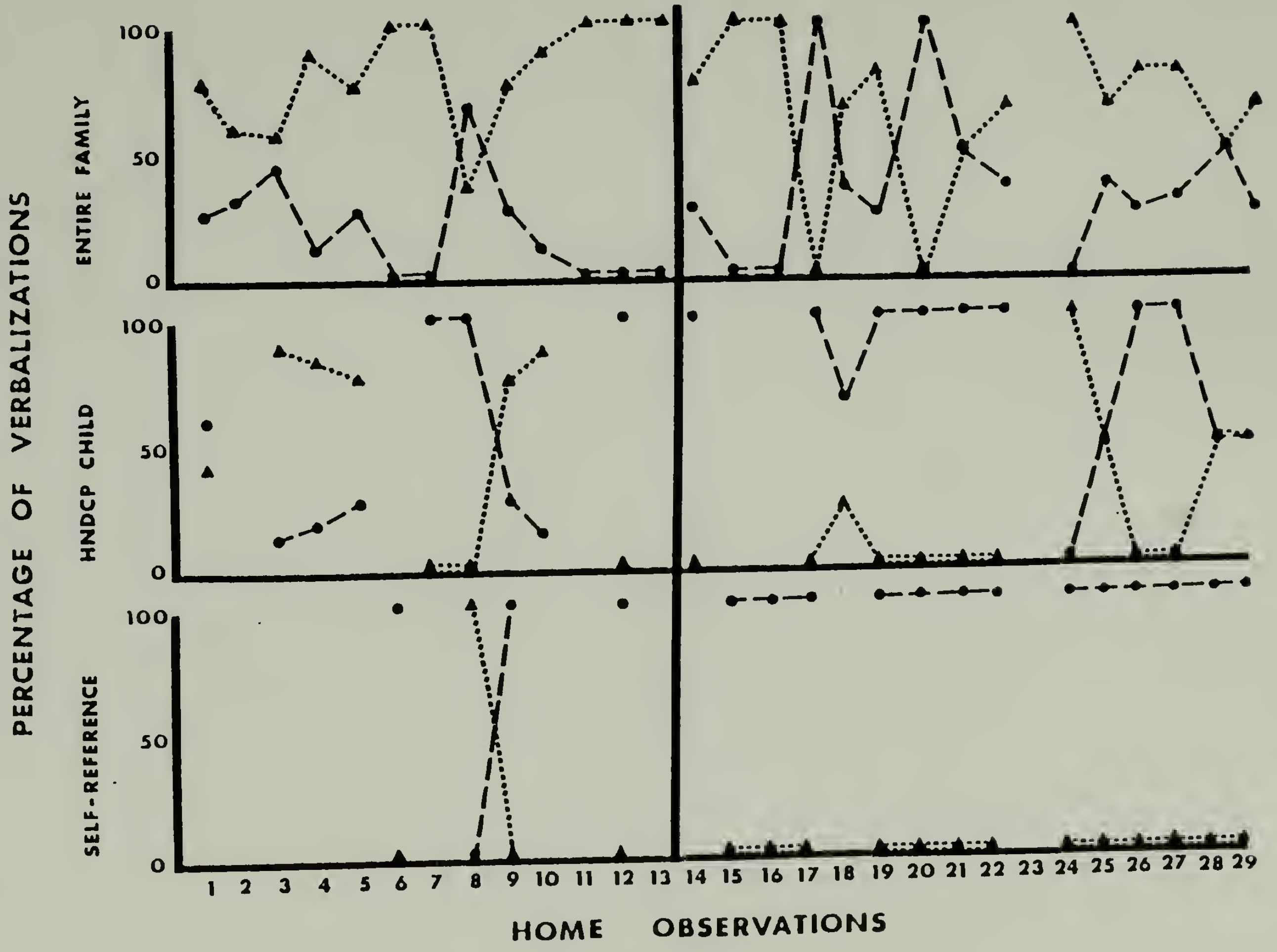

Fig. 31. Percent Positive and Negative Home Verbalizations: Ricky

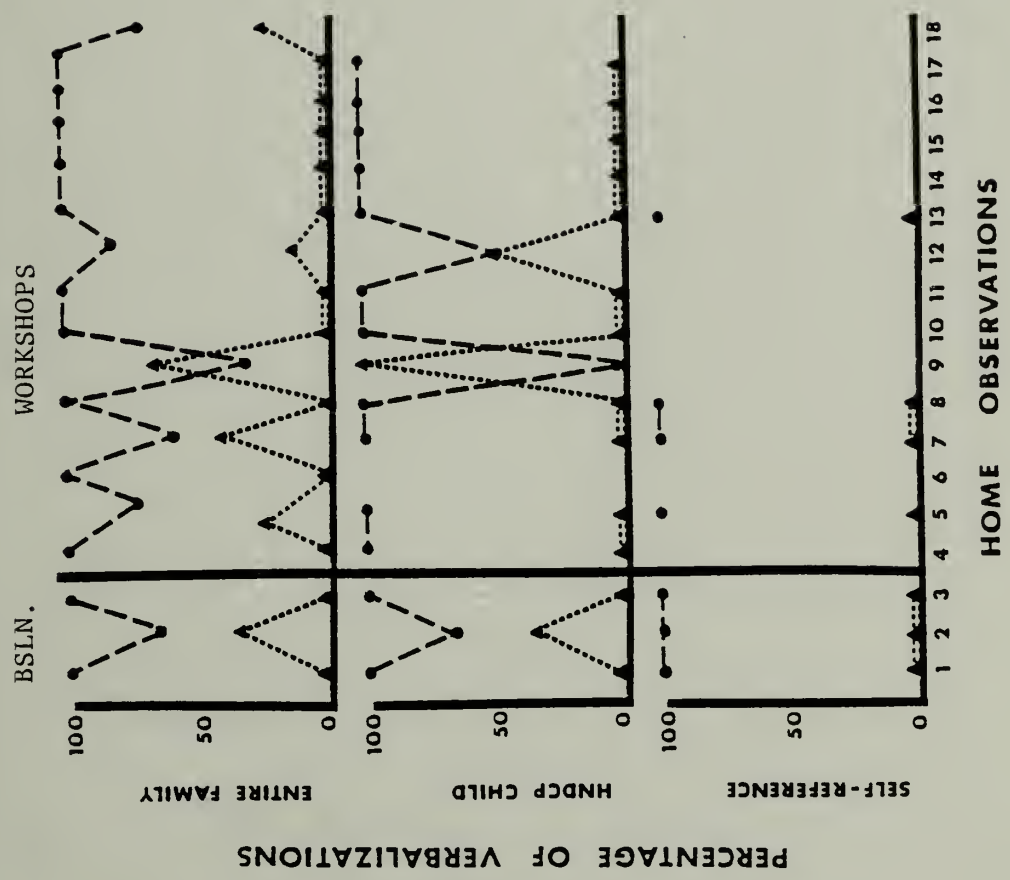

Fig. 32. Percent Positive and Negative Home Verbalizations: Henry

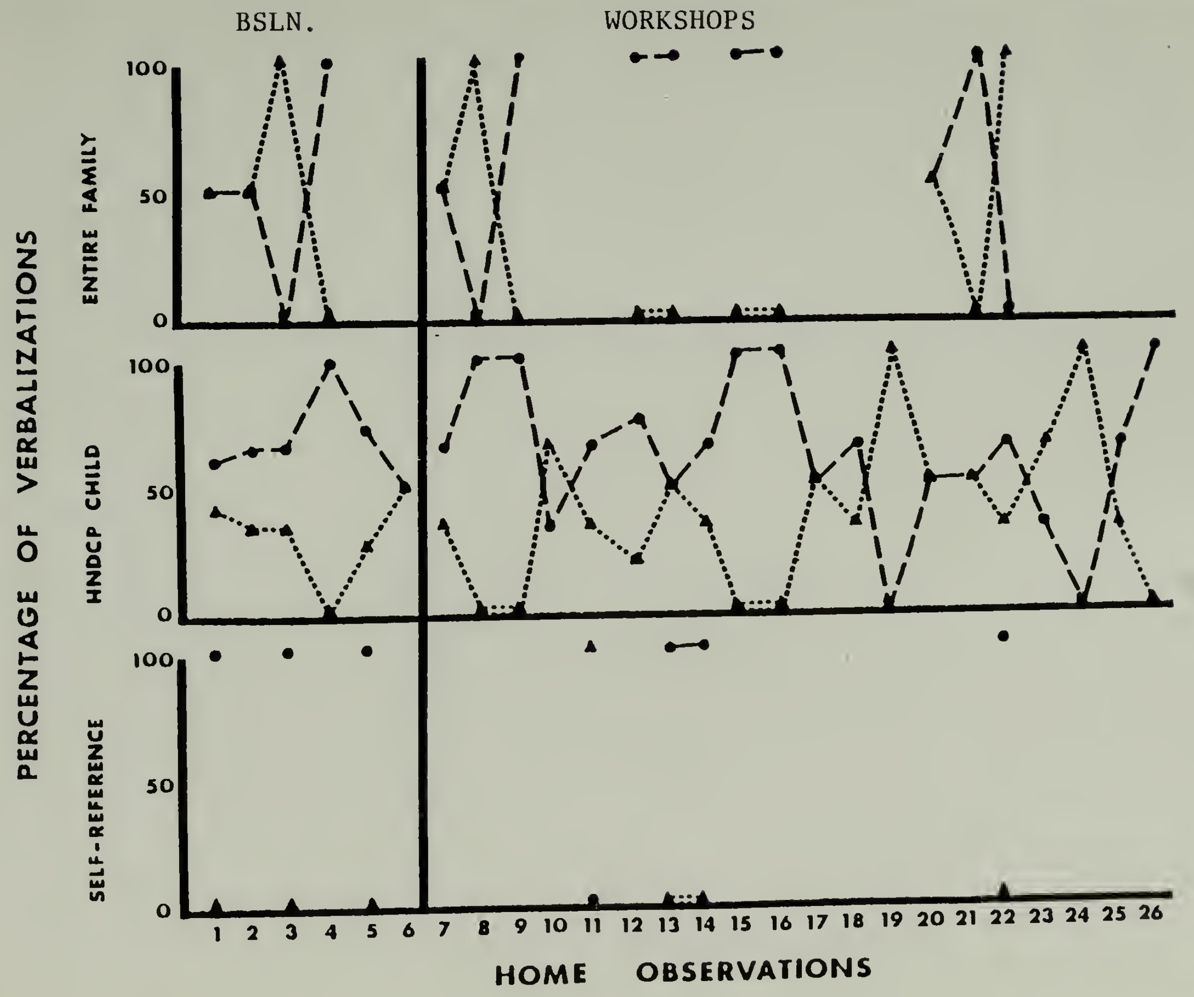

Fig. 33. Percent Positive and Negative Home Verbalizations: Daniel

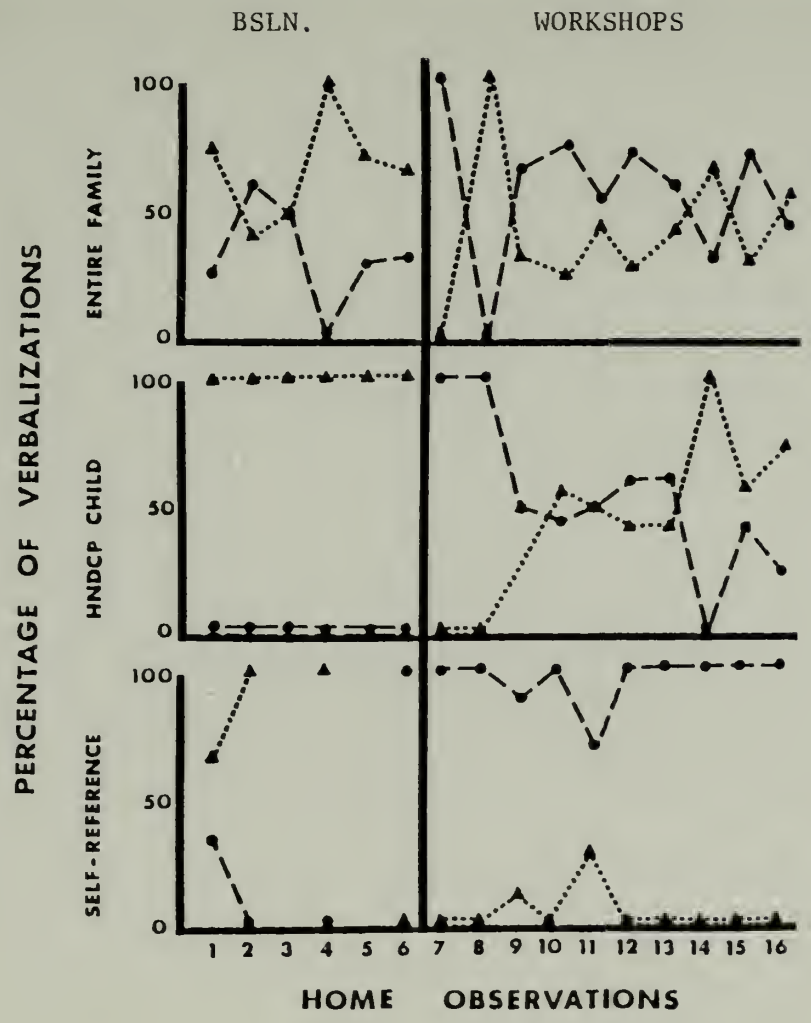

Fig. 34. Percent Positive and Negative Home Verbalizations: Jane

is important to note here that it was Jane whose role play verbalizations were so overwhelmingly negative during baseline. After the first workshop, she showed a dramatic turnaround in that context as well. These home data at least provide some verifications for the nature of Jane's role play responses.

