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ABSTRACT

Investigated with five communication handicapped and four model (normal) children were communication patterns and friendship choices in a mainstreamed preschool setting. A review of literature revealed a controversy as to whether mainstreamed communication handicapped children receive appropriate verbal models and whether mainstreaming helps develop the social skills of the handicapped children. Scan sampling procedures were used to collect data over a 6-week period on potential social/communication interactions, and each child was seen individually for a sociometric investigation of positive and negative choices for playing with and talking to classmates. Results of the study of interactions indicated that teachers were doing the most talking and the handicapped children were being talked to the least by their peers. No patterns could be established through a comparison of the sociometric choices; however, the three most liked children were models. A focal study of one handicapped S indicated that she was more often talked to in comparison to initiating talking to others, that teachers and then normal children were the most frequent interactors, that the S usually did not respond verbally when talked to, and that the S interacted more with normal than handicapped classmates. Generally, intervention on the part of a teacher appeared necessary in order to develop interactions between mainstreamed handicapped and normal children, and there appeared to be a relationship between severity of the handicap and social acceptance. (IM)

SOCIAL RELATIONSHIPS AND COMMUNICATION INTERACTIONS OF MAINSTREAMED COMMUNICATION HANDICAPPED PRESCHOOL CHILDREN: A PILOT STUDY

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INTRODUCTION

Education of the exceptional child has expanded over the years, effected by research findings, litigation and changing educational philosophies. Presently the concepts of early intervention and utilization of the least restrictive alternative to educating the handicapped have contributed to the development of various programs for preschool handicapped children. Many handicapped children are being placed in educational environments for the purpose of integrating the individual into the mainstream of education and preparing him socially and academically for maximum success in society. Methods for achieving this goal vary. One frequently used method is to integrate the handicapped child with normal children who can act as models for social, verbal and academic learning.

A great deal of literature stresses the importance of developing social skills and friendships in normal children. Research has been done to ascertain what factors affect social interactions and to investigate the effects of various methods of intervention. In some instances, intervention has been done in an attempt to factor out what variables may have affected social interaction. Sociological studies have also looked at the handicapped populations, independently and in comparison to the normal population. With the thrust of mainstreaming came increased interest in comparing the educationally integrated with the educationally segregated handicapped child. Unfortunately these studies have not always taken into account nor controlled for variables known to affect the social relationships of normal children. These studies also tend to group handicaps according to educational labels

and pool data of the groups without accounting for individual differences. Baldwin and Baldwin (1972) make the consideration of individual differences a salient point with their statement:

> Each child is a unique person with his own spectrum of handicaps and his own problems in coping with the demands of the world....we have come to recognize that many of the problems faced by handicapped people are not strikingly different for people with different handicaps....Thus the whole array of...handicaps...and normal adjustments are seen merging imperceptibly into one another while each child is viewed as an individual coping with his individual problems. (p. 1)

One area which has not been adequately considered when investigating the social relationships of the handicapped is the variable of language/speech ability. This is especially apparent in studies of the social skills of the retarded. Mental retardation is a handicap which manifests itself in broad differences in linguistic abilities and perhaps even different language processes (Schiefelbush and Lloyd, 1974). Since language is associated with social learning, it is important to consider the role language plays in the social development of a communication handicapped child. Levels of verbal comprehension and verbal expression which affect social learning as well as the perception of self and others must be considered. In addition, the development of social skills relates to the development of self concept in a cyclic manner with self concept relating to such areas as academic achievement.

Modeling, as in a classroom which utilizes normal children to provide examples of appropriate behavior, or through symbolic modeling procedures, such as film or video tape, has been investigated to ascertain effects on social behavior. Intervention programs have attempted to improve social skills and the development of friendships. Most modeling and intervention studies attend to the interactive process of socialization while looking at one or several segments of this process. The interactive process includes not only

the individuals involved but environmental variables and the cognitive process of the individuals. Findings from modeling and intervention studies which do not attend to this interactive process or studies which use contrived settings, unrelated tasks or populations which are poorly defined should be considered with caution. Communication ability of handicapped children is a significant variable which should be described and considered when investigating social skills.

Further complicating the social skills research which compares normal and handicapped children in integrated settings is the assumption that models in a classroom will have a positive effect on the handicapped child's social and verbal skills. If the use of models is to have a positive effect, one might also assume 1) it is necessary for these models to interact with the handicapped child and 2) that the handicapping condition is not causing major interference in this interaction. Baldwin and Baldwin (1972) point out "that the child's patterns of social interaction may be related to his handicap in various ways." (p. 4) In some cases, such as autism, it is the pattern of social interaction which is the disturbance itself whereas in other cases it is related to "the reaction of other people to his handicap...the consequence rather than the cause of the primary problem," (p. 4) such as with Down's Syndrome. Therefore, not only is it necessary to know if models are interacting with the handicapped population, but it is important to know the nature of this interaction.

Normal preschool children might react to the physical, behavioral and communication differences of the handicapped child. Does integrating communication handicapped children with normal children provide a situation which will develop the verbal skills of the handicapped? There is controversy in the literature as to whether verbal modeling as related to imitation enhances

verbal development of young children (Cazden, 1972). If models do have a positive effect, does the mainstreamed communication handicapped child also have the opportunity to receive appropriate verbal models and is the child positively reinforced for verbal interactions? Children are known to be able to adjust their communication to the listener (Shatz and Gellman, 1973). If the listener has a communication disorder, what effect, if any, does this have on the model's use of language? Do normal children provide appropriate language models and interactions with their communication handicapped peers? Does integrating communication disordered children with normals achieve the desired goal of developing the social skills of the handicapped? Gottlieb and Budoff (1973) state:

> To the extent that the social acceptability of retarded children represents a desirable goal of educational integration, far greater thought needs to be expended regarding the parameters of social acceptance in the classroom. (p. 19)

Answers to the above questions might best be approached through the observation of children interacting in a naturalistic setting. Baldwin and Baldwin (1972) state that most studies in social psychology investigate "distant variables" such as social class or mental disorder which are "relationships which must be mediated by chains of intermediate events." (p. 10) A more revealing approach, then, would be to look at the behavior and interactions of children in their environment. Blurton Jones (1972) suggests the use of ethological methods in studying child behavior:

> In general I feel that ethological methods give the traditionally 'soft sciences' of child development and social behaviour a useful opportunity to make themselves a little 'harder' without at the same time getting as narrow-minded as could result from too successful an imitation of the physical sciences. (p. 28)

The present study is an attempt to investigate the potential communication events, states and interactors which may relate to the development of

verbal and social interactions of handicapped children who have been placed with model children in a preschool educational setting. Observational data will then be compared with sociometric choices made by the children and the communication levels of the handicapped children. This information might suggest what effect, if any, a model child has on a communication handicapped child and whether severity of the communication disorder is a variable in the development of social interactions between normal and handicapped children.

REVIEW OF THE LITERATURE

Education of the Exceptional Child

Special education has broadened and developed over the past twenty-five years as educators became more aware of children who were not succeeding in regular classes. With the recognition of a need to provide appropriate educational procedures for handicapped children came the increased tendancy to label and segregate those who fell into diagnostic categories. During the sixties, ninety per cent of children lableled exceptional were receiving instruction in self-contained classes (Mackie, 1969). The question was then raised as to the advisability of labeling and segregating the large number of mildly retarded children (Kirk, 1964, Dunn, 1968). The misplacement of children into educable classes and the failure to provide those children with appropriate educational programs became apparent (Garrison and Hamill, 1971). Dunn (1968) discussed the disadvantages to slow learners and underprivileged children who were educationally segregated. He stressed the importance of exceptional children interacting with normal children with the statement:

> Special educators have long recognized that the ability of a handicapped individual to succeed in society depends in a large measure on his skill to get along with his fellow man. (p. 19)

The movement towards placing exceptional children into the mainstream of education began with renewed vigor in the seventies. The original stimulus came from litigation regarding equal educational opportunities for handicapped children (Reynolds, 1962). Integrating the handicapped child with the normal child suggests that there are advantages to be obtained from the provision of social, verbal and educational models and that integration prepares the exceptional child f[or] acceptance in the "real world." This movement, embraced by many special educators, (Iano, 1972. Christopholos,

1973, Budoff, 1971, Lewis, 1973) has also aroused warranted criticisim. Lilly (1970b) has suggested that in "solving original problems facing special education, now problems have been created which demand new solutions." (p. 745) He proposes a "zero reject model" which makes it impossible for a child once placed, to be administratively removed from the mainstream of education. To facilitate this concept Lilly proposes the use of special educators as supportive personnel and the training of self-sufficient regular teachers. In another article, Lilly (1970a) indicates the need to "change both how we think of children labeled as exceptional and how we behave with regard to them." (p. 43) Adamson and VanEtten (1972) offer an alternative to the zero reject model, proposing special classes and resource rooms rather than regular class placement. With most of these approaches, handicapped children will have social contact with the nonhandicapped children in the educational setting.

Cautionary statements are also being made in an attempt to keep mainstreaming in perspective. Martin (1974) has stated his concern regarding "pell-mell, and I fear naive, mad dash to mainstream children, based on our hopes of better things for them." (p. 150) He further questions possible overt rejections from peers and teachers, an important question in regard to the social development of exceptional children. The subject of the who, how, when and why of mainstreaming continues to be debated (CEC, 1970, Jordan, 1974) and researched (Haring and Krug, 1975, Hayball and Dilling, 1969) and possibly the efficacy and advisability of this approach will be decided. In the meantime, mainstreaming is a reality in the educational system.

Although early education for children has long been a part of the educational system in America (Spodek, 1972), sociological and psychological developments reported by outstanding professionals such as Harrington, Hunt and Bloom (cited in Datta, 1973) gave impetus to a dramatic increase in

early intervention programs for the culturally different as well as the exceptional child. Recently, Head Start policy mandated that the number of handicapped children in the national program be at least ten per cent. After review, Congress has ordered the Office of Child Development to take action which will guarantee only certified handicaps are counted in the ten per cent and urges that severely handicapped children also be served by Head Start (Nazzaro, 1974). The present direction in education of the handicapped child combines both the concept of early intervention and mainstreaming or integrating handicapped children with normal children.