To summarize the results of the home observation, there was no case in which a subject's home interactions or verbalizations were negatively affected by participation in the sibling workshop program. In most cases, the subject's behavior remained stable across experimental phases. For two out of four observed subjects an increase in the percentage of positive interactions with their siblings occurred during the workshop phase. For the other two subjects there was no change at all. In addition, in no instance did the workshops produce either an increase or decrease in the frequency of sibling interactions. Three children showed no change due to the workshops in the nature of their verbalizations. For one subject who did, the change was in a more positive direction.

CHAPTER IV

DISCUSSION

Because of the multiple measures of effect collected throughout the course of this project it would be an extremely tedious and redundant task to summarize and discuss all of these results here. Instead, the most salient results, as well as those that are most significant theoretically and clinically, have been seelcted for discussion. This discussion, then, is divided into three sections: 1) issues related directly to the results and conclusions of the present study, 2) general issues of theoretical and clinical importance, and 3) an analysis of present research needs and future directions.

Issues Related to the Results and Conclusions of the Present Study

The results of this investigation indicate that all subjects became more accurate in their definitions and understanding of developmental disabilities as a function of participating in the sibling workshop program. Despite this increase in exposure to topics related to childhood handicaps there were no concomitant negative side effects, as indicated by the pattern of the subjects' verbalizations about their families, siblings, and themselves. Five of the six the subjects responded to the curriculum with an increase in positive family verbalizations. And four of these five showed an associated decrease in negative verbalizations about their families. In addition to the change in family statements, five of the six subjects responded to the workshops with an increase in positive and a decrease in negative verbalizations regarding their handicapped sibling. Similarly, four of the six subjects showed an increase in positive self-referents and a concurrent decrease in negative self-referents. These results were more consistent and of a greater magnitude for the Group 2 girls than for the Group 1 boys.

The results of the analyses of the subjects' paralinguistic behavior indicated that concurrent with these changes in the content of the siblings' verbalizations, there was an increase in the quantity and the fluency of their speech. These effects were stronger and more consistent with the boys of Group 1 than the girls of Group 2.

The biggest question to remain regarding these results is why there was a difference between the groups in terms of the effects of the workshop curriculum. The answer may lie in the sex and age differences between the groups. But if we accept these differences, we still have not explained how these factors operated to produce the present results. The fact that the composition of the groups differed in both sex and age makes it impossible, with this experimental design and with this small sample size, to disentwine the differential effects of these two variables.

The groups also differed on other variables which may have contributed to the differential results. The first variable was linguistic maturity, as indicated by the paralinguistic measures and performance on the PPVT. The children who entered the program with the greatest verbal ability demonstrated the most positive changes in the content of their role play responses. Unfortunately, linguistic complexity was also related to sex and age; the older girls showed the most advanced verbal skills. However, despite the fact that language skill was directly related to age and sex, its positive correlation with curriculum-related changes would make it a variable to control for in the future when selecting subjects for any curriculum such as this that relies so heavily on verbal intervention strategies.

It is likely that one of the sources of the difference between the groups' role play performance was the differential amount of exposure and practice the subjects received during the workshop session on the critical content areas assessed in the role play scenes. As demonstrated in the workshop data, subjects in Group 2 verbalized more within the relevant content areas and thus received more practice and feedback on the target behaviors than did the subjects in Group 1. However, we are still left without an explanation as to why the two groups behaved so differently during the meetings.

There are a number of reasons for believing that the sex difference played a more important role than the subjects' age difference. First of all, it is possible that the experimenter, being female, provided a role model with whom the girls were more likely to identify and to imitate than were the boys. The girls often maneuvered their positions to be the closest one to the experimenter and seemed to compete with one another as to who could be the most like her. Of course, this all led to inordinate amounts of cooperation and compliance from the girls. On the other hand the boys appeared more motivated by the approval of their peers and they often praised one another for behaviors in competition with those desired by the experimenter. Whereas the girls competed with one another to be most like the experimenter, the boys seemed to compete to see who could be most like their chosen television superheroes. Because it often seemed to the experimenter that the girls were "too good" and the boys were "too rough," more effective peer modelling may have been possible with mixed sex groups.

An additional reason for believing that age may have been only secondary to sex, was the initial reaction of the boys to discussing their handicapped siblings in front of one another. The fact that all of them had talked openly with the experimenter about their siblings when they were with her alone, indicates that their refusal to saying the same in front of their peers did not reflect a lack of ability or understanding. Perhaps it reflected a response to more general social pressures promoting the idea that boys should not openly express their feelings. In contrast, the social message for girls is that it is appropriate for them to be emotionally expressive.

One other possible sex related difference between the groups which may have contributed to the differential results was the amount of doll-playing experience the girls and boys had prior to playing with them during the role play assessment. It is most likely that the girls had considerably greater experience pretending and talking with dolls than did the boys. This, at least, may have accounted for some of the differences between the groups in such paralinguistic behaviors as the duration, latency, and fluency of their role play responses. As the boys gained more experience with the doll their paralinguistic behaviors may have changed, independent of the workshop program. The fact that less powerful changes in paralinguistic behavior were noted with the girls makes this possibility more plausible.

These group differences (i.e., verbal ability, expression of emotion, physical activity, and play preferences) suggest that sex, rather than age, may have been the critical difference between the groups. However, it is still important to operationalize the family and society practices that may have contributed to the children's learning of sex-related interactions with and about their handicapped siblings. Since this issue is of such critical theoretical and clinical importance it will be discussed in more detail in a later section.

Other chraacteristics of the subjects, besides their age and sex, which may have contributed to the group differences were the outstanding events that occurred with two of the Group 1 subjects (Ricky and Daniel) but with none of the Group 2 subjects. It will be recalled that Daniel's stepfather left the family during the workshop phase. The change in his family composition during the workshop phase certainly may have resulted in some changes in his role play behavior that were contrary to the curriculum objectives.

Due to its complexity, the measurement system used in this project is certainly worthy of mention. The role play format was based on previous research utilizing role play scenes to assess and modify children's assertive social behaviors (e.g., Bornstein et al., 1977). With the exception of the affect ratings of "match" and "emotion," the measures of paralinguistic behavior were also derived from the literature on children's assertiveness. Bornstein et al. (1977) and Reardon et al. (1979) used the role play format with children in grades 3 through 8. The format used involved having an assistant read a statement depicting the setting of a simulated interaction, followed by a standard verbal prompt for the subject's response. The authors described the procedures then used to code and categorize the subjects' responses. There is no mention in any of these studies of subjects being uncooperative, for whatever reason, in the role play session. Neither is there any mention of how the experimenters dealt with such responses as "Can I leave now?" or "That's a nice sweater you're wearing." or "Could you repeat that please?." If the responses of the subjects in the present investigation are any indication, then children do not give responses that fit crisply with the schemes and procedures of the experimenters. It is possible that these types of comments do not occur frequently with subjects as old as those in the children's assertion literature. However, if they did occur, it would appear from the reports that these responses would be considered "irrelevant" and would be ignored in data analyses. However, the timing of such "irrelevant" statements may not be at all irrelevant or random and may be a strategy the subject uses to avoid particularly uncomfortable, threatening, or novel topics. By ignoring them in their review, the researchers in the assertion literature may not only be discarding important information but are also depicting the analysis of children's role play behavior as being a predictable and simple task. Certainly, such was not the case in the current project, as indicated by the frequency of occurrence of noncompliant statements. The subjects often interrupted their own speech to embark on a new topic, to ask a quesiton, or in some cases, to leave the room. It would be useful, and perhaps more realistic, if future researchers in this area would discuss the difficulty as well as the ease with which their assessment strategies were implemented.

One of the problems discovered after using the role play procedures is that subjects occasionally brought up important topics with the experimenter, but not in response to the standard prompts. Since only replies to the prompts were analyzed in order to obtain better experimental control, important information was sometimes missed in the data analysis. Similarly, subjects often included in their responses topics that were not related to the prompts but that were targeted for monitoring in the project. For instance, in response to the prompt in the developmental disabilities scene of "What does handicapped mean?" one girl answered, "That means you have a broken leg or something . . . you know my mother once had a broken leg and I helped her get better." The coding of this reply would reflect her definition of the word "handicapped," as well as her description of her mother and of herself. Thus, the experimenter's definition of a scene as being about developmental disabilities or descriptions of sibling did not always coincide with what the subjects were actually talking about in response to the prompts.

Related to this issue of measurement is the external validity of the current role play assessment instrument in assessing children's concepts about developmental disabilities, themselves, and their family relations. The results of this study are positive insofar as they reflect actual changes in the children's verbal, as well as cognitive and affective, behaviors. There were no measures incorporated in the present study to assess systematically the external validity of the subjects' role play responses. However, certain data do provide corroborating evidence. First, there were no incompatibilities with the role play data in the pattern of the subjects' verbalizations and interactions at home. In fact, Jane's data showed an excellent correspondence. This small amount of overlap is even impressive when one considers how different the role play conditions were from the observation conditions used by the parents. Second, the changes in the content of Daniel's family, self, and sibling statements corresponded closely in time with the changes in his own family life. This also suggests that the instrument was effective in eliciting the subjects' "true" attitudes regarding their family life. In addition, the high "match" scores may suggest that the subjects were sincere in their responses, insofar as the way they spoke matched what they said.

As is possible with any clinical intervention, some of the positive changes obtained in association with the sibling workshop program may only represent changes produced by aspects of the procedures unrelated to the curriculum content. Some of the components of the process which may have produced these placebo effects would be 1) the novelty and general excitement of being brought to a "big university" for a "special program" by an adult who gave a lot of positive attention and 2) being out of the house and away from family members for an increased amount of time each week. The data for Jane and Henry provide some evidence for this. Both children exhibited high baseline levels of negative, as opposed to positive, verbalizations about their siblings and families, as shown in Figures 6 and 8. Following the first workshop session they showed a dramatic change to more positive statements, even though the curriculum did not involve practice of these types of responses.

Related to the issue of placebo effects are the possible effects the program may have had on parents. As will be recalled, most of the parents gave two reasons for consenting to have their child participate in the sibling program. The first was that they felt their child would benefit from learning that other children are in a situation in which parents sometimes have to pay greater attention to a handicapped child. The second, related, reason was that the parents were glad they could enroll their "normal" child in an activity that was just for them, especially since the handicapped child was enrolled in so many special services and activities. Thus it is possible that the parents' enthusiasm for the program may have encouraged them to communciate with the subjects on topics related to the curriculum once their children began attending the workshops. Parents made notes on their observation sheets as to interesting and new conversations they had with their children. Three mothers related instances when the subject initiated a conversation at home to tell the parents about the handicaps of the siblings of other children in the group. Henry's mother reported an incident in which Henry played with his sister for about an hour one day, taking her outside to push her around in her stroller. She reported that she felt Henry had become generally more aware and interested in his sister since his enrollment in the program. Additional evidence of the parents' enthusiasm was the fact that Martha's mother contacted the mothers of the other girls in order to get the girls together during the summer months. She did this totally independent of any suggestions from the experimenter.