Social Skills of the Exceptional Child

Many areas of social skills and friendships in normal children have been (Gronlund, 1959, Lindzey and Byrne, 1968) and continue to be investigated (Asher, Oden and Gottman, in press, Gottman, Gonso and Rasmussen, 1975, and Lewis and Rosenbloom, 1975). Information is available on the social skills of children with learning disabilities (Hayball and Dilling, 1969), blind (Nezol, 1972, Jones, et. al,, 1972), emotional disturbance (Rubin, Seneson and Betwee, 1966), hearing impairments (Craig, 1965, Kennedy and Bruininks, 1974) and physical handicaps (Jones, 1974, Baldwin and Baldwin, 1972).

Most studies investigating the social skills of the exceptional child have focused on the mentally retarded. These studies usually investigate the social skills of moderately or mildly retarded children within a segregated educational setting or compare social skills of those integrated into normal classrooms with those in self contained classes. Early studies by investigators such as Johnson, Kirk, Lapp and Baldwin (cited in Iano, et. al., 1974) suggested an EMH (educable mentally handicapped) child in a regular classroom is rejected and isolated by his classmates in comparison

to his EMH peers. Miller (1956) found children in a regular classroom were "mildly accepting" of EMH children but more accepting of average and above average intelligence children. Other investigators (cited in Lindzey and Byrne, 1968) have found a relationship between intelligence and social acceptance.

Currently the thrust of mainstreaming and increased awareness of the importance of friendships in children has prompted investigators to take a closer look at the social skills of the exceptional child. In addition, the relationship of self-concept to social, linguistic and cognitive development (see Howard, 1974, Stern and Luckenbill, 1972 and studies by Zisfein and Rosen, 1974, Richmond and Dalton, 1973) gives further reason to investigate the social skills of mainstreamed handicapped children.

Recent studies continue to support the notion that educable mentally retarded (EMR) children in regular classrooms are isolated or rejected more often and accepted less often than their normal classmates (Goodman, Gottlieb and Harrison, 1972, Rucker, Howe and Snider, 1969, Iano, et. al., 1974). Gottleib (1969) found in a study of Norweigan children that the mentally retarded were more acceptable in play than in other educational environments. Gottleib and Budoff (1973) looked at the effect of architecture on peer acceptance and found a difference in social acceptance of EMH elementary students integrated into classes in a traditional school building versus a no-interior-wall building. Although the subjects in the unwalled school were known more to the normals, they were not included in friendship choices and were more frequently rejected than subjects in the traditional school. The authors conclude their findings support the premise that "merely integrating retarded children with nonEMR children does little to improve the former's social position." (p. 17) Geographical differences in principal's

attitudes were also found as a variable in the social acceptance of the mentally retarded in that suburban administrators were more accepting of the concept of integrating handicapped children with normals than were city administrators (Payne and Murray, 1974).

Campeal, Gottlieb and Harrison (1974) conducted an observational study of integrated and segregated EMH children and their peers. Using a time sampling method to count twelve behavior categories including attention and communication, the investigators found that both mainstreamed and segregated children had significantly fewer interpersonal interactions than their nonretarded peers. Results also indicated significant differences between integrated and segregated EMH students on three of the twelve behaviors measured: The segregated subjects were more restless and gave and received more negative verbal responses from peers. These findings should be treated with caution, however, since a multANOVA was used to treat the data in spite of the fact the criteria for the use of this statistic was not met, e.g., size of N .) Other studies (Meyerowitz, 1967 and Fuchigama and Sheperd, 1968) consider the social status of educable children in relationship to the neighborhood a child lived in and found similar results indicating low social ability of the mentally retarded.

Meyerowitz (1967) hypothesized "that the EMH child in a special classroom is more acceptable to his peers (whether classmates or not) than the EMH child in the regular classroom." (p. 23) A neighborhood sociogram was used to measure each of the 90 subjects' interaction with five neighborhood interactors. Subjects were divided into three groups: 30 experimental EMH children in special classrooms, 30 controls in regular classrooms and 30 criterion EMH subjects who were socioeconomically matched with subjects in the same classroom as the controls. Interactors were the same age, within one

school grade and lived within a subject's interactor sector defined as 50 street address numbers on either side and not interferred with by traffic barriers. All subjects and interactors were asked questions regarding who lived near them, who they like and not like to play with and who they would not invite to a party. Derrogation statements were also used for further negative nominations and all nominations were converted to saliency and acceptance scores. Results indicated EMH children neither reject more nor were they rejected, "they were simply disregarded." (p. 25) Meyerowitz also concluded the EMH child is an isolate in his neighborhood regardless of whether s/he is in a regular class or a self contained special education class.

Fuchigami and Shepard (1968) found different results from studying friendship and neighborhood patterns when they compared EMH males who attended neighborhood schools with those who attended schools out of the neighborhood and were transported to school. Subjects were 111 16 to 18 year olds with and IQ range of 51 to 88 ($\bar{X}$=69.5). Special education teachers responded to a questionnaire regarding opportunities for these children to participate in school related activities. The subjects were interviewed to ascertain their friendship patterns and choices. The investigators found the friendship patterns varied considerably in both groups. Intelligence appeared to be the factor associated with school activity in that subjects with an IQ above 60 were generally involved in more activities. Major differences were found between the groups in friendship choices: neighborhood school subjects reported more friendships with normals in and out of school whereas those who attended school out of the neighborhood had more retarded friends.

These contrastive results do not answer the question regarding the relationship between type of placement to friendship development or peer acceptance but do raise an interesting question as to what effect the lack of differentiating bused versus nonbused subjects has had on other studies with the handicapped. Craig (1966) criticized studies comparing hearing

impaired children's social skills when populations tested were day class children who were geographically dispersed and thus transported to school. She suggested there is a confounding variable in studies when a child's play friends are in the neighborhood and therefore different from school friends. With low incidence handicaps, transporting children is frequently done and may need to be considered in describing populations studied.

Modeling and Social Skills

Imitation and observational learning has been widely discussed in the literature (see Flanders, 1968). There are variances in opinions as to the strength imitation or modeling plays in the acquisition of behaviors. In part, differences in opinion are related to the manner in which "imitation" is defined. Psycholinguists place a low value on the role imitation plays in language acquisition (Slobin, 1971, McNeill, 1970). On the other hand, Bandura and others (cited in Kuhn, 1973) indicate imitation plays a prominent role in social learning. Expanding on the theories of imitation, Kuhn considers a cognitive perspective of imitation. She discusses, from a Piagetian viewpoint, the importance of the interaction between the child's cognitive structure, imitation environment, model and child's interpretation of the model. In her own research on classification she found that if change occurs, children exposed to a model in stage learning tasks made changes to one stage above, regardless of what level was modeled:

> This suggests, then, that in the case of behaviors which are part of a naturally-occuring sequence of stages, an environmental model serves only to stimulate progress in this sequence; it does not determine the form of the change. (p. 177)

If development of social relationships is stage learning, findings by Kuhn are important to consider in providing social models.

Zimmerman and Rosenthal (1974) review the literature on observational learning and rule-governed behavior. They differentiate between mimicry and

and imitation and develop the arguement that imitation plays an important role in developing and abstracting rules. In their studies on modeling and verbalization they found support for the use of models:

> Taken together, these experiments have demonstrated the utility of modeling for establishing conceptual behavior, that concepts so learned can be generalized both immediately after training and also after long delays, that observationally instated abstract paradigms are relatively independent of the particular stimuli and experiments involved in the original training, and that verbal instructions, rule and encoding parameters play important roles in observationally created acquisition, generalization, and retention of concepts. (p. 33)

Age of the child and the relationship to observational learning has been investigated (Joslin, Coates and McKown, 1973). In comparing four and seven year olds' ability to perform novel behaviors after viewing an adult filmed model, these researchers found age a significant variable. In both rewarding and nonrewarding conditions, the seven year olds learned more. This is of significance when considering potential modeling effects on the preschool intellectually, verbally and/or socially delayed child who is functioning at a lower level than his chronological age.

Hartup, Glaser and Charlesworth (1967) point out the importance of peer reinforcement on sociometric status. Their research supported the hypothesis of other researchers cited in the article that there is a role of reinforcing interaction in the emergence of interpersonal attraction. Kohn (1966) also suggests the child in interacting with peers obtains from them a desired approach which in essence validates his approach to others and maintains the equilibrium between himself and the environment. His study was limited to a small number of first grade subjects but extensive observation of interactive behaviors periodically throughout a school year was used for data collection. Significant relationships were found between the rate children

initiated towards others and received from peers as well as between the proportion of positive acts given and received. Kohn states:

> These results suggest that both with respect to quantity and quality, the child gets what he puts out; that, in other words, the child creates his own environment. (p. 99)

The relationship of symbolic modeling to social interactions and social responsiveness of children has also been investigated (Jakibchuck and Smeriglio, 1975, Bandura, Grusec and Menlove, 1966, O'Connor, 1969, Evers and Schwarz, 1973, Gottman, 1975). These studies have shown the effects videotaped or filmed models have in changing social behavior in children. O'Connor (1972) found that both shaping and modeling were effective techniques in changing social behavior of 33 preschool isolates, but that modeling resulted in more rapid changes which were more stable over time. The use of symbolic modeling has the advantage of better c. . .l of the stimulus although lacks the element of human interaction. Thus far the results of studies using symbolic modeling support the use of modeling in the development of positive social relationships in children but do not clarify whether human interaction is more effective than symbolic models in intervention into the social skills of children.