Despite the contributions and successes of the present research there were certain methdological weaknesses that should be discussed to guide any replications. The first is that it was difficult for the experimenter to interact blandly with the subjects during the role play sessions. Though the verbal prompts were standard across baseline and workshop phases it is possible that the experimenter may have cued target responses inadvertently through more subtle, nonverbal behaviors. Because the sessions were audiotaped only, such nonverbal cues were not recorded. Future research should build in a feedback system to the person administering the role plays, either through videotape review or observation by an independent observer.

In addition, the home observations system posed methodological problems. Though a high agreement score was obtained when the experimenter conducted reliability sessions, there was no way of knowing for sure whether the parents actually collected data when the experimenter left. Though the experimenter became suspicious in only one case, the possibility remains that other parents also may have falsified the data.

General Theoretical and Clinical Issues

The difference in the age and sex distribution between the groups posed the greatest experimental restrictions on the conclusions that could be drawn regarding the differences between the groups in their responses to the workshop experience. However, this difference also produced the most interesting questions regarding the different socialization experiences of boys and girls within their families. Unfortunately, though, the small size of the present sample, combined with the confound of age and sex, make it impossible to examine this issue at any more than a speculative, tentative level. Nevertheless some of these speculations could provide fuel for future research. They are discussed below, with full respect for their tentative status.

As discussed in the introduction, almost all researchers have reported that the presence of a handicapped child in the family places greater stress and has a greater negative effect on sisters than on brothers, especialy if the sisters are older (Farber, 1959, 1960; Fowle, 1962; Grossman, 1972). Because the data for the previous research were gathered retrospectively or only by interview or survey, questions remained unanswered regarding the actual family interaction patterns which may produce such differntial effects on brothers and sistes. Some indication of these family processes was obtained by the current experimenter during her home visits to conduct the role play assessments and reliability checks. There were many occasions during those times when the experimenter observed the siblings and parents interact.

It was not uncommon for one or both of the parents to instruct one of the girls to do something that was in one way or another related to the behavior of her handicapped sibling. These "sibling orienting prompts" sometimes concerned the sister with caretaking responsibilities (e.g., "Get me your brother's pants," "Turn the faucet off in the bathroom, your brother left it on"). But, equally as often, these prompts were unrelated to caretaking and served a more general orienting function (e.g., "Look at your sister, isn't that funny?" or "Are you wearing your brother's sunglasses?"). In contrast, on no occasion did the experimenter hear one of the boys' parents use such orienting prompts to direct the boys' attention to their siblings. It appeared that when the entire family was together that the boys were allowed greater independence from their handicapped siblings than were the girls. The orienting prompts had the effect of placing limits on the extent to which the girls could act and think independently before being pulled back to the folds of the family.

There were wide differences between the boys and girls in their behavior at home in relation to their siblings. On occasion, one of the handicapped children would wander into the role play session with the subject. Whenever this occurred with the girls, each of them looked up at the child and said something, and then either continued playing or tried to get the child out of the room. However, whenever this happened with the boys, none of them showed any change in their behavior; they simply continued their play without interruption until their mother or someone else took the child out of the room. Thus, the girls more frequently oriented themselves to their siblings, possibly as a function of the number of times their parents had done it for them.

It is probable that these "sibling orienting prompts" represent only one aspect of parents' behavior that produces different responses between brothers and sisters. The short term effect to the girls may be that they become more interpersonally "sensitive" and "aware" of their handicapped siblings than do boys. This greater display of empathy may have an endearing effect on adults and, thus produce some immediate short term gains. However, the parents' prompts may also act much like a yoking contingency whereby many of the girls' thoughts and actions are contingent on those of their siblings. This was, indeed, true of the girls' self-referent statements, many of which reflected their behavior towards their sibling. For example, one of Martha's positive self referents was "I'm nice to my sister." This was never the case with the boys. This would help to explain why Grossman (1972) found that the adjustment of girls to their handicapped sibling was more strongly influenced by the characteristics of the child than with boys. Thus, these socialization practices with the girls, though beneficial in the short term, may actually produce negative long term effects.

If these limited observations were a realistic sample then a greater proportion of parents' behavior towards the boys entailed topics other than the handicapped sibling. The effect of this pattern, when compared to the girls, is that the boys have greater freedom to explore non-family related topics before being reminded of the family members. In the short run, the boys could then negatively appear less "aware" of other family members and could impress other adults as caring less for their siblings. But in the long run, such a pattern could have the positive benefit of allowing the boys to develop thoughts and interests independent of the nuances of their siblings' behavior.

Admittedly this analysis was based on striking, but less-than-systematic, observations. However, even though the sample was small, the marked differences in the family interactions for boys and girls produced intriguing questions as to whether or not they represent some of the roots for the differences between brothers' and sisters' adjustment in later adolescence and early adulthood. Certainly they are worthy of further investigation.

Of additional theoretical interest was the finding that the pattern of positive and negative sibling verbalizations closely paralleled the pattern of family verbalizations, for all six of the subjects. Specifically, peaks in the percentages of negative and positive family verbalizations were consistently associated with peaks in the percentages of negative and positive sibling verbalizations, respectively. These data suggest that subjects' attitudes and concepts about their siblings were directly related to their attitudes towards their families in general. This result is supportive of other reports indicating that siblings' attitudes towards the institutionalization and treatment of the handicapped child closely reflected the attitudes of their parents

(Caldwell & Guze, 1960; Graliker et al., 1962). It also ties in nicely with Grossman's (1972) finding that the agreement between siblings and their parents is greatest for middle and upper-middle class families, which the current families were.

The present finding may be interpreted in a number of ways. The first is that children at this age do not yet discriminate their feelings towards particular family members from their global feelings about their families in general. Given the results from the other previous studies, it may be that their feelings and attitudes towards their parents are most salient. Another interpretation is that positive and negative behaviors are reciprocal or "contagious" within a family, such that positive behavior from one member is more likely to be followed by positive behaviors from the others. This family reciprocity has been substantiated before in other family interaction studies (Patterson, Reid, Jones & Conger, 1975). Thus, it may be that young children can discriminate their feelings about different family members and that these family members simultaneously peak in their actual positive and negative interactions. These data indirectly support Grossman's (1972) psychosocial position that is the reaction of the community (in this case, parents) rather than the presence of a handicap itself, that determines how siblings adjust to the handicapped child.

Directions for Future Research

The major contribution of the present research was the demonstration that children as young as 3:9 years improve their statements (and concepts) regarding their handicapped siblings, families, and themselves as a function of the workshops. Related to this major contribution, of course, was the design of the sibling workshop curriculum that brought about these positive changes. This type of group intervention strategy would appear to have advantages over conducting such workshops with children individually. The children shared information and clarified issues for one another. For instance, during the second workshop on developmental disabilities Kathy stated that her brother had "brain damage" and Jane responded, "So does mine. Can your brother see or walk or talk?" This conversation continued until the two girls had listed their siblings' problem areas at which point the experimenter merely pointed out that the words "brain damage" could represent a range of disabilities rather than just the particular problems they knew. Such interchanges easily could be lost in a simple teacher-student interaction. However, despite these contributions, the study covered an equal number of unanswered questions for future research.

Unfortunately, there are still no well-controlled studies indicating whether or not siblings of handicapped children are at-risk for later problems of adjustment. The need for such a study is obvious.

The issue that became most evident during this project concerns identifying the different early socialization experiences of boys and girls which produce the different adolescent and adult behaviors regarding their handicapped siblings. What is most needed in this field, as in many others, is a long term follow-up to determine how early childhood experiences associated with the handicapped child (such as amount of responsibility, episodes of family emergency, how the normal child is informed of the disability) relate to later adjustment.

Another research question which has been virtually untouched concerns the importance of birth order in defining a sibling's adjustment to the handicapped child. Are there any problems specific to being a younger sibling of an older disabled child? In what ways does the chronologically younger sibling function as an appropriate model for the older, delayed child? Are there any particular problems associated with encouraging the young child to assume a "teaching" role with the older sibling, or have past researchers simply assumed this without reason?

To date, the research in this area has focused predominantly on identifying negative reactions of children to their handicapped siblings. Subsequently there is a need to identify more of the positive benefits associated with growing up with a child with developmental problems. There is a similar need to identify the many benefits handicapped children may derive from their normal siblings.

In addition to the need for these more demographic investigations, the area of curriculum development remains wide open. The current sibling workshop program represents only one of many possible models that could be adopted for teaching young children about their siblings' development. An interesting variation of the current format would be to see if a pyramid teaching system could be employed whereby children who previously participated in the workshops could act as teachers and teaching assistants to new students. Another interesting variation would be to run the programs with different subject composition groups (e.g., mixed-sex, same-sex, related handicaps, etc.). Since one of the goals of the present project was to teach the children to be more expressive of their feelings regarding their family situation, what is missing in this project was a systematic link with other family members to ensure that these gains could be maintained at home. As siblings have been ignored by past researchers in the fields related to the families of handicapped children, so, too, did this research ignore the roles of other family members such as fathers and grandparents. Research methods should be developed that adequately reflect the complexity of the interactions among multiple family members.

As our social and legal policies encourage families to educate their handicapped children within existing community facilities, the list of applied research needs will grow even longer. Hopefully, this project represents the beginning of a research base for preventative programs that can help shape the direction of social policies related to families of developmentally disabled children.

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APPENDIX 1

Role Play and Workshop Materials

Role Play Materials

Father-figures (1 blond, 1 brunette)
Mother-figures (1 blond, 1 brunette)
Young boy dolls (2)
Young girl dolls (2)
Infant dolls (1 boy, 1 girl)
Grandfather doll (1)
Grandmother doll (1)
School house
Train-set town of small houses and trees
Small checkered doll blanket for doll picnic
Doll-house kitchen table and chairs
Small plastic zoo animals
Small plastic grocery cart
Plastic canned foods and groceries for doll house
Plastic helicopter
Plastic airplantes (2)
Plastic motor boat
Plastic dune buggy for dolls
Plastic doll-house swing set
Plastic horse models (2)
Construction paper
Markers
Craft sticks

Workshop Materials

Construction paper
Markers
Crayons
Tape
Dramatic hats (firefighter, floppy flowered hard, hard hat)
Hand puppets (5)
Water paints
Assortment of children's pictures from magazines
Picture of girl in a wheel chair
Easel
Scissors
Glue
Craft sticks

Train-set town of houses and trees
Human-figure dolls (same as in role plays)
Poster paper on roll 40" by unlimited length
Toy telephones
Doll house and furniture
Baby dolls
Decorative wall posters
Blocks
Race track
Cars
Checkers
Masks
Play-dough
Shovel
Pail
Soldiers

APPENDIX 2

Role Play Assessment Instrument

The following scenes were designed to elicit subjects' responses in nine areas:

1) understanding of developmental disabilities
2) description of mother
3) description of father
4) description of handicapped child
5) reaction to positive behavior of mother
6) reaction to positive behavior of father
7) reaction to positive behavior of handicapped brother
8) reaction to parents ignoring subject in favor of sibling
9) description of self (i.e., self-reference)

Each of these scenes involved the experimenter using human figure dolls and appropriate environmental props to set up simulated interactions between the subject and other people. The experimenter attempted to make the interactions as realistic as possible by changing the pitch and inflection of her voice for each character, by dramatizing all appropriate actions involved with the dolls, and by setting up any relevant props for the setting of the interactions (e.g., play beach towels for beach scenes, toy dishes for dinner scenes). A total of ten settings for these weekly family outings were arranged. They were presented in the following order: 1) home and school, 2) beach, 3) zoo, 4) grocery store, 5) airport, 6) boating, 7) camping, 8) park picnic, 9) farm, and 10) horseback riding. In each scene the experimenter assumed the role of one interpersonal partner (with one of the dolls) who provided prompts for the subject's responses to the situation with the other doll. The dolls were of the same sex and relative age of the subject and his or her family members and friends.

The actual verbal prompts (which remained standard across sessions) are presented in the scripts that follow. Included are the scripts the experimenters used in the transition from one scene to another within each setting/session.

SCENE 1: UNDERSTANDING DEVELOPMENTAL DISABILITIES

Standard Verbal Prompts

- What does the word handicapped mean?
  - Are handicapped children happy or sad?
  - What can handicapped children do?
- What does blind mean?
- what does deaf mean?
- What does retarded mean?

Introductory Comments for Each Setting

Setting 1: Home-School

During recess, as a peer, the experimenter says:
C'mon, Susie, let's go outside and take a walk together. Which way would you like to go? (Child responds) Okay, let's go that way. You know, you're my best friend, so maybe you can answer some questions about some thigns I heard my mommy say. Can I ask you? (Child responds) Well, last night my mommy, she said that a new little boy in our neighborhood is handicapped. (Prompts)

Setting 2: The Beach

As a peer, the experimenter says:
Hey, Johnny, I'll be right back. I'm getting orange drink for us. (Doll leaves and returns with imaginary drinks.) Here's yours. Can I ask you something Johnny? I just heard some adults up there say that they saw a kid who was handicapped. (Prompts)

Setting 3: The Zoo

As an adult at the zoo the experimenter says:
Now before you can all go into the cafeteria I'll tell you that there are children there who are handicapped. I'd like Susie to tell the other children what that means. (Prompts)

Setting 4: The Grocery Store

As the subject's mother, after returning home, the experimenter says:
You know, Susie, there is a new family moving in next door. Have you seen them yet? (Child responds) Well, I met them today and I found out that one of the children is handicapped. Maybe we can talk a little about that now. (Prompts)

Setting 5: Airport

As a peer, the experimenter says:
John, my father said that there was a handicapped child next to him on the plane. I didn't know what he meant and he didn't have time to tell me. (Prompts)

Setting 6: Boating

As a peer, the experimenter says:
Hey, Johnny, I'll be right back. I'm getting ice cream for us. (Doll leaves and returns with imaginary ice cream.) Here's yours. Can I ask you something Johnny? I just heard some adults up there say that they saw a kid who was handicapped. (Prompts)

Setting 7: Camping

As a friend, in the woods, the experimenter says:
My Girl/Boy Scout leader said that (s)he is bringing her troop camping today too and that there is a kid who is handicapped in that troop. (Prompts)

Setting 8: Park Picnic

As mother, having lunch on blanket, experimenter says: When I went over to the pond before I saw a little boy/girl who was handicapped. I'm not sure if you know what that means. (Prompts)

Setting 9: Farm

As teacher taking class to farm, experimenter says:
Ok, class, before we go to the farm we're going to stop at another school and we'll pick up some other kids. Now some of the kids are handicapped. (Prompts)

Setting 10: Horseback Riding

As a friend, in the woods, the experimenter says:
My Girl/Boy Scout leader said that (s)he is bringing her troop horseback riding today too and that there is a kid who is handicapped in that troop. (Prompts)

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SCENE 2: DESCRIPTION OF MOTHER

SCENE 3: DESCRIPTION OF FATHER

SCENE 4: DESCRIPTION OF HANDICAPPED CHILD

Standard Verbal Prompts

Tell me all about your mother.
What is she like?
What does she do?
(Repeat with father and handicapped child.)

Introductory Comments for Each Setting

Setting 1: Home-School

As a friend coming to subject's house for afterschool visit:
You know, I never met anybody in your family before. I guess I'll meet them today. (Prompts)

Setting 2: The Beach

As a friend, invited to go with subject's family:
Well, I don't know if I can go with you because my parents have never met anyone in your family before. What should I tell them about your family? (Prompts)

Setting 3: The Zoo

As a new acquaintance, met at the zoo:
So your name is ______. Gee, tell me about your family. Who did you come with to the zoo? (Child responds) Well then tell me about them. (Prompts)

Setting 4: The Grocery Store

As a store clerk with subject lost in the store:
Well, who did you come with today? Tell me something about them as we look for them together. (Prompts)

Setting 5: Airport

As a friend, waiting for subject's parents and sibling to land:
Gee, where did your family go? (Child responds) Your family will be here any minute now. I can't remember the last time I saw them. It's been so long ago. (Prompts)

Setting 6: Boating

As a clerk from whom subject wants to get a boat:
I'm sorry, but I can't rent you a boat. You're so young. I can only rent it to someone if I know something about them and their family. (Prompts)

Setting 7: Camping

As a friend, invited to go with subject's family:
Well, I don't know if I can go with you because my parents have never met anyone in your family before. What should I tell them about your family? (Prompts)

Setting 8: Park Picnic

As a new friend on swings:
So you came on a picnic with your family? So did I. Gee, tell me about yours and I'll tell you about mine. (Prompts)

Setting 9: Farm

As teacher speaking to class:
Well we will need to have some family members come with us on the trip to watch the kids. John tell me about yours so that maybe they'll come. (Prompts)

Setting 10: Horseback Riding

As a clerk from whom subject wants to get a horse:
I'm sorry, but I can't rent you a horse. You're so young. I can only rent it to someone if I know something about them and their family. (Prompts)

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SCENE 5: REACTION TO POSITIVE BEHAVIOR OF MOTHER

SCENE 6: REACTION TO POSITIVE BEHAVIOR OF FATHER

SCENE 7: REACTION TO POSITIVE BEHAVIOR OF HANDICAPPED CHILD

Standard Verbal Prompts

a. (as Mother): This is it. This is what I did especially for you.
b. (as Father): Here, this is especially for you.
c. (as Mother): Look what your brother/sister is doing just especially for you.

Introductory Comments for Each Setting

Setting 1: Home-School

a. I have a surprise for you in your bedroom today. Come with me and I'll show you what it is. While you were at school today I spent all my time making the surprise for you. Guess what it is? That's right, it's a _______. (Prompt a)

b. Hi, Susie, I'm home. I brought you something home with me today. Remember that book you said you wanted. Well, I made a special stop today to pick it up for you from the library. (Prompt b)

c. Let's go inside to your brother's room together and we will show him your new book. (Walk) Oh, my goodness, look at your brother. Look what he's doing. He's rolling a ball back and forth. He's never done that before. (Prompt c)

Setting 2: The Beach

a. Good morning, John. Guess what we're going to do today? (Child responds) We're going to the beach. We haven't gone to the beach in such a long time and it's such a beautiful sunny day today. Let's make today really special in every way. I'm going to go to the kitchen now to fix the lunches for everybody. It will take some time so please tell me what you would like to have to eat at the beach and I'll make whatever you'd like. What would you like to have? (Child responds) Okay, now you get ready and I'll go work on it. (Later . . .) Susie, it's time to go. Look in our basket. Look at all the things I made for you. (Prompt a)

b. (Everybody in the car driving to the beach) Hey look, there's a store where you can buy things to play with on the beach. Would you like to stop there, John, and find something for you? (Get out of car and go into store) Wow, look at all these beach things. They have floats and pails and shovels and beach balls. But boy, are these expensive. They are going to cost a lot of money! Well, because it's such a special day you can pick out the toy you'd like to have and I'll buy it for you. Which one would you like to have? (Child responds) Okay, let's pay for it. (Prompt b)

c. (Arrive at the beach and everybody starts to unpack the car) Okay, now everybody should carry something down to the water. What will you carry John? (Child responds) Now what do you think your brother can carry? (Child responds) Well let's see if he can carry something that isn't too heavy. Look, John, he's carrying your ball for you. I've never seen him do that before and he's doing it just for you! (Prompt c)

Setting 3: The Zoo

a. (Night before going to the zoo.) So what kinds of things do the zoo animals eat, Sue? (Child responds) Oh no, we don't have any of that for them. I'm going to have to stay up late tonight and make some food so that you and your friends can have fun feeding the animals tomorrow. (Pretend bedtime, sleep, morning) Good morning, Sue. Look what I packed--all of those paper bags full of food for the animals. Boy, did I work hard last night. (Prompts)

b. Susie, your friend's mother just called. She won't be able to come because her mother cannot bring her over. I'll tell you what. Since you really wanted your friend to come, how about if we go get her ourselves? Then she can still come. I don't have much time today but I'll do this so you can still have fun today at the zoo. (Prompts)

c. Ok, now we're ready everybody. Look, your brother is moving his arm to put it in the sleeve as you hold it, Sue. Gee, I've never seen him do that before. (Prompts)

Setting 4: Grocery Store

a. Ok, now for the next two minutes you can look around the store and pick out something you'd like just for you. And I'll buy it for you. (Prompts)

b. Well, while you were busy at the store looking for food I went next door to a toy store and I bought something for you. It's small, but it's something you're wanted. (Prompts)

c. Hey look, Johnny, your sister picked this out just especially for you. (Prompts)

Setting 5: Airport

a. Look, this is what I brought you from our trip. (Prompts)

b. This is something I saw on our trip that I thought you'd like. (Prompts)

c. Your brother has something that we all know you'll really likw. (Prompts)

Setting 6: Boating

a. Well I am very busy right now but I guess I can go over to that clerk and help you get the boat and take it on the lake. While you were over there I found this great sailor's hat. Here, you can have it. Ok, let's go. (Prompts)

b. Oh, that's too bad, the man won't let youngsters take boats without a grown-up. Well I am busy now but maybe that can wait. Okay, I'll take you all for the boat ride so you and your friend can have fun. (Prompts)

c. Hey, look, your brother is waving to you from shore. (Prompts)

Setting 7: Camping

a. You've always wanted a sleeping bag, right? Well, look what I've made you. It's a sleeping bag just for you for our camping trip. (Prompts)

b. After I saw the sleeping bag your mom made I thought it would be nice if you also had some other camping things. Now what would you like for our trip? Okay, I'll go get ______. Here you go, it's a ______. (Prompts)

c. Your sister is trying to close the zipper on your sleeping bag for you. I've never seen her try to do that before. (Prompts)

Setting 8: Park Picnic

a. Good morning, John. Gueses what we're going to do today? (Child responds) We're going to the beach. We haven't gone to the beach in such a long time and it's a beautiful sunny day today. Let's make today really special in every way. I'm going to go to the kitchen now to fix the lunches for everybody. It will take some time so please tell me wht you would like to have to eat at the beach and I'll make whatever you'd like. What would you like to have? (Child responds) Okay, now you get ready and I'll go work on it. (Later . . .) Susie, it's time to go. Look in our basket. Look at all the things I made for you. (Prompts)

b. Let's go the pond. Everybody has a bathing suit I hope? Ok, let's go. I brought our floater to push you kids around on. (Pushes) (Whee) (Father plays for a while, then starts to bring kids back to picnic blanket) Wasn't that fun. Well I did that just for you to have fun and I had fun too. (Prompts)

c. (As they return to the blanket) Look, your sister is eating much better than she usually does. (Prompts)

Setting 9: Farm

a. Your teacher called and said that the class needs some mothers to go to the farm. I know you have wanted me to go. So just for you I'll go. (Prompts)

b. Before you leave, how about I read you a book about farms that you have wanted me to read? Prompts.

c. Well, isn't your brother being nice and quiet as we read. He usually doesn't do that. (Prompts)

Setting 10: Horseback Riding

a. You really like those horses don't you? Well, look, my friend owns a horse and he said that you could have it to ride for a few days but only if I said yes. I think I should let you borrow him for a while. (Prompts)

b. Here, and I'll fix a place in the backyard for it near the tree. I don't have too much time but I'll work extra hard so you can play with it. (Prompts)

c. Look, your sister is pointing towards the horse and sounding out "Haw-haw." I think she's making that sound just for you. (Prompts)

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SCENE 8: REACTION TO PARENTS IGNORING SUBJECT IN FAVOR OF SIBLING

Standard Verbal Prompts

Well we can't do that with you or You can't do (what you want) because of your brother/sister. We are with your brother now.

Introductory Comments for Each Setting

Setting 1: Home-School

As experimenter: Let's make believe that you come home with a new book that you really want Mommy and Daddy to read. You look for them and they are in your brother's room. You ask them to read to you. (Child asks) (Prompts)

Setting 2: The Beach

As experimenter: Make believe you and your friend are ready to go in the water to swim. Your Mom and Dad are on the blanket with your sister. You cannot go in the water without one of them, so you ask if they will go with you. (Child asks) (Prompts)

Setting 3: The Zoo

As experimenter: You ask your Mom and Dad if your friend can come to the zoo. Prompts: No, because your sister's friends will be there and that would be too many kids.

Setting 4: The Grocery Store

As experimenter: You're in the store and you really want to sit in the grocery cart to be wheeled around, so you ask your mother. (Child asks) (Prompts)

Setting 5: Airport

As experimente: You are all going to get to sit in the airplane as a tour. You really want to sit by the window and look out to the airport. You ask your parents if you can. (Child asks). Prompt: No, let your brother sit by the window.

Setting 6: Boating

As experimenter: Make believe you and your friend are ready to go in the water to swim. Your Mom and Dad are on the blanket with your sister. You cannot go in the water without one of them, so you ask if they will go with you. (Child asks) (Prompts)

Setting 7: Camping

As experimenter: Another family who is camping in the woods invites you over there to go to a campfire party. You really want to go because you've never been to one before. You ask your parents. (Child asks) (Prompts)

Setting 8: Park Picnic

As experimenter: You really want your new friend to come over to your house after the picnic. You ask your parents. (Child asks) Prompts: No, your brother's teacher is coming over today so the house will be too busy. No, you cannot have a friend over.