Language and Social Skills

An important area to consider is the role of language in the development and maintenance of positive social relationships. Mahoney (1975) states that communication is "one of the (sic) principal mechanisms involved in initiating and sustaining social interaction between an organism and its surroundings." (p. 139) In investigating social speech and social interaction, Garvey and Hogan (1973) suggest a strong relationship between language and social development:

> It may well be that a major function of early language use is social, in the sense of establishing and maintaining interpersonal contact. As such children's talk could also serve as a vehicle for learning those concepts that underlie social intercourse (e.g. concept of reciprocity, obligation, and complementarity. (p. 562)

Bates (1975) reviews the literature on language acquisition and relates this to the development of social skills. She discusses the conflicting views on egocentrism and states the following issues in relationship to the developmentof social interaction in young children:

1) social intent and empathy in small children
2) private or nonsocial speech and its function in problem solving
3) repetition or play with the surface forms of speech
4) role taking, or the ability to take the listener's perspective
5) the ability to produce and to understand the "listener cues" required by conversational rules (p. 266)

She describes the classic debate on egocentrism, language and thought between Vygotsky and Piaget and summarizes the latter's view as "the egocentric child may indeed be very socially motivated during most of his speech. He is egocentric only insofar as he is unable to adapt his speech successfully for his intended listener." (p. 268) This concept, however, is still being debated because there are conflicting findings on the ability of a young child to adjust to a listener. Both theoretical and methodological variances account for these differences but recent studies (Shatz and Gellman, 1973) suggest a preschool child can adjust linguistically to the listener. It is of interest to view Bates' consideration of the development of language and cognition in relationship to the development of social skills in normal children for it raises interesting questions in regard to the ability of the communication handicapped child to establish positive peer relationships. Would differences or delays in verbal development and possibly cognitive development account for differences or delays in social development of the communication handicapped child? Would remediation of a communication disorder have positive effects on peer interaction?

Also using a Piagetian model, Lee (1975) proposes that the process of interpersonal development parallels that of cognitive development with different conditions influencing each. As thought and language develop, the child also develops in social areas, learning to conserve the social partner and situation. Lee suggests that for assessing the social partner the child must consider physical characteristics, behavioral and emotional states and the role relationship. For assessing the social situation the child must consider the setting and the group. Through experience in social exchanges the child learns to classify cues and construct social schemas, a process which interfaces with cognitive structures. Lee also stresses the importance of language during the preoperational and operational stages: "The primary tool for socialization is the interpersonal exchanges." (p. 213)

Asher, Oden and Gottman (in press) stress the importance of accurate communication, as measured by object description, password or similar activities which require the child to relate information to others, has in developing friendships. According to studies cited in the article, improvement in communication resulted in improved social relations in elementary school children who were previously identified as isolates. Asher, et. al. propose that the reason children who communicate poorly may be less liked is "that it is not very reinforcing or personally validating to be with someone who cannot express his ideas clearly and who may not be an especially good listener." (p. 29)

Craig (1[illegible]) discusses the relationship of language to the development of self concept and social interaction in investigating the social skills of a language deficit group, i.e., the deaf. Her subjects were 48 nine to twelve year olds from three school populations: institutionalized deaf, noninstitutionalized (day school) deaf and normal hearing public school children. In comparison to earlier studies with this population which had

poorly controlled variables, Craig used population selection to control for age, sex, IQ, hearing loss, class size and length of acquaintance with class peers. The sociometric instrument used was a modification of one used by Schiff which compares actual sociometric ratings with predicted ratings in order to obtain an index of perceived self. Care was taken to assure the subjects knew the minimal language required for the task. Her findings indicated the self concept of the deaf child was less accurate (a greater difference between self perception and ratings of others) than that of normal hearing children. Language was the significant variable in the establishment of social acceptance.

In contrast to the above findings and similar studies with the hearing impaired, Kennedy and Bruininks (1974) found 15 first and second grade hearing impaired children integrated into normal classrooms had a high level of social acceptance and realistic self perceptions. The hearing loss of the subjects ranged from moderate to profound and all wore hearing aids. Speech and language ability of the subjects was not described. Sociometric measures used to evaluate peer acceptance and socioempathy were Moreno-type peer nomination scales with pictures to illustrate responses for "friend," "all right" and "wouldn't like." A modified version of the Ohio Social Acceptance Scale was also used. No special attention was given to the language used for the tasks which were administered in a group setting. In light of the communication problems the hearing impaired subjects would be anticipated to have, method of administration of these measures may have been more appropriately done individually. Although this would not affect the choices made by the normal children it could affect the choices made by the handicapped children. The authors did feel, however, the findings indicated the hearing impaired (language delayed) subjects enjoyed high social status in their classes and suggested one of the reasons may have been that "young non-handicapped children

are more nurturant than older children toward hearing impaired children." (p. 341)

Shears and Jensema (1969) suggest that children with visible physical handicaps may experience ease in social acceptance in that the need for explaining the problem is minimized and the normal peer is more apt to know how to accomodate. Physical anomolies and a prosthesis, such as a hearing aid, which signals a disorder, may assist the interactor in understanding the problem. They suggest, however, that a communication handicap which is acoustic (invisible) rather than visible would cause difficulty in message exchange so that negative social interactions could result.

Studies with definitive information on the communication ability of the handicapped subjects would be helpful in further understanding the possible effects a speech and language disorder has on social interaction. Level of communicative ability may have been one factor accounting for differences in results between similar studies. For example, three studies with retarded children had little information in regard to subjects' communication ability but suggested that communication may have been a variable. Although not fully described, severe language delay was inferred as the significant factor in two of seven retarded children's lack of social development through play with models (Devoney, et. al., 1974). Minimal language disorder associated with mental retardation was also inferred as the reason for successful social skill development of a preschool child in an intervention program (Nelson, et. al., 1973). Less intense rejection by normal peers of EMH students ready to participate in a regular class was found by Lapp (1957). These extremes in communication ability, inferred but not described in the studies, may have resulted in differences in social success of the mentally retarded subjects. One might further question the findings of studies which neither described the speech and language abilities of the subjects or which pooled the data on groups labeled EMH.

Coates and Hartup (1969) discuss discrepencies in findings regarding the relationship of age and verbalization as a facilitator of learning from models. Although the question of whether or not preschoolers' social learning is enhanced by accompanying verbalization is yet unanswered, the literature, according to these authors, indicates verbalization seems to facilitate social learning in normal children. It would be of interest to learn if the same principle is true with the linguistically handicapped population.

Deutch (1974) investigated the relationship of normal female preschoolers' communicative egocentrism, the ability to take another's view-point, to the level of peer popularity. Communicative egocentrism was evaluated with a modification of a technique used by Glucksberg and Krauss (cited in article). Subjects (60 females, CA 3.0 to 5.0 enrolled in nursery school) described six nonsense figures to the examiner. Responses were scored and the degree of communicative egocentrism obtained. Social interactions were observed and direct sociometrics given to measure popularity. The level of communicative egocentrism of the subjects related significantly with observations of frequency of interaction but not with direct sociometric measures. Although Deutch suggests a preschool child's ability to take the viewpoint of another person is related to observed popularity but not peer choices, the time sampling method used (tallying interaction every 15 seconds during ten five minute intervals over a three week period) may have affected the results. There is also some question as to whether the task used to measure communicative egocentrism was valid.

Language Development and Modeling

As previously discussed, psycholinguists place a low value on the role imitation plays in language acquisition. There are, however, numerous language intervention programs which stress modeling and imitation for developing linguistic skills in language handicapped children (McLean, Yoder and Schiefelbusch, 1972). The imitation/modeling concept as a basis for these

intervention programs is in part the same concept which supports integrating linguistically handicapped children with normal children. This concept subsumes that the opportunity for verbal modeling will naturally occur when handicapped and normal children are combined into the same academic setting. The question of how this will occur is not answered. Furthermore, if models do have a potential positive effect, there is no literature to support whether or not and, if so, how frequent communication interactions between normal and handicapped children occur in a mainstreamed classroom.

The articles by Kuhn (1973) and Zimmerman and Rosenthal (1974) also have relevance in relating language development and modeling in that they suggest observational learning has an effect on stage learning and rule governed behavior. These are both characteristics of language from a linguistic but not necessarily psycholinguistic point of view (Brown, 1973). It would then follow that the communication handicapped child would benefit from observing a model even without interacting. Perhaps, as Kuhn postulates, the model will not determine the form of the change (in communication ability) but only stimulate progress for change.

Consideration must also be given to the quality as well as quantity of verbal interaction between models and the communication handicapped. Shatz and Gellman (1973) have found that young children adjust their language to listeners. The four year old subjects in their study were evaluated as to egocentric level in a task similar to the one used by Deutch (1975) but simplified. Although subjects showed poor performance on the egocentrism task, evaluation of their spontaneous conversations with two year olds and adults indicated they had the ability to adjust linguistically to the listener, thus suggesting an ability to recognize another's viewpoint. Four year olds tended to "talk down" to two year olds and, in fact, showed different adjustments

between younger and older two year olds. Shatz and Gellman suggest that studies which measure egocentrism through having the child provide verbal labels or indicate causality tax a young child's linguistic and cognitive ability but do not suggest children cannot take into account or adjust their messages to listeners when the task allows them to use the semantic and syntactic repetoire available to them. These findings not only raise questions in regard to other studies on egocentrism, but could be interpreted to suggest that model children may behave in a similar manner, i.e. "talk down" to a linguistically delayed child of their same age. One cannot be sure, however, from Shatz and Gellman's study if the four year olds were reacting only to the language of the two year olds or if size differences were contributing to the language changes.

Other Factors Related to Social Skills

The propinquity aspect should be considered in studying mainstreamed classrooms to ascertain if there is a relationship between nearest neighbors in the classroom and friendship choices. Propinquity has been correlated with social acceptance. Two studies cited in Lindzey and Byrne (1968) indicate friendship choices vary with propinquity or physical proximity: Gallagher studied second through fifth grade children and found social attraction to vary as a function of closeness of residence. Byrne reported seating patterns in college classes influenced attraction. The question can then be raised, is propinquity between children in a preschool classroom related to friendship choices?