Setting 9: The Farm

As experimenter: You really want to have your mother be the class volunteer to go to the farm with everyone. You ask her if she will go to the farm with your class. (Child asks) (Prompts) (Later the mother agrees to go. See reaction to positive behavior scene 7, setting 9)

Setting 10: Horseback Riding

As experimenter: It is the morning you are supposed to go horseback riding. You wake up all excited and run downstairs to say good morning. When you get downstairs your parents tell you that you can't go because your brother has a cold. (Prompts)

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SCENE 9: DESCRIPTION OF SELF

Standard Verbal Prompts

So, tell me. What is Susie/Johnny like?
Is she happy or sad? Nice or mean?
What kinds of things does she do?

Introductory Comments for Each Setting

Setting 1: Home-School

As experimenter: This doll is your new teacher. On the first day of school your teacher wants to talk to your Mom and Dad so they drive you to school. (Have subject drive the family to school and have parents get out of car first) As teacher: Hello, I'm John's new teacher. Maybe you can tell me some things about John before he comes into my class. (Prompts Mom and Dad dolls)

Setting 2: The Beach

As friend invited to go to the beach: Well I'll have to ask my parents if I can go. They might want to call your parents and talk to them before they let me go. Later as friend's parents. Hi, Mr. _____. This is Mr. _____. My daughter said Susie invited her to go to the beach with your family. Well I haven't even met your daughter Susie before. Isn't that a shame. (Prompts)

Setting 3: The Zoo

As a new acquaintance at the zoo: Well my name is _____. What is your name? What are you doing here? (Child answers) (Prompts)

Setting 4: The Grocery Store

As grocery clerk helping mother (subject) look for lost subject: So you say she just went to get tomatoes for you and that now she must be lost? (Child answers) Well tell me about her and I'll try to help you. (Prompts)

Setting 5: Airport

As adult seated next to parents (subject) on the plane: Oh, so you have a son. So do I. (Prompts)

Setting 6: Boating

As grandmother/father who telephones before family leaves to go boating and speaks with parents (subject): I certainly have not seen my grandchild in a long while. (Prompts)

Setting 7: Camping

As another camper helping mother and father (subject) set up their camp: So you have two children you say? (Prompts)

Setting 8: Park Picnic

As a woman whose picnic blanket is near mother and father (subject). So, is that your little girl/boy I see over there? (Prompts)

Setting 9: Farm

As mother speaking on phone to teacher (subject) about being a monitor for the class trip: Well, I'm not sure right now if I can come but I'll try. Since I already have you on the phone why don't you tell me how my daughter is at school? (Prompts)

Setting 10: Horseback Riding

As friend of father (subject) from whom father is borrowing a horse: So your son is much older than the last time I saw him. Boy has it been that long? (Prompts)

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APPENDIX 3

ROLE PLAY ASSESSMENT

Definitions of Verbal Content Categories

POSITIVE VERBALIZATIONS

Positive Description of Others (PD): This is a statement about another person which positively refers to or praises some aspect of the person's appearance, behavior, or personality. These statements will be coded as to the person referred to in the statement--the subject's mother (PD-M), father (PD-F), or the handicapped child (PD-HC).

Examples of PD: My brother has nice eyes (PD-HC).
My mom is nice to me (PD-M).
My dad sings real well (PD-F).

If the subject describes someone other than a family member use -O to indicate other. Also this is a statement in which the subject states another person feels positively about him or her (coded as PD/PSR). If the subject describes some behavior which children often like (e.g., buying candy, playing with them) then this is a positive description of that person.

Positive Self-Reference (PSR): This is a statement in which the subject praises or positively refers to some aspect of his or her own appearance, behavior or personality. Also included are responses by which the subject states that other people feel positively towards him or her. Also included are resopnses in which the subject depicts his-her own behavior as being helpful to others, or the way other people should behave.

Examples of PSR: Don't I have nice hair?
My mother loves me.
I am a good swimmer.

Show of Concern (SC): This is a statement in which the subject expresses concern for the physical or emotional state of another person. It is coded as to whom the concern is for--the mother (SC-M), father (SC-F), or the handicapped child (SC-HC).

Examples of SC: I hope my mommy feels better today (SC-M).
Does daddy feel sad? 9SC-F).
Does my sister's tummy hurt still? (SC-HC).

Show Kindness (SK): This is a statement through which the subject does something nice (e.g, shares, gives a present to) another person. Code the person involved.

Examples of SK: Here Mom, I made a pancake for you (SK-M).
I'll take you for a parachute ride (SK-HC).

Show Appreciation (SA): These are statements by which the subject acknowledges the kind act of another person towards him or her. They consist of the set of socially accepted ways of responding to others' kindness. Code the person to whom it is expressed--mother, father, handicapped child.

Examples of SA:	Thank you mama (SA-M).
	Dad, oh it's just what I wanted (SA-F).
	It's great mom, thanks (SA-M).

Praise (PR-): This is a statement spoken directly to another person in which the subject compliments or acknowledges some positive aspect of the person's behavior. These statements are similar to the PD (positive description) statements. However the PR (praise) is directed to the actual person whereas the PDs are positive descriptions the subject tells to someone other than the person involved. Code the person praised.

Examples of PR-( ):	You're such a good girl, sis (PR-HC).
	Great, you counted to 3 (PR-HC).
	That looks nice on you dad (PR-F).

Positive Emotion (PE): This is a statement in which the subject clearly labels a positive emotions he or she feels towards naother person. These statements will be coded as to whom they refer--the mother (PE-M), father (PE-F), or the handicapped child (PE-HC). Also coded PE-( ) are any occasions during which the subject demonstrates affection towards another person by kissing or hugging.

Examples of PE:	I'd tell my mommy I love her (PE-M).
	I like my daddy (PE-F).
	I love my sister (PE-HC).

PE is also coded for any statement in which the subject expresses a positive emotional reaction to something. These differ from PE-( ) because they describe the child's reaction and do not warrant the "-( )."

Examples of PE:	That makes me happy.
	Boy, would that make me feel good.
	I'd like if that happened.

Offers Solution (OS): This is a strategy in which the subject proposes an alternative to the parents which would allow all parties to get their way. If the subject proposes more than one solution to the problem, then use numbered subscripts to indicate this.

Examples of OS:	Then could we go tomorrow instead.
	How 'bout if I help you then you can finish faster.
	How 'bout if we do something else then that HC likes and I like?

Accepts (AC): This is a statement in which the subject simply accepts what the parent says even though it may be counter to what the subject wanted. The subject does not negotiate, disobey, whine, cry, or suggest solutions.

Examples of AC: I wouldn't say anything.
Ok, mom, I understand.
Well if I can't then I can't.

NEGATIVE VERBALIZATIONS

Negative Description of Others (ND): This is a statement about another person which negatively refers to or degrades some aspect of the person's appearance, behavior, or personality. These statements will be coded as to the person referred to in the statement--the mother (ND-M), father (ND-F), or the handicapped child (ND-HC).

Examples of ND: My sister is stupid (ND-HC).
My mother is mean (ND-M).
My father is ugly (ND-F).

Use ND if the subject describes a person as doing something negative even if the subject says they only do it "sometimes."

Negative Self-Reference (NSR): This is a statement in which the subject insults or negatively refers to some aspect of his or her own appearance, behavior, or personality. Also included are responses in which the subject states that others feel negatively towards him or her.

Examples of NSR: I can't do anything right.
My father thinks I'm stupid.
I don't have any friends; nobody likes me.

Ignores Kindness (IK): This is coded only for positive scene. It is a statement which follows a kind act of another person in which the subject fails to acknowledge the other's kindness. Code (IK-) until the subject does acknowledge the other person's kindness.

Exclusion (EX-): This is a statement in which the subject verbally excludes a family member, or him-herself, from family activities in which the examiner explicitly includes the person the subject excludes.

Examples of EX: We'll go to the movies and my brother will stay with a babysitter (EX-HC).
I don't want daddy to walk with us (EX-F).
I am going to run away (EX-SELF).

Aggression (AG): This is a statement in which the subject states that he or she would respond to a situation with either verbal or physical aggression towards another person or towards the person's possessions, or indicates that he or she would intentionally try to hurt another person. It is coded as to the target of the aggression--the mother (AG-M), father (AG-F), or the handicapped child (AG-HC).

Examples of AG: I'd kick my mother (AG-M).
I'd scream at my daddy (AG-F).
I'd take his favorite toy and break it (AG-HC).

Blame/Jealousy/Resentment (BJR-): This is a statement in which the subject makes a comparison between something the handicapped child has that the subject wants but does not have, or states that things were better before the brother or sister was born. Also included are any statements in which the subject blames another person for something bad that has happened. BJR can be used to code statments about family members other than the handicapped sibling. If the subject blames someone for something bad and then describes the bad act use both ND-( )/BJF-( ).

Examples of BJR: My parents only pay attention to my sister.
I can't have fun, just because of my brother.
I used to like when I could spend time with just me and my mother alone.

Negative Emotion (NE): This is a statement in which the child clearly labels a negative emotion he or she feels towards another person. It is coded as to the person referred to in the statment--the mother (NE-M), father (NE-F), or the handicapped child (NE-HC).

Examples of NE-( ): I hate you mommy (NE-M).
I don't like my daddy (NE-F).
I don't like anything about my sister (NE-HC).

Also included are statements when the subject describes a negative reaction to something other than another person.

Examples of NE: That would make me very sad.
I'm unhappy that we can't play today.

Whines/Cries (WH): Thsi is a statement in which the subject poses no alternatives or solutions but raises (changes the tone of) his-her voice to a somewhat strident pitch and persists, complains, or just begins crying.

Examples of WH: Oh boy I don't see why. Brother.
Boo-hoo-hoo.
But, ma, but ma how come? how come?

Disobeys (DIS): This is a statement in which the subject goes against the parent's command and does what it was (s)he asked permission for originally. If the subject's response is to run away then the appopriate code would be DIS/EX-SELF.
Examples of DIS: I'm going swimming anyway.
You can't tell me what to do.
See if I care. I'm leaving.

GENERAL VERBALIZATIONS

General Description of Others (GD): This is a statement about another person in which the subject describes some aspect of the person's appearance, behavior, or personality in general, neutral, or nonjudgmental terms. The subject uses neither complimentary nor degrading qualifiers to describe the person. Use this code if the subject describes the sibling's handicap in general terms or even mentions that the sibling has a disability.
Examples of GD: My brother sucks his thumb (GD-HC).
My mother likes ice cream (GD-M).
My father wakes up early on weekends (GD-F).

General Self-Reference (GSR): This is a statement in which the subject describes in general, neutral, or nonjudgmental terms some aspect of his or her own appearance or behavior. The subject uses neither complimentary nor deprecating qualifiers in the description.
Examples of GSR: I have blue eyes.
I sleep in my own room.
I like to go to school (PE/GSR).
Also included are statements of preferences ("I like-") which should be coded as PE/GSR.

DEFINITIONS OF DEVELOPMENTAL DISABILITIES

Accurate Definition and Understanding (AU): This is a statement in which the subject accurately describes or defines a handicapping condition.
Examples of AU: Retarded just means learning slower than others.
Some deaf kids talk with their hands.
I can be normal even if my brother is brain damaged.

Inaccurate Definition and Understanding (IU): This is a statement in which the subject inaccurately describes a handicapping condition, or gives an erroneous definition.
Examples of IU: Retarded means you never learn anything.
Deaf means you can't see.
If my brother has brain damage, then so do I.

OTHER

Noncompliance (NC): This is a statement by which the subject 1) explicitly refuses to reply to the presentation of the scene, or 2) responds to the scene with an irrelevant or nonsensical remark, or 3) changes the topic, or 4) states "I don't know" to anything but a question regarding developmental disabilities when it is obvious that the subject could provide some information, or 5) the subject responds with unintelligible vocalizations. If the subject's immediate response to a prompt is "I don't know" but then the subject proceeds, without prompt, to answer the question, the "I don't know" should be coded as "talk" (TA).

Examples of NC: I don't want to do this.
I am leaving.
I'm not going to tell you.
PKK-KK-KK

No Response (NR): The response will be coded as NR if the subject does not reply within 10 seconds after the delivery of the prompt. This does not include responses in which the subject makes any form of irrelevant vocalization. The latter are coded as NC.

Talk (TA): These are statements which cannot be coded into any of the other categories but which are clearly relevant to maintaining the interaction with the examiner and/or the play materials.

Examples of TA: Pass me another doll for a friend please.
This will be their car.
This doll can't sit up very good.

APPENDIX 4

WORKSHOP OBSERVATIONS

Definitions of Observed Behaviors

1. General Topic Area: Indicates the topic or focus of the general group discussion or activities, regardless of what the target child was doing. Any group member talked about, asked about, drew a picture of, or in any other way focused on one of the following:

   a. Sibling of the Target Child (ST): The target child was that subject indicated on the data sheet to be observed.
   b. Family of the Target Child (FT)
   c. Sibling of a Non-Target Child (SNT): The non-target child is any other subject besides the one being observed during the interval.
   d. Family of a Non-Target Child (FNT)
   e. Developmental Disabilities (DD)
   f. Other: This was used if anything other than any of the above topics was the focus of the activities.

2. Verbalization of Target Child: This category was scored only if the subject under observation during that interval verbalized during any portion of the interval. If the subject verbalized the content was coded into one of the above categories (i.e., ST, FT, SNT, FNT, DD, O).

3. To Whom the Subject Spoke: Indicates if the subject's verbalization was to another child (CH), adult (AD), or to the group (GR) in general.

4. Context: Indicates if the verbalization was appropriate (AP) or inappropriate (IN) to the context. Appropriate verbalizations were those that follow the general group topic. Inappropriate verbalizations were those on a different topic from that discussed by the group.

5. Body Orientation of Target Child: Indicates whether the target child was physically turned toward or away from the group, regardless of whether or not (s)he was speaking or being spoken to.

   a. Towards Group (+) : The target child is physically part of group. If this is an activity requiring the kids to be sitting near one another, the child's torso is directly facing at least one of the group members. If it is an activity that requires the kids to be apart from one another, still score 3a if the child is following through on the teacher's command or partaking in the group interaction (e.g., running to catch a ball thrown by another person).

b. Away from Group (-): The target child has his or her body rotated away from all group members (is not facing any one directly), or has head and shoulders facing in a direction opposite from that of the group, or is physically isolated from rest of group (more than 3 feet away from any other group member without teacher's instruction or without reason from nature of group activity.

6. Eye Contact of Target Child: Indicated whether the subject was looking towrads or away from the group and activities during the interval.

   a. Towards Group (+): The target child looks at any part of the upper body of the speaker or at what the speaker is doing or pointing to. If the child is working on a task or playing with other materials, the child should be looking at the task or the materials, throughout the interval. The child can look from one person in the group to another or to the task-related materials and still be scored as (+).
   b. Away from Group (-): The target child does not look at the upper body of the speaker or at what the speaker is doing or pointing to at any point during the interval. The child speaks to the group but looks down, up, or aside, but not at the people. If the chld is playing with materials but looks away from the task toward something or someone who is not part of the activity then score 6b.

7. Facial Expression: Indicates whether the subject shows any of the following types of expressions during any part of the observation interval.

   a. Positive Expressions (PS): The target child smiles, laughs, grins at any part of the interval, indicating a positive, pleasant affect.
   b. Negative (NG): The target child frowns, grimaces, sticks tongue out, pouts, cries during interval, indicating soem form of negative, or unpleasant affect.
   c. Neutral (NT): The target child has neither a positive nor a negative facial expression, but a rather plan look on his or her face.

8. Physical Interactions: Indicates whether any of the following occurred during any portion of the interval.

    a. Aggression (AG): Target child hits, spits, kicks, stomps feet, grabs toy from another, pulls hair.
    b. Affection (AF): Target child pats, kisses, holds hand, rubs, hugs, tickles another.
    c. Imitation (IM): Target child verbally or physically imitates the words or actions of another during same interval or words or actios occurring during immediately perceding interval.

9. Interaction with Whom?: Indicates whether the physical interaction was with another child (CH) or adult (AD).

APPENDIX 5

DATA COLLECTION FORMS

QUESTIONNAIRE

1. General Information Today's date: ____________

a. Child's Name: ____________________

Date of Birth: ____________ Age: ______

Sex: ______

b. Parent(s) Name(s): ____________________

Home Address: ____________________

____

Home Telephone: ____________

c. Sibling(s) Name(s): ____________________

Date(s) of Birth: ____________ Age(s): ____________

Sex: ______

Nature of handicap: ____________________

____

d. Other(s) Living with family: ____________________

Relation to child: ____________________

2. Child's Schedule

a. Please cross out, on the chart below, those times when your child would not be available to come to the University for the discussion groups or for the assessments.

	M	Tu	W	Th	F
10-11					
11-12					
12-1					
1-2					
2-3					
3-4					
4-5					
5-6					

b. Does your child attend preschool or elementary school? Yes____ No____
If yes, what grade?________ How often?____________

2. Child's Schedule (cont.)

c. Are there any other special activities your child is involved in outside of your home (e.g., art lessons, dance classes, religious instruction)? Yes______ No________ If yes, please list these briefly____________

____

3. Child's Understanding and Contact with Special Needs

a. Have you discussed your special needs child's disability with your other child(ren)? Yes______ No______
If yes, please answer the following questions.

(1) How old was your child when you first discussed special needs?______

(2) How soon after you were aware of your child's disability did you talk with your other kid(s)?________________

(3) Please estimate how often you have discussed these issues with your child(ren):

everyday______
1-2 times per week______
1-2 times per month______
1-2 times per year______
other________

(4) Are there any materials you found helpful to you in these discussions (e.g., books, pictures)? Yes________ No________
If yes, please describe:______________________________

____

____

(5) Are there certain words you use to refer to your child's special needs when speaking with your other children? Yes________ No________
Please list:____

____

(6) Are there any words you try to avoid using? Yes_______ No________
Please list:____

____

b. Please list the activities/games which your children play well together (even for a brief period of time).__________________________

____

____

3. Child's Understanding and Contact with Special Needs (cont.)

c. Have there been any events which have brought you concern or enjoyment about your child's adjustment to his brother or sister's disability? Please explain:____

____

____

____

____

____

d. Are there any topics which you would especially want to be brought up during the playgroups? Yes________ No_______ Please explain:

____

____

____

____

4. Other Information for Planning Group Activities

a. What size tee-shirt will your child wear this summer?______________

b. Please provide a list of the following:

(1) Snacks/foods your child likes (and you approve of) and dislikes (or you do not allow).

Likes:

Dislikes:

(2) Any food allergies:

(3) Favorite activities/games/materials:

(4) Favorite T.V. Shows:

(5) Favorite colors:

(6) Other:

4. Other Information for Planning Group Activities (cont.)

   c. Please provide me with any other information which you feel will help make this an enjoyable experience for your child.

5. Observation Schedule

   Please list the days and times which you will conduct your observations.

WORKSHOP OBSERVATIONS

Date:__________ Time:_______ Observer:____________________

Target Intrvl

Please put an X through the behaviors that do occur during the interval.

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4. Eyes: (+ -) 5.Face: (PO, NG, NT) 6. Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4. Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4. Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
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Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
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Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Content To whom Context
1.Topic: (ST, FT, SNT, FNT, DD, O) 2.Talk: (ST, FT, SNT, FNT, DD, O) (CH, AD, GR) (AP, IN)
Type w/whom
3.Body: (+ -) 4.Eyes: (+ -) 5.Face: (PO, NG, NT) 6.Inter: (AG, AF, IM) (CH, AD)

Observing Your Childrens' Interactions

HOW TO OBSERVE

Select a 30 minute period from 3 weekdays during which you are likely to be at home with both of your children. You should select 3 days on which you could observe during approximately the same 30 minute period each day.

Set the timer at 10-minute intervals, as follows. Observe your children at the beginning of the 30-minute period, and set the timer for 10-minutes from your first observation. When the timer rings, reset it for another 10 minutes, "find your children" and record whether or not they are interacting (according to the definitions below). You should continue this until you have made a total of 4 checks on your children within the 30 minutes. For example, if you are observing between 6:00-6:30 p.m., at 6:00 you would set the timer for 6:10 and then go check on your kids. When the timer rings at 6:10, set it for 6:20, and check your kids. At 6:20, set the alarm for 6:30, go find your kids, and then make your final check at 6:30. Always set the timer for the next 10 minute period as soon after it rings as possible, and before you check on your children. In this way, if you get sidetracked by what your kids are doing the timer will already be set. This will help to guarantee that you will not have to record their interactions for more than 30 minutes.

DEFINITIONS OF INTERACTIONS

Interaction: Check "Yes" on your sheet if you observe any form of verbal or nonverbal interaction between your children at the moment of observation. The following are examples of interactions:

Conversation or vocalizations between the children.
One child speaks to or vocalizes to the other.
One child looks at the other.
The children look at each other.
The children are using a mutual toy (e.g., building blocks together).
Physical contact between the children
(e.g. - hugging biting
kissing kicking
hitting pushing
tickling rubbing
wrestling holding hands)

If the children are in separate rooms of the house when you observe, check "yes" on interaction if the children are doing any of the following:

The children are talking across the rooms.
One child is speaking to the other from a different room.
One child is looking for the other.
One child calls the other's name.
They are playing a game together which requires distance between them (e.g., "hide and seek", "telephone").

No interaction: Check "No" if you do not observe your children doing any of the activities above, or if they are in the same room of the house but are doing completely independent activities. Examples on "no" interaction are below:

One child is sleeping while the other plays alone.
The children are on opposite sides of the room playing with different toys and they neither talk with or look at each other.
The children are watching T.V., but there is no physical contact, eye contact, or vocalizations between them.

TYPES OF INTERACTIONS - POSITIVE AND NEGATIVE

If you check that your children are interacting, please indicate if their interaction is a positive (pleasant) or negative (unpleasant) one. You should make this judgement on the basis of whether or not your children appear to be enjoying their interaction. (For example, if your kids were wallowing in mud together and laughing, you would check "positive" even though the sight might be terribly unpleasant or "negative" for you!) You will check either "positive" (P) or "negative" (N) only if you first checked "Yes" that your kids were interacting. Below are examples for positive and negative interactions.

Negative - This will be scored if you observe any of the following from one or both of your children:

Crying
Physical Aggression -
pushing
hitting
biting
breaking the other's toy
pinching
spitting
grabbing

Verbal aggression or teasing:
screaming
yelling
cursing
name-calling
taunting
nagging
growling

Positive - This will be scored if you do not observe any of the "negative" interactions above or if you observe any of the following from one or both of your children:

Smiling
Tickling
Hugging
Kissing
Play with a mutual toy or game.
Holding hands
Sitting together quietly
One child gives the other a toy
One child helps the other

RECORD OF DAILY STATEMENTS

Child's Name: ______________________
Today's Date: M Tu W Th F ___/___/___

Person Completing Form: ______________
Relation to Child: ______________

How much time were you with your child today? ______________

Instructions: Below is a list of a number of different types of statements you may have heard your child say today. If you hear your child say something in one of the areas below, then place a check in the appropriate box as soon after you hear him or her say it without interrupting activity or conversation. At the end of each weekday please think over your conversations with your child to make sure you have not missed anything.

TYPES OF STATEMENTS	WHO IS SPOKEN ABOUT?			
	Mom	Dad	Sib	Self
1. Comments or descriptions about family members and self.				
Positive (praises, compliments, etc.)				
Negative (insults, teases, etc.)				
2. Expresses emotions to family members.				
Positive Emotions (love, like, happy, etc.)				
Negative Emotions (hate, sad, angry, etc.)				
3. Shows concern for family members or self.				
4. Expresses aggression to family members.				
5. Expresses resentment or jealousy towards sibling.				
6. Asks questions about or talks about developmental disabilities.				

COMMENTS

Please note if anything out of the ordinary occurred today (e.g., sickness, special visitors). Also, if your child said something which you had trouble putting into one of the above boxes, but feel was important to note, please write it down here. Thank yo

Name: ____________________

OBSERVATIONS OF INTERACTIONS

Yes = An interaction occurs
No = An interaction does not occur

P = Positive interaction
N = Negative interaction

1
Day: MTWTF Date: ____
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No

2
Day: MTWTF Date: ____
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No

3
Day: MTWTF Date: ____
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No

4
Day: MTWTF Date: ____
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No

5
Day: MTWTF Date: ____
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No

6
Day: MTWTF Date: ____
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No
Time: ____ Yes: P or N
No

APPENDIX 6

LETTER OF INFORMED CONSENT

The Commonwealth of Massachusetts
University of Massachusetts
Amherst 01003

DEPARTMENT OF PSYCHOLOGY

March 3, 1980

Dear Parent or Guardian,

Though we have already discussed personally the nature of the program I will be conducting this Spring for siblings of special needs children, this letter will provide you with a written description of the project.