Similarity of personality characteristics, at least as they are perceived, tends to relate to attraction between individuals but can be altered by time and situation. Lindzey and Byrne (1968) state many studies in this area were methodologically weak and quote Secord and Backman who suggest "interpersonal congruency" is a determinent of attraction: "When a person perceives another

as behaving in a way that confirms his self concept, attraction is elicited... behavior may involve either similarity or dissimilarity depending on the need in question and on the situation." (p. 505) If this is true for young children, would similarity or dissimilarity in communication in a mainstreamed classroom correlate with social interaction?

Other personal and situational characteristics have been found to be associated with friendships in children. Lindzey and Byrne (1968), Asher, et. al. (in press), Lewis and Rosenbloom (1975) and Gronlund (1959) discuss such areas as name, race, sex, religion, sociometric status, accident-proneness, population mobility, physical attractiveness, opportunities for interaction and peer relationships.

The previous discussion on social and language factors of normal and handicapped children stressed findings from inter and intra group studies. Research activity has also dealt with investigating the results of intervention into the development of social interaction of mentally retarded and other handicapped children. Because mainstreaming is an educational intervention which may have ramifications on the social and language development of handicapped children, it appears appropriate to present studies on intervention into social skills. Following is a discussion of such studies which have attempted to further factor out or at least infer variables which may effect the development of friendships in handicapped children. These studies also provide examples of the difficulties encountered in research in this area.

Intervention into Social Relationships of the Exceptional Child

Intervention into a child's social ability continues to be an important area in the development of friendships in children. Studies in this area reflect the effectiveness or limitations of modeling, shaping and coaching to improve friendships and social interactions with children who are otherwise normal (Oden and Asher, 1975, Asher, et. al., in press). Studies

directed to improving social interaction of the exceptional child have also used various intervention methods: Do something to raise a child's social status, quality or quantity of interaction, and hopefully the group will perceive the child and s/he perceive her/himself in a more positive manner which will facilitate peer acceptance and the cyclic effect associated with the development of a positive self concept.

Chaires (cited in Lilly, 1971) paired two popular classmates with two low status children from intermediate and junior hight EMH classrooms in an attempt to raise the social status of the unpopular children. Treatment consisted of practicing a skit during a five week period, two times per week, 15 minutes per session. Post testing revealed low status children improved significantly in their social status but poor control of variables and lack of follow up limit interpretations of this study.

Chennault (1967) also paired unpopular EMH students with popular EMH students from the same class in the planning and presentation of a skit. Results indicated the experimental group made short term gains in social acceptance by peers as well as in the subjects' perceived peer acceptance. Chennalt suggested several reasons which may have contributed to the positive short term gains, e.g. group experience, teacher support, experimenter attention. She concluded that "perception of improved status suggests that a change in self-acceptance might well have occured and that the effect of the treatment on peer acceptance might have been mediated by the change in self acceptance and vice-versa." (p. 457)

Recognizing the limitations of controls and lack of follow up information to evaluate maintenance, Rucker and Vincenzo (1970) extended the Chennault study using more carefully controlled variables and follow up testing. A modified Ohio Social Acceptance Scale was used for pre-test, post-test and post post-test measures. Subjects were 95 intermediate and junior high

students in EMH classes. Two of the least accepted and two of the most accepted children in each class were paired to plan and produce a carnival for their class. Subjects met for two weeks, 45 minutes twice a week. Post testing was done three days after the carnival and revealed sociometric gains but post-post testing one month later indicated social gains were not maintained.

In a follow up to the Chaires study and in the same vein as the other studies described above, Lilly (1971) evaluated the effect of intervention on low achieving students to determine what factors contributed to improved social status. Forty-eight subjects from fourth, fifth and sixth regular grades were divided into six treatment groups: full impact treatment, experimenter impact treatment, peer impact treatment, minimal impact treatment, within classroom treatment and full control condition. Low social status children were in the lower quartile of academic achievement and, on a three point sociometric scale, were ranked by peers as the lowest two children in class. High and low paired children were given five weeks of treatment which consisted of making a movie to present to their class. This activity was chosen because of the minimal emphasis on verbal skills in comparison to the other studies. Treatments produced significant immediate gains in social acceptance but these gains did not endure over a six week follow up period. Of importance, however, was the finding there was no differentiation among treatments or interaction involved in improving social acceptance as measured in this study.

One study which suggests long term positive gains in social acceptance resulting from retarded children interacting with normals was done at the Jewish Community Center Assocaition in St.Louis. Pumphrey, et. al. (1970) reported in a retrospective study of retarded children who had participated in ongoing leisure time activity with normals at the center. Of the 41 children

who had five years of association with the center, 26 were located for follow-up. Twenty-one boys and twenty girls, IQ range of 48 to 78, were studied with a class sociometric (choose three to be with on a field trip) and scores on the Metropolitan Achievement Test. Results indicated that in comparison with matched subjects who did not attend the center, 3/4 of the JCCA retarded children did well socially and attempted to participate with normal peers. The MAT scores and other language reports showed the subjects were higher in word knowledge and spelling and had also developed slang, kidding and knowledge of fashion which could contribute to their social skills.

Although several studies (cited in Asher, et. al., in press) have investigated intervention with children labeled isolates, few studies have looked at peer interactions and friendships of the preschool communication handicapped child. Devoney, et. al. (1974) investigated the effects of social play with normals on seven handicapped children with a range of handicaps. Children varied from nonverbal to verbal and many manifested behavioral problems of hyperactivity or excessive passivity. Quality of play was recorded with a time sampling method utilizing a six point rating scale (autism to cooperative). During the treatment phase, normal children were brought into the special classroom and probes indicated social play improved in a small but positive direction. In the final phase, teachers intervened by structuring play and combining groups. A significant increase in quality and quantity of play occured. After structuring, five of seven children spent approximately 75 per cent of their time in associative or cooperative play. The two children who did not show gains were the only nonverbal children in the class. The authors concluded "nonhandicapped preschool children can serve as effective models for play behavior and produce a substantial and rapid increase in both the quantity and quality of play in handicapped children." (p. 362) Unfortunately the authors did not state the number, duration or period of treatment but only "three times a week during the free play period." (p. 361) Neither teacher

behavior nor type of structuring were described so it is impossible to evaluate what effect these factors would have on the findings.

It appears from results of both identification and intervention studies that the handicapped population has difficulty in establishing and maintaining social relationships. With the increased momentum to integrate the handicapped with the normal child at an early age, careful evaluation of the effects this educational management will have on the handicapped is needed.

Rationale for Investigating the Social Skills and Communication Interactions of Mainstreamed Communication Handicapped Preschool Children

Many of the identification and intervention studies regarding the social skills of handicapped children have been hampered by lack of follow up studies, use of small N's, poor control of variables, lack of reported information which allows for repeatability of experimentation, variation in use of sociometric measures, variation in amount and type of intervention, the grouping of subjects according to broad educational labels, the use of questionable measures to make generalizations and, in some instances, the use of inappropriate statistics and observational methodology.

Unfortunately most studies of the social relationships of handicapped children do little to describe subjects beyond age, IQ and educational label. Not only are communication levels rarely described, but behavioral aspects, racial and cultural differences and physical appearance and other factors known to affect social acceptance of normals and retarded children are often not reported in the literature on social acceptance/development of handicapped children. If communication ability of the subjects is reported, neither differences between receptive and expressive ability nor speech (phonology, voice, fluency, prosodic features) and language (semantics, syntax, morphology) are made, measured or described. Since several studies look at the older handicapped child, the contamination of long term learning by the subjects

(negative self concept) and peers (prejudice against differences) possibly present a different picture than that of studies with preschool handicapped children interacting with normal children.

In addition to considering the relationship between language and social development, one must consider the role of language in measuring social skills. This becomes especially important when sociometric measures are used with a linguistically impaired population to ascertain their sociometric choices. In reviewing the literature on the difficulties associated with measuring personality characteristics of the mentally retarded, Gardner (1967) stresses the importance of recognizing that limited reading, verbal and cognitive abilities can affect test results. Craig (1965) points out that the validity of testing social skills of a language disordered population is questionable if the language loading of the task is not considered. She found that by carefully controlling the language level and presentation of the sociometric task with the deaf population, validity and reliability comprable to other sociometric measures with normals were obtained. Several authors suggest the reliability and validity of personality and self concept measures with the retarded be treated with caution (Schurr, 1973, Laurence and Winchel, 1973, Gallagher, 1959). However, Zisfein and Rosen (1974) indicate four self concept measures evaluated in their study are usable with the mentally retarded in that findings varied independent of IQ of the 40 adult subjects (CA 19 to 40, $\bar{X}$=25.3; IQ 49 to 101, $\bar{X}$=71.3). These measures controlled for language level and utilized primarily nonverbal responses.

Sociometric measures with nonverbal representation to minimize verbal loading such as used by McCandless and Marshall, Moore and Udegraff, Biehler, Abel and Sahenkaya (cited in Lindzey and Byrne, 1968) or materials used by Craig (1965) may facilitate sociometric measurement with the handicapped

population, especially those with accompanying language disorders. Picture sociometrics, picture completion with line drawings or paired pictures are all potentially usable with the linguistically impaired if directions are also modified when needed.

Behavioral data on peer interaction over a long term basis which takes into account both quality and quantity of interaction may be usable in assessing social acceptance and factors which may be important as well as practical in changing social and verbal status of handicapped children. Recently Ray (1975) reviewed the limited amount of recent research which utilizes ethological methods with normal and handicapped preschool children. He demonstrated the use of this method as well as interesting differences between free play behavior of normal and Down's Syndrome toddlers. Gottman, Gonso and Rasmussen (1975) and Campeal, Gottlieb and Harrison (1974) also studied social relationships of retarded children through the use of naturalistic observation techniques. Unfortunately these studies and others used time sampling techniques and sampled behaviors which were both states and events. Therefore, of the few studies in this area which used naturalistic observation, findings were contaminated by procedures. As Omark and Marvin (1974) state:

> ....a time sampling technique is seldom, if ever, justified. It yields apparent data that rarely can be used across different ages, sexes, groups, or even behaviors within an individual, especially when subtle differences are being sought, and it may obscure gross differences that result from differences in the patterning of behavior. (p. 17)

Baldwin and Baldwin (1972) noted the lack of studies in naturalistic situations amd recommended observations of social interaction between handicapped and normal children be done using "direct observation of the child interacting with significant people in his environment." (p. 4) Further discussion of the use of naturalistic observation in the study of language and social relationships of young children can be found in Blurton Jones (1972), Hutt and Hutt (1970),

Lewis and Rosenbloom (1975) and Mahoney (1975).