The "Sibling Program" consists of a six week curriculum for children (ages 4-6 years) who have a brother or sister with special needs. The children will meet together weekly in groups of three to four children for approximately 1½ hours each week.

The goals of the program are:

1) to teach children about different forms of developmental disabilities and to help them recognize the strengths of handicapped children,

2) to teach children to openly express their positive emotions and to give praise to their family members,

3) to teach children to identify their negative emotions and to express them in a constructive way, and

4) to increase the childrens' positive feelings about themselves and their own special strengths.

By meeting with other children who have similar family backgrounds, it is hoped that the children will be able to share and learn from the experiences of one another.

Each meeting will consist of special activities designed to help the children meet each of the goals, as well as a snack period and a period of free play. As we discussed, your child will receive a small present, a personalized tee-shirt, for participating in the group. At the end of each meeting, I will press one letter of your child's name onto his or her tee-shirt, so that by the end of the program (s) he will bring home a tee-shirt with his or her name across the front.

As you may know, there currently exist very few programs for working with young siblings of handicapped children. For this reason it is necessary that we evaluate fully the effects of the present project. I described to you the ways in which I will assess what the children learn from the program. My assessment will consist of a set of what I call "role-play scenes." In the role play scenes I will use dolls and puppets to set up make-believe situations in which your child will describe how he or she would react if (s)he were in the situation. These sessions will be videotaped. Only people directly involved in the project will view the videotapes. These people include myself, my research assistant, and my academic supervisor. The tapes will be viewed solely for the purposes of evaluating the successes of the program. When I look at each videotape I will be interested in what your child says (how (s)he describes himself or herself and other family members, what (s)he understands about different handicaps, and how (s)he expresses positive and negative feelings). I will also use the videotape to record more nonverbal aspects of your child's behavior (for example, smiles and eye contact). I will do this assessment with your child individually once each week for at least two weeks before the discussion groups begin and once during each week that the groups meet. By assessing what your child knows before the discussion program began, I will be able to learn what he or she has gained from the program.

As we discussed, I would also like to see if what your child learns in the groups has any effect on what he or she does at home. This is where I will need your cooperation in doing some observations. Basically, they involve selecting one-half hour from three weekdays. Every 10 minutes of the ½ hour you will record whether or not your kids are interacting and the quality of that interaction. Then after your child goes to sleep (only on week nights) you will fill in a brief check-list describing different types of statements which you may have heard your child say that day. I realize that all of these assessment procedures represent an extensive time commitment for you and for me. However, given the fact that the sibling program is one of the first of its kind, we need to know exactly where it succeeds and where it does not. This way, I will be able to continually tailor the program to meet the needs of other children.

At the end of the program I will provide you with a written copy of the results of the project. I will provide you with general, weekly feedback on the activities of the group and your child's participation in the meeting. However, because I want to encourage the children to use the meeting as an opportunity to share their ideas openly with peers, I do not want them to feel as if I will be telling you every detail of what they say and do during each meeting. For this reason, I will not quote your child's statement or give precise descriptions of his or her behavior to you. I want your child to know that he or she will be the one to tell you in detail what he or she learned or felt during the group. As stated during our conversation, all information which could be used to identify your family will be held strictly confidential. If you decide that you do not want to have your child participate in the activities you have the right to withdraw your consent at any phase of the project.

If you have any questions at any time, please feel free to call me at 665-7082 (home) or 545-0083 (UMass). Thank you.

Sincerely

Debra Lobato-Barrera, M.S.

DLB/ap

Consent Form

Project Title: Multiple assessment of a workshop program for siblings of handicapped children.

Project Dates: March 1, 1980 to July 15, 1980

The goals and procedures of this project have been explained to me to my satisfaction. I understand that the project involves an evaluation of the effects of a six week discussion group program for young siblings of handicapped children. I understand that the discussion groups and role-play tests may be videotaped, but that any information identifying my family will be held strictly confidential. I also understand that I will conduct observations of my children at home as part of the evaluation procedures. I have been informed that I have the right to withdraw consent for my child's participation at any time during the project.

I consent to having my child, ____________________, participate in the project.

Signature

Date

APPENDIX 7

Sibling Workshop Curriculum Model

The following section of this manuscript contains a description of the exact activities and materials that were used to achieve the goals of the program. A basic outline of the weekly objectives appears first, followed by the more detailed descriptions of the weekly activities. This manual should function as a guide for future implementation of the sibling workshop program.

Curriculum Outline and Weekly Goals

Workshop 1: Getting Acquainted
Sharing Information about Selves and Families

Workshop 2: Increasing Understanding of Developmental Disabilities
Increasing Recognition of Strengths of Handicapped Children

Workshop 3: Increasing Identification of Positive Emotions
Increasing Identification of Family Members' Strengths
Increasing Expression of Positive Emotions--Giving Praise

Workshop 4: Increasing Identification of Negative Emotions
Increasing Alternative Resposnes to Negative Family Situations
Increasing Expression of Negative Emotions in a Constructive Manner

Workshop 5: Increasing Identification of Own Positive Strengths
Increasing Expression of Own Positive Strengths

Workshop 6: Review

Workshop 1

Goals. The goals of the first meeting were both general and specific. The general goals were to explain the purpose and activities of the workshops to the subjects, and to introduce the subjects to one another. The specific objectives for this meeting concern communication between children. In order for the group to function effectively in the future it was necessary that all children actively participate in the activities. For those children who initially appeared "comfortable" and shared their ideas with the teacher and the other children, the goal was to maintain this level of participation. For children who were initially quiet or who tried to stay on the periphery of group activities, the goals were to increase the frequency and duration of their responses and questions to other children within the group.

Introduction of goals, rules, activities. The experimenter and the children assumed a circle, sitting on the rug in an area associated with discussions. Using colored paper and markers, the teacher helped the children write as much of their names as they could. They taped these on their shirts and went around the room until each child could say the name of all people in the room. Then, the teacher described the goals of the workshops according to the following list:

1. To have fun (point out the materials and games in the playroom).
2. Meet with other kids whose brothers or sisters sometimes need special teachers and special attention. (Specifics were not yet discussed.)
3. Learn about each other and ways to get along with famlies at home.

Before listing the rules for conduct during the groups the teacher asked the children who had been in school what types of things they can and cannot do while inside. The following rules were discussed:

1. No screaming or yelling--other people are working in other rooms.
2. No grabbing or hitting other people.
3. If anyone gets angry or wants to get something from someone they should ask.
4. Ask lots of questions.
5. Ask for toys from the shelves if you want them.
6. This is a special group where we will talk about special things that we think and feel and do. Some of these things you even may want to be secrets--just to talk about while we are here. That will be okay because I won't be telling your mommy or daddy everything you say and do. But you can tell them anything you want to. Everything we do here is special and can be a secret if you want it to be.

The teacher then described how each workshop was to be scheduled:

1. Each day we do some work that I (the teacher) plan.
2. Then once that is finished you can choose some things you'd like to do for awhile.
3. The we'll all have a snack.
4. When we're finished we will come back together again and I'll tell everybody how they did and everyone will get a special surprise. (Take out each child's tee shirt and describe how they get one letter each week, etc.)

Activities related to the curriculum goals were then introduced.

Curriculum Activities

1. Using puppets to increase conversation. The first goal was to get the children to talk with one another about themselves and their family members. The teacher provided feedback about how much each

subject spoke but not about the positive or negative content of the speech. The teacher began this process by putting on a puppet show about two characters, Freddy and Darla, who are attending a playgroup for the first time. Freddy is shy and anxious at first but gregarious, confident Darla coaches him into conversations with others, the subjects watching the show. Once Freddy had gone around the circle and learned each child's name he became curious about other things about them such as where they live and whom they live with. Darla demonstrated how to find out. The teacher then stopped and offered a selection of puppets to the subjects so that they could participate in the show and, as such, offer more information about themselves. The teacher first prompted the children to ask a questions she suggested (e.g., Where do you live?) and then went around to each chlid to elicit suggestions for more questions. Each of these questions was then asked by each of the other children.

2. Family drawings and discussions. Working at either a table or on the floor, the children were instructed to draw a picture of each member of their family. As everyone drew the teacher began asking questions and again encouraged questions between children. When the children described their siblings the teacher did not push for information regarding their handicaps. At the end of the discussion the teacher highlighted what similarities and differences existed between the children and their families.

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Workshop 2

Goals. The goals of the second workshop were to increase the frequency of discussion between children about developmental disabilities in general and about their handicapped siblings, in specific. The goal of the discussion about siblings was to have the children produce positive statements about them. The teacher began the discussion in the content of the concept of similarities and differences--between people.

Curriculum activities

1. Same and different. The teacher and children sat in a circle. The teacher drew a picture of a boy and girl with the same color hair and eyes and asked on subject "How is this person different from this one?" The teacher then asked another child how the chlidren were the same. Once one of the chlidren responded the teacher encouraged them to respond as a group, "They have the same color hair."

The teacher then showed a picture of a girl sitting in a typical chair and one girl sitting in a wheelchair. One-by-one the teacher coached each subject to identify how the girls were the same and then how the girls were different. The teacher then discussed why people might use wheelchairs. The children were prompted to name one positive thing about either girl.

2. Discussion of siblings as handicapped. The teacher began the discussion by stating that eveyrone had a brother or sister who has a special teacher who helped him or her learn something they had trouble learning, and that they were the same to the subjects in some ways and

different in other ways. The teacher asked for descriptions of how they were different. With one group this introduction opened a full discussion between the children about the history and present of their siblings' disabilities and behavior. With the other group the children were extremely reticent. In this case the teacher returned to a more general discussion about different forms of disabilities.

3. Discussing positive aspects of siblings' behavior. The teacher and children moved to the easel. On the easel the teacher taped up one piece of paper for each subject. On a sample paper she drew one smiling face and one frowning face. She explained that they were to think real hard about something their brothers or sisters often did. They were then to decide if what they thought was good or bad and to draw a smiling or frowning face on a paper to indicate which. The teacher went around the circle one-by-one, looked at the face-symbol the subject had drawn and then asked the child to state his or her thought aloud. The other children were asked if they thought the statement represented something good or bad about the subject's sibling. On the easel the experimenter drew the face originally assigned by the subject and, next to it, the face agreed on by the others. If the subject produced a negative comment the experimenter prompted a more positive statement and immediately recorded this on the easel for public display. This procedure was repeated twice with each subject.

4. Group reading. After snack the group sat in a circle in the discussion area. The teacher read the book, Like Me, a rhyming verse about a child labeled "retarded." Throughout the reading the teacher

encouraged the children to point out how the handicapped children in the pictures were the same and different from themselves, and what things they were doing that were good.

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Workshop 3

Goals. the goals for the third workshop were to increase the subjects' identification and expression of positive emotions.

Curriculum activities

1. Identifying positives by looking and listening. The teacher sat with the children in a group. The teacher perched Freddy and Darla, the puppets, on her knee. The teacher manipulated the puppets to have sad-looking faces and then asked the chldren if Freddy and Darla heard good news or bad news. Were they happy or sad? She then manipulated more cheerful expressions--mouths agape and upturned, arms upraised--and repeated the questions. The subjects selected their own puppets and one-by-one demonstrated how their puppets look when they feel happy. The next activity was to demonstrate how we can listen to someone's voice to know if they're happy. The subjects were told to cover their eyes with their puppets and to decide if Freddy was happy or sad. Freddy laughed loudly, in an exaggerated manner, and the children responded. The teacher pointed out that another way to know how people feel is to listen. Children then took turns using their eyes to express something positive while all others closed their eyes and guessed what they had expressed.

2. _Demonstrating praise with puppets_. The teacher discussed how people like to hear laughter and smiles when they have done something good. The teacher used Freddy and Darla to demonstrate how to praise, asking the children to identify how it feels to be praised. The teacher solicited suggestions of nice things Freddy could do for Darla and took turns with each child's suggestion as Freddy did these kind acts while the other children suggested how Darla could respond most positively.

3. _Demonstrating praise by role playing with dolls_. A second activity was planned for practicing positive emotional expressions and giving praise. The chlidren joined the teacher at the activity table and together built a town with miniature houses, shrubs, and people. Each child selected the house that they wanted to be his or her family's and the dolls that were to be the family members. The teaching assistant was told, in front of the subjects, to put a star next to each child's name to indicate the number of good things each child said about their family members and the number of good reactions they suggested for those behaviors. One by one the subjects showed each of their family members doing something positive. The other children decided if the subject had, indeed, described something good and decided whether (s)he deserved a star under her name. The subject then used his or her own doll figure to demonstrate how (s)he would react. Again, the other subjects decided if the reaction was a positive one deserving of a star. This process continued until all children had accumulated at least two stars for each family member, though in the present study the girls in group 1 accumulated more than six apiece.

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Workshop 4

Goals. The goals for the fourth workshop were to increase the subjects' identification of negative emotions, to increase the range of responses to potentially distressing situations related to disabilities, and to increase the constructive expression of negative emotions.

Curriculum activities

1. Identifying negative emotions by looking and listening. This procedure was similar to the one used to teach the children to identify positive emotions. The teacher sat with the children in a circle and demonstrated sad faces with the puppets. The children were given their own puppets and one-by-one demonstrated what (s)he looks like and sounds like when sad. The teacher then had Freddy and Darla alternate between pleasant and unpleasant expressions. Once the children could identify and discriminate positive and negative emotions on 90% of the examples they were ready for the next more involved activity.

2. Expressing negative emotions and offering solutions to family dilemmas. In order to work towards these goals, the teacher/experimenter selected six magazine photographs of children and wrote a story to accompany each. The stories depicted children in sad situations related to their interactions with their parents, siblings, and/or peers. The end of each story was left open so that the subjects could suggest things that the children in the stories could do to feel better and to express themselves most effectively. The stories were arranged in a

sequence of increasing complexity and increasing potential sadness. The stories are presented below, and the pictures are copied in Figure 35.

Story 1. The little boy is 7. He has a brother who is 2 and very healthy. This boy cleans his room before school every day. One day he comes home and goes to play in his room on his table and sees that his brother scratched it up with a pencil. His table is ruined for good. He doesn't want his Mom and Dad to be angry at him and think that he did it with his truck.

How does he feel? Why?

Mom and Dad come home and they go into his room and see his table.

What can he say so they don't get so angry?

What can he do?

Story 2. This little boy is 4. He has an older sister who is normal. It is his sister's birthday and this ice cream is for her party. The boy really wants some ice cream but his father says "no--that's not for you. It's just for your sister."

How does the boy feel? Why?

How does the boy feel about Dad? Why?

What can the boy say?

What can he do so that he might have some ice cream, too?

Story 3. This little girl is at a picnic with her Mom and with other children and babies. The family has a new baby the Mom is taking care of. The baby is handicapped. The baby is deaf and cannot hear. (What is the baby's handicap?) Mommy is taking care of the baby and playing with the baby.

The other children are going to go swimming and this little girl wants to go too. But she is supposed to go swimming with Mommy. She asks Mommy to take her swimming. Mommy says "no" because she has to care for the baby.

How does the girl feel? Why?

How does the mom feel? Why?

How does the baby feel? Why

What can the girl say to her Mom?

What could she do so she could go swimming?

Story 4. Here's another family. This girl is 6 years old and her brother is 3. The brother has brain damage. Every morning they wake up and her Mom goes right into the brother's room and hugs and kisses him. The girl watches becaues Mommy isn't hugging and kissing her.

How does she feel? Why?

How does she feel about Mom? Why?

How does she feel about brother? Why?

The little girl wants Mom to hug and kiss her too.

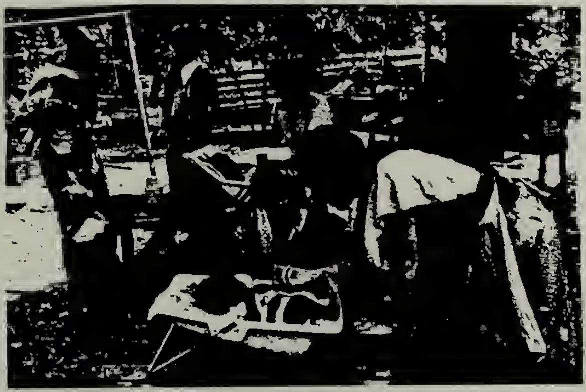
What can she do?

What can she say?

Story 5. Here are two more children. This one is Amanda--she's five and her brother is John--he's seven. They have a sister who is retarded. (What does that word mean?) They walk home from school and they want to show their Mom and Dad a new doll they found. They're all excited about the doll. But when they get home Mom and Dad are not there. Their grandmother is there instead and tells them that Mom and

Story 1

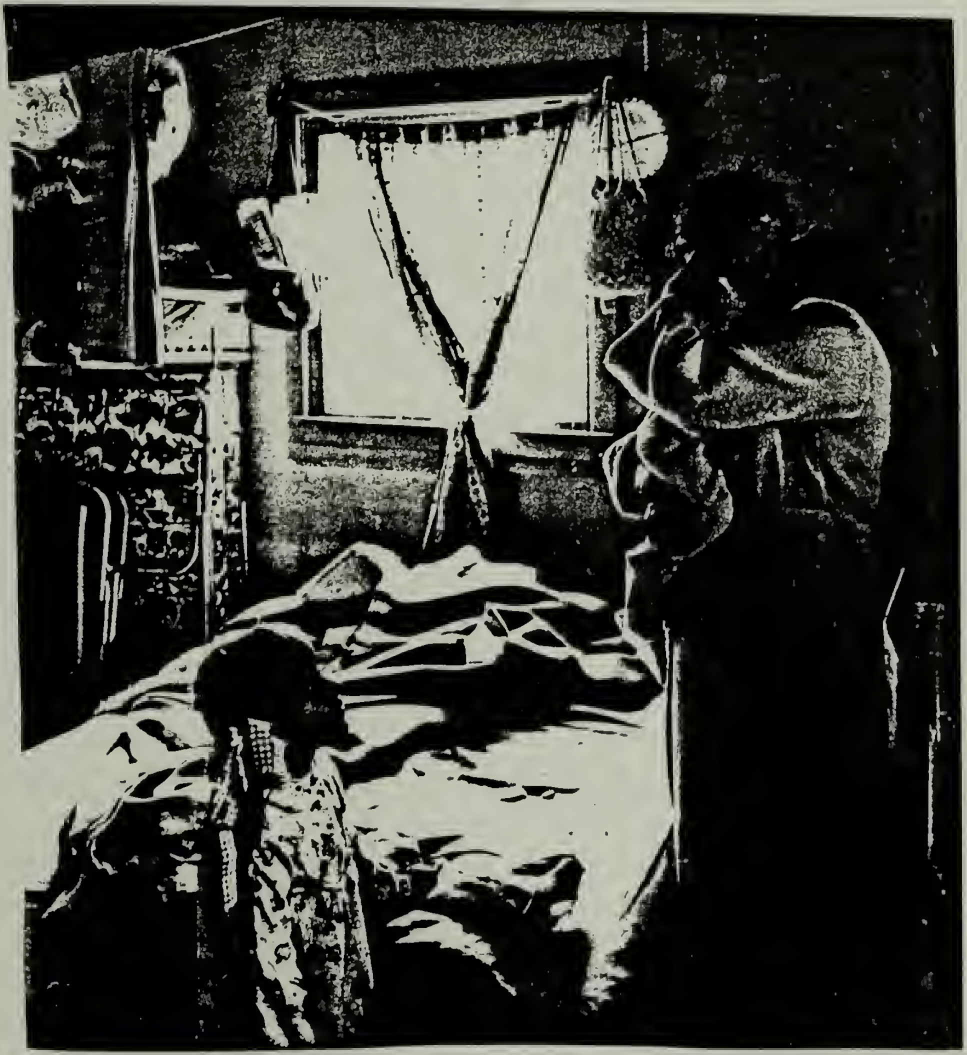
Story 2



Story 3

Story 5

Fig. 35a. Magazine Photographs Accompanying Stories for the Fourth Workshop on Expressing Negative Emotions



Story 4

Fig. 35b.

Story 6

Fig. 35c.

Dad had to rush their sister to the hospital because she became sick. Mom and Dad won't be home for a couple of days.

How do the kids feel? Why?

How do the parents feel? Why?

What can they say to each other and Grandma?

What can they do when their sister comes home from the hospital?

Story 6. These kids are at a big party togehter. This girl (boy) has a sister who is handicapped. This girl is 8 years old and can't walk or talk yet. The sister is at the party, too. These boys come over and start to tese and make fun of the handicapped sister.

How does the girl feel? Why?

What can she do to make them stop teasing?

What can she SAY?

Why do the kids tease?

The teacher read each story to the children and then posed the accompanying questions. Only one subject responded to each question about identifying the depicted child's emotion (i.e., "How does the boy/girl feel?). When the other questions dealing with solutions were asked, all subjects were required to respond. One subject would offer their first suggestion and the teacher would coach the entire gorup to try the suggestion (e.g., "Ok, now let's try Henry's answer). Once three alternative solutions were offered by the group the teacher had the subjects practice each suggestion in unison (e.g., "Yes she could cry OR she could find something else to do OR she could tell Grandma she felt sad.") The word "or" was accentuated to highlight that these were alternative responses.

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Workshop 5

Goals. The goals for the fifth workshop were to increase the subjects' identification and expression of the strengths in their own behavior.

Curriculum activities

1. Constructing positive self-reference posters. The teacher and subjects were seated around the activity table. The teacher took each child aside one-by-one while the other two children painted any picture or design of their choice. The teacher and single chlid spoke quietly in a corner of the room. The teacher showed the child a sample of simple drawings with simple positive self-statements written above each drawing. The teacher explained to the child that (s)he should pick out the saying and picture that (s)he would like to give to each of the other children, and that it should be something nice about each chlid. (These drawings appear in Figure 36.) Once the single child had chosen a drawing for his or her peers, (s)he was instructed to not tell them so that this could remain a surprise. Thsi procedure was repeated twice, once with each of the other subjects.

After all of the subjects had chosen drawings the teacher returned to the group at the table and let the subjects color and paint the drawings they had selected for their peers. The teacher emphasized the

Fig. 36. Drawings for the Fifth Workshop on Positive Self-Reference

positive statements the children had chosen for one another but did not betray for whom each statement was intended. Once the paintings were finished, the group broke for an early free play and snack period.

After snack the teacher brought the children to a wall where she had horizontally draped a long roll of white paper to serve as a mural. With the children's help she marked the paper into three sections and assisted the children in writing their names on top of the section they chose to be their own. These sections were to be made into posters each child could take home, displaying positive things about him or herself.

The teacher encouraged the subjects to paint a self portrait on the poster. Then she sat with the sample of drawings the children had selected for one another and announced the nice things each child had said about the other. The child-recipient then glued one drawing at a time onto the poster, but only after repeating the appropriate positive self-statement. This procedure was repeated so that each subject said at least two positive things about him or herself.

The next, and final, step in constructing the posters was to have the subjects generate their own positive self-statements. The teacher drew an appropriate, colorful picture for each self-statement and then encouraged the child to decorate their posters in any way they pleased. They were allowed to take their posters home at the end of the workshop.

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Workshop 6

Goals. The goal of the final workshop was to review all of the concepts that had been discussed during the previous five workshops.

Curriculum activity

1. The review board game. In order to review the greatest number of curriculum goals with the least amount of boredom the experimenter designed a board game similar to the game bingo. Each child was given a playing board (see Figure 37) of 12 squares. Each square was numbered to represent a different curricum objective. Only the teacher/experimenter knew which number represented which objective. Small squares of numbered paper (1-12) were mixed in a hat. One-by-one, each subject reached into the hat and selected a number. The teacher then presented a task to that subject (e.g., "tell me what deaf means" or "say two good things about your brother"). The other two children decided whether or not the answer was appropriate. If they decided it was the subject covered the box with the corresponding number on his or her playing board. This procedure continued until each subject had answered each of the questions correctly. The first subject to cover his or her entire playing board selected a prize from a group of three small prizes (a can of playdough, a paint set, or a coloring book). The second child to finish chose from the two remaining toys, and the last child to complete the task was awarded whichever price was left.

The workshop program ended with the experimenter ironing the last of the subjects' letters onto their shirts. In this way each subject brought two presents home on the last day--the tee shirt and the prize from the board game.

1	5	9
2	6	10
3	7	11
4	8	12

Fig. 37. Game Board Used During the Final Workshop to Review All Concepts