MacMillan (1971) proposed changes in research approaches in special education which are applicable to the naturalistic study of interactions between normal and handicapped children. He states the need for the following changes:

> 1) shifting from a developmental emphasis on factors influencing behavior and learning to a focusing on events and conditions existing in the present.
>
> 2) shifting from the before and after experimental design to the use of repeated measures over time, especially to note changes in behavior as it occurs.
>
> 3) shifting from a comparison of experimental and control groups to a comparing of individuals as well as groups, thus eliminating the imprecisions that accompany groups that are only partially matched on a small number of variables.
>
> 4) shifting from research procedures specifically requiring implementation by statisticians and professional researchers to the use of parent, teacher, or impartial observer data. (p. 3)

The mainstreaming movement, the questions of developmental and maintenance aspects of social relationships, the recognition that handicapped children are potentially less accepted by their normal peers, the fact that negative social experiences affect self concept creating a cyclic problem which generalizes to academic achievement, the role communication plays in establishing and maintaining friendships, the limitations of contrived experimental settings, the variation of factors which operate in the development of social interactions and the effect of modeling on changing social and verbal behavior all suggest the need for investigating social relationships and communication interactions of mainstreamed communication handicapped preschool children in a naturalistic setting using ethological methods.

The first purpose of this pilot study is to investigate the social relationships of preschool communication handicapped children placed with normal peers who act as models. The following questions are proposed:

In a preschool classroom which integrates normal and communication handicapped children:

1) Do children tend to more frequently associate (are more frequently observed to be in physical proximity) with those they select as friends on a sociometric measure?
2) Are handicapped children more likely to establish friendships with other handicapped children in a preschool setting?
3) Are normal children more likely to establish friendships with other normal children?
4) Is speech intelligibility or language performance a variable in the friendship choices of young normal and communication handicapped children?

The second purpose of this study is to investigate the communication interactions of a severely linguistically handicapped child in order to ascertain:

1) What type of communication interactions occur?
2) Who are the most frequent interactors?
3) How are these communication events reinforced?

In more colloquial terms, do children who hang around together tend to be friends, and, if so, do they hang around with those who are communicatively similar or dissimilar, suggesting whether or not a "model" child is having an effect on social and linguistic development of a communication handicapped peer?

METHODOLOGY

Subjects

Five classrooms were observed in a program for preschool handicapped children prior to selection for the study. All classrooms had both communication handicapped and model children all of who were transported to school. Model children were described in this program as normal in intellectual, verbal and social skills. Handicapped children, according to the administrative definition, were exceptional children with characteristics ranging from very mild to very severe as designated by Article XIV of The School Code of Illinois.

Following observations of these classes, one class was chosen for the pilot study in that it fullfilled the following criteria: 1) the class schedule had a minimum of one hour of open-informal activity daily which would allow for observation of children's verbal and nonverbal interaction in a relatively free setting (i.e., a classroom atmosphere with a minimum amount of teacher initiated or directed activity), 2) a class which had at least one severely linguistically handicapped child, 3) a class with fairly equal distribution by sex and ratio of models to handicapped, 4) a head teacher who was cooperative and interested and 5) a facility which offered ease of observation through a one way vision mirror with audio facilities.

The class chosen for study was described by the head teacher as originally being structured and becoming more informal as the children showed increased ability to function in an open setting. Therefore, the class could not be described as an "open classroom" in total philosophy or practice but during the period of observation and data collection did fullfill several of the criteria for open-informal education (Evans, 1971, Katz, 1972). Because the program was also involved in teacher training, there

were two to four teachers present in addition to the four model and five communication handicapped children.

The model or normal children (NC) included two females, CA 3-11 and 4-3, and two males, CA 4-6 and 4-11 (group Mdn 4-5) with normal IQ scores on the Standford-Binet and speech and language diagnostic findings indicating normal phonological, morphological, semantic and syntactic ability. The communication handicapped children (HC) included two males and three females, CA 4-0 to 6-2 (Mdn 4-5) with intellectual test findings ranging from untestable to normal IQ. Speech and language diagnostic information suggested that although all HC had communication disorders, the range in severity and type of disorder indicated the need for subcategorizing this group.

Two children categorized as handicapped had severe disorders of language (HC-L) including one male (CA 5-9) who used jargon, echolalia, screaming and some single word utterances and a female (CA 6-2) who was frequently nonverbal but did use single word and occasional two and three word utterances as well as some manual signs in communicating. One female (CA 4-5) was categorized as delayed in speech and language (HC-S/L) in that she combined meaningful intelligible speech with echolalia and jargon which was unintelligible. One male (CA 4-0) was described as initially having a moderate language disorder but by the end of the observational period was normal (HC-L/N). One male (CA 4-4) was categorized as having no communication disorder (HC-N): Although he had been linguistically handicapped the previous year making him eligible for the program, he no longer had a communication handicap. His speech was characterized by minor developmental articulation errors and thus he more closely resembled a model child than a handicapped child. Changes in the communication ability of the HC-L/N and the HC-S/L children during the observation period of this study suggested they also were approaching the normal category. The two severely linguistically handicapped children showed minimal communication changes during the period the study was conducted.

All children were from middle socioeconomic class homes. The handicapped children had normal hearing and vision and no apparent oral anomolies which would account for their communication disorder. Eight of the children in the classroom were White and one model female was Black. Table I summarizes the description of the handicapped children.

Observation of Potential Social/Communication Interactions

Observations of the classroom chosen for study were done for several sessions for the purpose of delineating which categories of interaction would be most appropriately recorded. After decisions were made as to methodology, the investigator practiced observational and recording techniques for four one hour sessions. Recording forms and the notation system were revised and evaluated through use during an additional observation period. Data collection for the pilot study was then done 11 times over a period of eight weeks at approximately the same time in the class period which was characterized by an open-informal setting rather than a structured period.

Scan sampling (Altmann, 1973) procedures were done at five minute intervals to ascertain the nearest neighbor (Kummer, 1968), interactor, communication event and state for each child. A total of 39 scans were done with varying number of observations obtained for each subject depending on whether they were observable on the scan.

Nearest neighbors (NN) were defined as a child or teacher who was in physical proximity close enough to talk to or reach and touch for communication/attention purposes (NN-1) or in a physcial setting which allowed for potential communication/social interaction on a verbal or nonverbal level (NN-2). Nearest neighbors were identified by name if a child and "t" if a teacher. Because of the rotation of teachers, no differentiation was made for this interactor/nearest neighbor. If a child was engaged in an activity such as working or playing in an area which did not allow visual contact with others, working in an area of the

TABLE I: SUMMARY OF COMMUNICATION ABILITY OF HANDICAPPED CHILDREN

Name	CA	Receptive Language	Expressive Language	Phonol./ Intell.	IQ	Other
Robert HC-L	5-9	Follows simple dir. incon. Severe delay	Inappropriate labeling, jarg. screaming, echolalia	Unintell. other than some echoic responses	Untest. -2½yrs.	Autistic-like, shrt attn span hyperactive
Tammy HC-L	6-2	Mod. delay & diff. to assess	MLU Stage I Single words, some sem. rel. some man.signs	Apraxic, Intell. in context w/ known words	SB 37? Impress. is EMH	Third yr. in class
Laurie HC-S/L	4-5	PPVT 18%ile Incon. & inapp. response to questions	MLR 1 sd-$\bar{X}$ M5LR 2 sd-$\bar{X}$ DSS -10%ile Jargon and echoic with mng. lang.	Lat. fric. & stops, freq. unint. unless topic known	SB 75 higher? VMI -2½	Increase in intell. and decrease in echo.by Dec.
Greg HC-L/N	4-0	Normal	By Dec. MLR, M5LR, DSS nor. MLU Stage V Some syntax errors	Intell. Dev. artic errors Nor. dysfl.	SB 92 VMI nor.	On entry soc/verb. reticent
Brent HC-N	4-4	Normal PPVT 101	MLR, M5LR, DSS normal, MLU Stage V	Dev. artic errors, Intelligible	Neg. in test, est nor. VMI nor	Verbally reticent; Last yr. hand.

Key:

PPVT - Peabody Picture Vocabulary Test
DSS - Developmental Sentence Scoring (Lee)
SB - Stanford Binet 1972 norms
MLR - Mean Length Response (Templin)
M5LR - Mean of the Five Longest Responses (Templin)
MLU - Mean Length Utterance (Brown)
VMI - Visual Motor Integration

room with no apparent intent to communicate or interact, alone in the bathroom or one of the small adjoining classrooms the situation was judged Neutral (N). In the N state nearest neighbors were recorded if they fullfilled the N-1 or N-2 description and there were no physical barriers between them and the scanned subject. If a child was not located on a scan (not in view, out of the classroom for individual activity or therapy, absent) time out (t.o.) was recorded and no NN were noted. If the state could not be judged to fit into a N or t.o. category it was recorded as Other (O) and a description written. If the subject being observed on a scan was judged to be in neither a verbal nor nonverbal interaction but had NN, the state was recorded as a Communication Potential (CP) state.

Communication events were recorded as follows: Verbal Receiver (VR) when a child or teacher was observed to be talking to the child, Verbal Initiator (VI) when the child was verbally communicating in some manner to another, Nonverbal Receiver (NVR) when the child accepted or showed awareness of another's nonverbal message of gestural or facial expression and Nonverbal Initiator (NVI) when the child was using a nonverbal communication attempt.

Communication/social interactors both receivers and initiators, were recorded as teacher (t), handicapped child (hc), normal child (nc), group or generally directed to a group of others (g), and unidentified, unknown and/or unrecognizable interactor (u). This latter category included self-talk on the part of the child.

The order of subjects scanned was randomized each time using a random numbers table. On each scan a child was observed for approximately five seconds to determine the nearest neighbor(s), event, state, and when indicated interactor(s). Although a cassette tape with a five minute time signal was originally used, procedural problems occured and five minute signals were obtained with an electric timer.

One severdy linguistically handicapped female child (HC-L) was chosen for a focal animal study. Sequences of behavior were recorded for five minute time periods with scans done before and after each focal animal observation. The same categories of communication states, events and interactors were recorded. In addition other frequent behaviors which the focal subject had been observed doing were recorded (looking at others, walking around the room). An attempt was made to record the time spent in communication interactions and communication potential by timing with a stop watch the neutral and time out periods. This procedure, however, became too cumbersome and may have been more informative if interactions and CP were timed instead.

Materials and Procedures for Sociometric Investigation

Sociometric status was investigated through a picture sociometric technique. Subjects were first trained on the task by having them select pictures of food they most and least liked to eat. Then, using color photos of each class member, subjects were asked to indicate two positive and two negative choices for playing with and talking to classmates. Although the small class size would have allowed for the use of a roster rating, pairing or ranking task which would have fullfilled more of the requirements for a sociometric suggested by Moreno (Lindzey and Byrne, 1968), a specific choice method was used. It was felt limiting the number of choices would lessen the time and difficulty of the task for the HC who had limited communication and/or attention span. Each child was seen individually in a small room within the classroom.

The investigator presented the training task with the following directions:

> These are all pictures of something to eat. I bet there is one food you like to eat the best. Show me your favorite food. Which one do you like to eat the most? (Child chooses and picture is removed.) Now which one do you like to eat? (Child chooses and picture is removed.) Now show me something you don't like to eat. (Same procedure is used for two negative choices.)

If the child successfully performed the training task, the picture sociometric was administered. Color photos of each child in class were presented to the subject with the following directions:

> I know you know all of these children because they are in school with you. You get to be with them almost every day. But I bet you like to play with one of them more than the others. Everyone feels that way. Let's look at all the pictures so you can pick out the friend you like to play with the most. Who is your best friend to play with? (Child chooses and picture is removed.) If _____ wasn't in school that day, then who would you play with? (Child chooses and picture is removed.) Sometimes there are people we don't like to play with. Everyone feels that way. Show me the picture of someone you don't like to play with. Who don't you like to play with? (Child chooses and picture is removed.) Now show me someone esle you don't like to play with.

All pictures were then rearranged and the procedure was repeated to ascertain positive and negative "talk to" choices. With the language handicapped children the directions were repeated or rephrased and gestures added when necessary. For example, with one child who appeared uncertain of the meaning of "like and don't like" the investigator added positive and negative gestures and a vocal "mmmmm" and "eeyuk." With another child, manual signs accompanied verbal directionsto enhance her understanding. The decision to deviate from the directions was based on the investigator's experience with linguistically handicapped children.

RESULTS

Scan Sampling and Sociometric Data

The observational data obtained from the scans were summarized for each child according to states, events, interactor(s) and nearest neighbors(s). (See Appendix.) Because the number of times each subject was located on a scan varied, the events and states observed for each subject were converted to percentages in the various categories. The subjects were ranked according to severity of communication ability (with the model children sharing equal ranks)[1] and Spearman Rank correlations computed for N, CP, VI and VR categories. Because of the low incidence of occurences of the nonverbal categories, correlations were not done on NVR or NVI. Correlations between communication level and the N, CP and VR events/states were not significant whereas Verbal Initiation was significant (r_s=.646 significant at $p < .05$.) These findings support the expectation that communication ability was positively correlated with the frequency of occurence of verbal initiations.

To ascertain if there was any pattern which identified who NC were talking to and thus potentially acting as verbal models, the total number of verbal interactors (initiators and receivers including t, hc and nc) was computed for each group. Table II summarizes this data. Although the frequency of occurence is biased by the number of scans and the differences in the size of the two groups (4 NC and 5 HC), the results are of great interest. NC received and gave verbalizations to teachers and other NC far more often than to HC. Also few instances of VI or VR were observed amongst HC interacting with NC or other HC. The most verbal interactions observed for both groups were teachers talking to HC and the least frequent (zero) were HC talking to NC. In totaling all the verbal interactions of these three groups of interactors, nc, hc and t, it is obvious the teachers are doing the most

[1] Although four subjects shared the same rank, this statistic was deemed appropriate (Glass and Stanley, 1970).

TABLE II: VERBAL INTERACTIONS BETWEEN HANDICAPPED CHILDREN, NORMAL CHILDREN AND TEACHERS

		Verbal Initiator			Verbal Receiver		
		t	NC	HC	t	NC	HC
NORMAL	Seth	2	3	0	4	5	0
	Reem	3	3	1	3	4	0
	Curtis	3	1	0	8	3	0
	Rachel	2	2	2	5	3	0
	TOTAL	10	9	3	20	15	0
HANDICAPPED	Brent	1	1	0	5	0	0
	Greg	0	0	2	5	0	1
	Laurie	1	0	0	9	1	2
	Tammy	0	0	0	5	1	1
	Robert	1	0	0	10	0	0
	TOTAL	3	1	2	34	2	3
	GRAND TOTAL	13	10	5	54	17	3

talking and HC are being talked to the least by their peers.

Analysis of Nearest Neighbor data was done by totaling the number of neighbors for each child in both groups. A NN ratio score was computed by dividing that number by the potential NN from each category. Results indicated NC had NC as NN twice as often as they had HC (NN ratio of NC=25, HC=12.4) whereas HC had both NC and HC equally as NN (NN ratio of NC=15.25, HC=14.25.) A further breakdown of the HC into two groups according to severity of the communication disorder showed an interesting pattern. NC more often had HC who were approaching normal communication ability as NN than they had the more severely handicapped children. HC showed no consistent NN pattern between these subgroups of HC.

Sociometric choices were plotted on matrices (Table III.) Because of the small N, no statistical treatment was done on the separate categories. However, it can be noted that in play and talk choices by both groups, the NC were most frequently the positive choices and the HC the negative choices. This becomes more apparent when the data are pooled and a statistical analysis is possible. Chi Square for the 2 x 2 contingency table was 6.803 which was significant at the .01 level. This would indicate that not only do NC choose NC for friendships but handicapped children choose NC also.

Specific child choices are shown in the Appendix. If the friendship choices are compared to the educational placement categories, no pattern in severity of the communication disorder is suggested. However, if the two HC who were approaching normal communication ability were again recategorized as "normals" an interesting finding occurs. All NC positive choices were either other models or "normals" with one exception. Also the "normals" made positive choices of models and "normals"

No differences in choices according to sex or race were apparent. Most children had similar play and talk choices. For all but one NC both positive

TABLE III: SOCIOMETRIC CHOICES OF NORMALS AND HANDICAPPED

Separate Categories

Play

		+	−	
Normal Children	NC	5	3	8
	HC	3	5	8
		8	8	

Talk

		+	−	
Normal Children	NC	4	2	6
	HC	4	6	10
		8	8	

Play

		+	−	
** Handcpd Children	NC	6	2	8
	HC	2	5	7
		8	7	

Talk

		+	−	
** Handcpd Children	NC	5	1	6
	HC	3	7	10
		8	8	

Play and Talk

		+	−	
Normal Children	NC	9	5	14
	HC	7	11	18
		16	16	

		+	−	
Hndcpd Children	NC	11	3	14
	HC	5	12	17
		16	15	

Summary

	+	−	
Normal Children	20	8	28
Hndcpd Children	12	23 *	35
	32	31	

* one handicapped child would not make a second negative play choice.

** one handicapped child could not be conditioned to the task.

and negative categories had at least one repeated choice. This would suggest the children were sure of their positive and negative choices for that day. However, the stability of preschoolers sociometric choices has been shown to be low (Lindzey and Byrne, 1968) and comments by the children suggested there may be low reliability if the measure were repeated later with this group. When asked why they chose a specific peer, the following comments were given by the children:

I like him because he plays ball with me.
I like her because she's nice.
I don't like her because she does a little bad stuff sometimes.
I like his shirt.
He's my best friend because he just is.
Because he's nice to me.
Because he gave me something.
I just do.
Just because.
Because.

Only one comment reflected communication ability influenced the friendship choice. A NC chose the HC-L female as a positive choice for talking to because "She knows my name." The manual sign and verbal approximation of the name of the NC had indeed been recently learned by the HC,

In comparing observed NN with sociometric choices, no pattern could be established. With instances of a high occurence of a specific nearest neighbor, sociometric choices varied from like to dislike. The same variance was noted with low or no occurences of NN and, in fact, in one pairing (NC and HC-L/N) there were 0 and 1 NN observations respectively but their choices for talk and play were mutually positive. One triad of two HC and the HC-S/L had opposite choices from those who chose them, i.e., their dislikes and likes within this group of three showed polar choices. (See Appendix for specific sociometric choices given and received in comparison to observed NN for each child. NN-1 and NN-2 were not deemed necessary to differentiate.)

Sociometric choices were used to identify the children in the classroom who were most liked, disliked and neutral. The three most liked were [illegible]; the three most disliked included the HC-S/L, HC-L and one NC; the three neutrals (nearly equal positive and negative low frequency choices) were the female HC-L, the HC-L/N and the HC-N.

Focal Animal Data

After an attempt to analyze the sequences of behavior in relation to probabilities and time segments, it was decided possible inconsistencies of the novice investigator in timing and recording the behavior resulted in data which lent itself better to a simple analysis of the relationship between the types of communication events and the interactor's responses. Table IV shows the total number of observed communication events (verbal receiver, nonverbal receiver, verbal initiator and nonverbal initiator), the type of interactor (teacher, handicapped child, normal child) and the type of response which followed the event. One can recall from the description of the classroom that there were usually approximately the same number of interactors in each category present in the room each day. Therefore, although an accurate count of potential interactors was not made during each focal animal observation, it can be assumed the results represent the general trend of the relationship between event and response on the part of the child or event and response on the part of the interactor. During the recording of observations and when analyzing the data, there were instances when a sequence of interactions occured. In this case, since the content of the dialogue was not available for analysis, the investigator arbitrarily decided the person initiating the event continued to be recorded in that role.

From the results it can be seen that the subject was more frequently communicating with a teacher and of these interactions was more often a verbal

TABLE IV: COMMUNICATION EVENTS OF THE FOCAL ANIMAL (HC/L)

Nonverbal and Verbal Receiver

Event	Subject's Response			
	VA	NVA	No Resp.	Total
VR(t)	31	31	45	109
VR(hc)	0	0	5	5
VR(nc)	3	9	34	46
NVR(t)	0	0	0	0
NVR(hc)	0	0	2	2
NVR(nc)	0	1	3	4
Total	36	41	90	166

Nonverbal and Verbal Initiator

Event	Interactor's Response			
	VA	NVA	No Resp.	Total
VI(t)	14	1	7	22
VI(hc)	0	0	1	1
VI(nc)	1	5	5	11
NVI(t)	0	1	1	2
NVI(hc)	0	0	2	2
NVI(nc)	0	0	0	0
Total	15	7	16	38

Looking Behavior

Potential Interactor	Potential Interactor's Response			
	VA	NVA	No Resp.	Total
t	3	0	27	30
hc	0	0	11	11
nc	3	0	13	16
g	0	0	4	4
Total	6	0	55	61

receiver (109 instances) than a verbal initiator (22). Of the 109 instances of a teacher talking to the subject only approximately one-third of the time (31) did the subject respond verbally. Thirty-one times she demonstrated a nonverbal response (complying, shaking her head in agreement, etc.) and 45 times gave no apparent response. Although data was not kept according to specific teachers, it was the observor's opinion that the head teacher obtained the most consistent verbal answers from the subject. The second largest category of verbal receiver events the subject had was with normal children (46) although in this instance the subject most often did not respond (35) or demonstrated a nonverbal answer (8).

When the subject verbally initiated a communication interaction with a teacher, the most frequent type of interactor, she more often received a verbal (14) rather than nonverbal answer or no response. However, it is of interest that the teachers, in light of their role to develop the communication ability of the language handicapped child, did not reinforce communication through the use of verbal answers in eight instances. The second largest group the subject verbally initiated to were normal children (11) although she again received little reinforcement (one verbal answer). There were only two instances of VI(u) and four of VI(g) for which she received no response which is not remarkable.

The above results indicate the subject is more often talked to (166) in comparison to initiating talking to others (38); teachersand then normal children are the most frequent interactors; the subject usually does not respond verbally when talked to; the subject interacted more with normal children than with handicapped children.

In comparing this information with the sociometric data on this subject one can see the pattern of her choices of normal children is more positive than

for handicapped children in that she gave three positive choices and one negative choice to NC and the reverse to HC. Also she was one of the socially neutral subjects when choices received were analyzed. This information supports the notion there is a relationship between communication and social choices at least as the subject viewed it. Her lack of communication ability, however, seemed to affect her social acceptance by normals in that only one normal child chose her whereas she received two negative and one positive choice from HC. Because the numbers are so small it might be better to interpret her social status as related to communication ability similarly to the Meyerowitz (1967) finding that EMH children were more apt to be disregarded than accepted or rejected. The lack of verbal reinforcement to her communication attempts and the lack of response on her part would support the notion stated by Kohn (1966) that "the child gets what he puts out."

Because the subject frequently demonstrated "looking at" behavior which could suggest a desire for initiating communication but was not categorized as a nonverbal initiation, an analysis of the type of response the subject received when she looked toward an interactor was done. The sequence of subject look-others response revealed that usually "looking" received "no response"(t=27, hc=11, nc=13, g=4). But the two interactor groups who responded verbally following the subject's looking showed the same pattern as above in that teachers and normal children verbally answered three times each. Therefore, if the subject was using looking behavior as a communication attempt, a speculative theory, she rarely received reinforcement. And, in fact, at one time received negative reinforcement when a NC said to her, "Don't look at me."

DISCUSSION

One of the reasons handicapped children are placed into the mainstream of education is to utilize the modeling potential of normal children. The communication interaction and sociometric results of this pilot study with preschool handicapped and model/normal children suggests normal children may not be providing the social or verbal roles which models are intended to provide. On the otherhand, sociometric choices of the handicapped children and observed behavior of the focal subject indicated young children may be noticing qualities of normalacy: HC tended to choose the model children to play with and talk to and the focal subject interacted more with normal children more than with handicapped children. If the normals are socially valued by the handicapped, albeit taking the risk of being rejected, then perhaps model children do provide a positive role in social development of the handicapped child.

The question remains unanswered as to how model children provide the impetus for increasing the social and verbal ability of the handicapped child. It does not appear from the results of this study that nonhandicapped preschool children will, by their presence in the room, necessarily positively contribute to the verbal and social learning of the handicapped child. The head teacher was aware of the possibility model children were not frequently interacting with handicapped children and providing other than distant modeling behavior or opportunities for observational learning for HC. Therefore, while demonstrating teaching techniques to her teacher trainees she would provide interaction situations by having handicapped and model children ask or tell each other messages. Data from the focal animal study suggested teachers should also be more aware of their responsibility to provide verbal reinforcement for verbal attempts on the part of a communication handicapped child and that the ratio of talking to a child versus receiving communication

from a child should be evaluated. (A teacher can become primarily a talker rather than a listener/reinforcer depending on how s/he views the teacher role or adult-child relationship.)

Intervention on the part of a teacher may be necessary in order to make maximum use of model children and to develop social and/or verbal interactions between mainstreamed handicapped and normal children. However, if teacher intervention into model children's behavior is necessary for providing social and communication models for the handicapped child, another issue is raised. What are the ethical considerations of a teacher utilizing a normal child in such a direct manner? One could suggest the normal child becomes less of an educational consumer and more of a "teaching tool." In attempting to improve the status of the handicapped child, can a teacher ethically use the behavior of another child? This is an issue which needs careful consideration and study. For example, if the normal child benefits from this interaction, such as developing appreciation for the value of human differences, is that a strong enough reason to rationalize the use of a model child in a classroom? Perhaps the emphasis should be placed on intervention with the handicapped child through other channels than use of model children.

Although the handicapped children in this study were more frequently rejected on friendship choices, a finding often noted in other studies on mainstreamed handicapped children, it also appeared the severity of the communication disorder of these children had a relationship to their social acceptance. Better communicators within the handicapped group had more positive social relationships with the model children and others with similarly developed verbal skills than they did with the more severely verbally handicapped. In that the relationship between social skills and communication ability has frequently been noted, it becomes important to 1) further investigate if the salient rejection feature of the handicapped child is

related to verbal ability more than to other aspects of the handicapping condition and 2) if so, place emphasis on increasing the verbal communication ability of the handicapped child rather than utilizing teacher intervention into the model child's behavior. In other words, it may not be necessary to intervene in the development of social skills of the handicapped child through social skill coaching nor through providing social models but rather through increasing the speech and language level of the handicapped child and modifying negative overt behaviors so s/he becomes a more attractive recipient and reinforcer of friendships with peers. Follow up study of the social status of children who increased their verbal ability would be of interest in that the data from this study already suggests that those approaching verbal normalacy were more accepted.

Another area of interest would be to investigate the reasons children make positive and negative friendship choices. Although some of the reasons offered by the preschoolers in this study suggested instability of choices, several reasons indicated that for specific children there may be negative or positive aspects of the behavior of a HC which should be developed (plays ball, knows my name) or diminished (does a little bad stuff) to increase social acceptance. Rather than attempting to draw conclusions from adult thinking as to what enhances friendship development in young children, it may be more expedient and realistic to ask the children what they are thinking.

This study looked only at communication events and not at the content or linguistic quality of the verbal interactions. Further study is needed to investigate the syntactical and semantic output and message content of the verbalizations to ascertain if models are changing their verbal output when talking to communication handicapped children. When verbal modeling from a normal child occurs, does it have a positive effect on increasing the

communication sophistication of the handicapped child? Or are the most frequent verbal interactors found in this study, the teachers, already assuming that role effectively and thus the use of model children has questionable value? If the teacher ratio were lower than that of this classroom, would verbal and social interactions between communication handicapped and normal children increase? If normal children possibly decrease the sophistication of their verbal output when interacting with communication handicapped children, would communication handicapped children increase the quality of their verbal performance when interacting with normal children? This would support the notion that the presence of model children would be a stimulus for language development for the communication handicapped child. Analysis of verbal interactions as well as frequency of interaction in the naturalistic setting may provide the answer to these and other questions related to the use of mainstreaming as an educational alternative.

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APPENDIX

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Seth Communication NC No. of observations on scans 34

Participants and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	2	4	0	1	7
nc	x	x	x	3	5	0	0	8
hc	x	x	x	0	0	0	0	0
g	x	x	x	1	0	0	0	1
u	x	x	x	0	0	0	0	0
Total	5	8	9	6	10	0	1	16/39

Nearest Neighbor								Total	Soc. Choices Given	Rc'd
Curtis(NC)	x	0	1	1	1	0	0	3	-2	-2
Rachel(NC)	x	0	6	2	2	0	0	10	+2	0
Reem(NC)	x	0	2	2	3	0	0	7	-1	+1
Seth(NC)	x	x	x	x	x	x	x	x	x	x
Brent(HC-N)	x	0	3	2	0	0	0	5	0	+2
Greg(HC-L/N)	x	0	1	0	0	0	0	1	+2	+2
Laurie(HC-S/L)	x	0	0	0	0	0	0	0	-1	0
Tammy(HC-L)	x	0	3	2	1	0	0	6	0	+1
Robert(HC-L)	x	0	0	0	0	0	0	0	0	x
teachers	x	0	8	3	4	0	1	16	x	x
Total		0	24	12	11	0	1	48		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Reem Communication NC No. of observations on scans 31

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	3	3	1	0	7
nc	x	x	x	3	4	0	0	7
hc	x	x	x	1	0	0	0	1
g	x	x	x	0	0	0	0	0
u	x	x	x	0	0	0	0	0
Total	8	5	9	9	7	1	0	15/39

Nearest Neighbor								Total	Soc. Choices Given	Soc. Choices Rc'd
Curtis(NC)	x	0	1	2	1	0	0	4	0	+2
Rachel(NC)	x	0	2	4	2	0	0	8	+1	0
Reem(NC)	x	x	x	x	x	x	x	x	x	x
Seth(NC)	x	0	0	2	4	0	0	6	+1	-1
Brent(HC-N)	x	0	1	0	2	0	0	0	+2	0
Greg(HC-L/N)	x	0	0	0	1	0	0	1	0	0
Laurie(HC-S/L)	x	0	1	1	0	0	0	2	-2	+2
Tammy(HC-L)	x	0	3	1	0	1	0	5	0	+2
Robert(HC-L)	x	0	0	1	0	0	0	1	-2	x
teachers	x	4	6	4	3	1	0	18	x	x
Total		4	14	15	13	2	0	45		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Curtis Communication NC No. of observations on scans 35

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	3	8	0	0	11
nc	x	x	x	1	3	0	0	4
hc	x	x	x	0	0	0	0	0
g	x	x	x	0	0	0	0	0
u	x	x	x	0	0	0	0	0
Total	4	8	12	4	11	0	0	15/39

Nearest Neighbor	t.o.	N	CP	VI	VR	NVI	NVR	Total	Soc. Choices Given	Soc. Choices Rc'd
Curtis(NC)	x	x	x	x	x	x	x	x	x	x
Rachel(NC)	x	0	4	1	0	0	0	5	+2	+1
Reem(NC)	x	0	3	0	2	0	0	5	+2	0
Seth(NC)	x	0	2	0	2	0	0	4	-2	-2
Brent(HC-N)	x	0	2	0	3	0	0	5	0	0
Greg(HC-L/N)	x	0	3	0	0	0	0	3	0	+1
Laurie(HC-S/L)	x	0	2	1	0	0	0	3	0	-2
Tammy(HC-L)	x	2	3	0	2	0	0	7	0	-1
Robert(HC-L)	x	0	0	0	0	0	0	0	-2	x
teachers	x	1	6	3	10	0	0	20	x	x
Total		3	25	5	19	0	0	50		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Rachel Communication NC No. of observations on scans 35

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	2	5	0	0	7
nc	x	x	x	2	3	0	1	7
hc	x	x	x	2	0	0	0	2
g	x	x	x	4	0	0	0	4
u	x	x	x	0	0	0	0	0
Total	4	2	14	10	8	0	1	20/39

Nearest Neighbor								Total	Soc. Choices Given	Soc. Choices Rc'd
Curtis(NC)	x	0	3	3	0	0	0	6	+1	+2
Rachel(NC)	x	x	x	x	x	x	x	x	x	x
Reem(NC)	x	0	4	3	2	0	1	10	0	+1
Seth(NC)	x	0	2	1	4	0	0	7	0	+2
Brent(HC-N)	x	0	3	2	2	0	0	7	+1	+1
Greg(HC-L/N)	x	0	0	4	1	0	0	5	+1	0
Laurie(HC-S/L)	x	0	2	1	1	0	0	4	-2	0
Tammy(HC-L)	x	0	2	0	3	0	0	5	+1	0
Robert(HC-L)	x	0	1	1	0	0	0	2	-2	x
teachers	x	0	4	5	5	0	0	14	x	x
Total		0	21	20	18	0	1	60		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Brent Communication HC-N No. of observations on scans 30

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	1	5	0	1	7
nc	x	x	x	1	0	0	0	1
hc	x	x	x	0	0	0	0	0
g	x	x	x	1	0	2	0	3
u	x	x	x	1	0	0	0	1
Total	9	6	12	4	5	2	1	12/39

Nearest Neighbor								Total	Soc. Choices Given	Rc'd
Curtis(NC)	x	0	3	0	2	0	0	5	0	0
Rachel(NC)	x	0	2	2	1	1	1	7	+1	+1
Reem(NC)	x	0	2	0	2	0	0	4	0	+2
Seth(NC)	x	0	3	1	0	1	1	6	+2	0
Brent(HC-N)	x	x	x	x	x	x	x	x	x	x
Greg(HC-L/N)	x	0	2	1	0	0	0	3	+1	0
Laurie(HC-S/L)	x	0	1	1	0	0	0	2	-2	-1
Tammy(HC-L)	x	0	4	0	1	0	0	5	0	-3
Robert(HC-L)	x	0	1	0	0	1	0	2	-2	x
teachers	x	0	8	2	6	1	1	18	x	x
Total		0	26	7	12	4	3	52		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Greg Communication HC-L/N No. of observations on scans 23

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	0	5	0	0	5
nc	x	x	x	0	0	0	0	0
hc	x	x	x	2	1	0	0	3
g	x	x	x	0	0	0	0	0
u	x	x	x	0	0	0	0	0
Total	16	4	11	2	6	0	0	8/39

Nearest Neighbor								Total	Soc. Choices Given	Rc'd
Curtis(NC)	x	0	0	0	1	0	0	1	+1	0
Rachel(NC)	x	0	3	0	1	0	0	4	0	+1
Reem(NC)	x	0	0	0	0	0	0	0	0	0
Seth(NC)	x	0	0	0	0	0	0	0	+2	+2
Brent(HC-N)	x	0	3	0	0	0	0	3	0	+1
Greg(HC-L/N)	x	x	x	x	x	x	x	x	x	x
Laurie(HC-S/L)	x	0	5	2	1	0	0	8	-1	-1
Tammy(HC-L)	x	0	2	0	1	0	0	3	-2	-1
Robert(HC-L)	x	0	1	0	1	0	0	2	+1	x
teachers	x	0	6	0	8	0	0	14	x	x
Total		0	20	2	13	0	0	35		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Laurie Communication HC-S/L No. of observations on scans 35

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	1	9	0	0	10
nc	x	x	x	0	1	0	0	1
hc	x	x	x	0	2	0	0	2
g	x	x	x	2	0	0	0	2
u	x	x	x	0	0	0	0	0
Total	4	6	14	3	12	0	0	15/39

Nearest Neighbor								Total	Soc. Choices Given	Soc. Choices Rc'd
Curtis(NC)	x	0	1	0	1	0	0	2	-2	0
Rachel(NC)	x	0	5	0	2	0	0	7	0	-2
Reem(NC)	x	0	4	0	0	0	0	4	+2	-2
Seth(NC)	x	0	0	0	0	0	0	0	0	-1
Brent(HC-N)	x	0	1	1	1	0	0	3	-1	-2
Greg(HC-L/N)	x	0	2	2	4	0	0	8	-1	-1
Laurie(HC-S/L)	x	x	x	x	x	x	x	x	x	x
Tammy(HC-L)	x	0	1	1	0	0	0	2	+1	+1
Robert(HC-L)	x	1	1	0	0	0	0	2	+1	x
teachers	x	0	6	3	11	0	0	20	x	x
Total		1	21	7	19	0	0	48		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Tammy Communication HC-L No. of observations on scans 26

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	0	5	0	0	5
nc	x	x	x	0	1	0	0	1
hc	x	x	x	0	1	0	0	1
g	x	x	x	0	0	0	0	0
u	x	x	x	0	0	0	0	0
Total	13	4	15	0	7	0	0	7/39

Nearest Neighbor								Total	Soc. Choices Given	Rc'd
Curtis(NC)	x	0	4	0	3	0	0	7	-1	0
Rachel(NC)	x	1	2	0	1	0	0	4	0	+1
Reem(NC)	x	0	3	0	1	0	0	4	+2	0
Seth(NC)	x	0	3	0	3	0	0	6	+1	0
Brent(HC-N)	x	0	2	0	1	0	0	3	-2	0
Greg(HC-L/N)	x	0	0	0	0	0	0	0	-1	-2
Laurie(HC-S/L)	x	0	2	0	1	0	0	3	+1	+1
Tammy(HC-L)	x	x		x	x	x	x	x	x	x
Robert(HC-L)	x	0	1	0	1	0	0	2	0	x
teachers	x	0	7	0	6	0	0	13	x	x
Total		1	24	0	17	0	0	42		

SUMMARY OF OBSERVATIONS AND SOCIOMETRICS

Child Robert Communication HC-L No. of observations on scans 22

Events and States

Interactors	t.o.	N	CP	VI	VR	NVI	NVR	Total
t	x	x	x	1	10	0	1	12
nc	x	x	x	0	0	0	0	0
hc	x	x	x	0	0	0	0	0
g	x	x	x	0	0	0	0	0
u	x	x	x	2	0	0	0	2
Total	17	2	6	3	10	0	1	14/39

Nearest Neighbor								Total	Soc. Choices Given	Soc. Choices Rc'd
Curtis(NC)	x	0	0	0	0	0	0	0	x	-2
Rachel(NC)	x	0	0	0	0	0	0	0	x	-2
Reem(NC)	x	0	0	0	0	0	0	0	x	-2
Seth(NC)	x	0	0	0	0	0	0	0	x	0
Brent(HC-N)	x	0	0	1	2	0	0	3	x	-2
Greg(HC-L/N)	x	0	1	0	1	0	0	2	x	+1
Laurie(HC-S/L)	x	0	1	0	0	0	0	1	x	+1
Tammy(HC-L)	x	0	0	0	0	0	0	0	x	0
Robert(HC-L)	x	x	x	x	x	x	x	x	x	x
teachers	x	2	7	4	10	0	1	24	x	x
Total		2	9	5	13	0	1	30		