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THE UNIVERSITY OF ALBERTA

Social Skills Training with Socially Withdrawn Children who have Multiple Physical Handicaps

by

DONALD CHARLES CROFT

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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Abstract

This study at the Glenrose School Hospital was designed investigate the application of a social skills training regime, known as the PEERS Program, to four socially withdrawn children who have multiple physical handicaps. A multiple-baseline across-subjects design was used, with one socially withdrawn child being in an attention control condition.

The application of the PEERS Program effectively raised the rates of positive social behaviour, towards peers at recess, of two of the target children to within normal limits for nonhandicapped children in community schools. These gains were maintained during a followup period of ten to fourteen weeks. The PEERS Program was not successful with a third child, whereas an intensive peer-pairing procedure demonstrated limited, but worthwhile, progress. The attention control child did not improve in the absence of treatment, nor with a peer-pairing procedure. The treatment effects were socially validated via peer roster ratings, teacher ratings and normative behaviour comparisons.

Implications of these findings related to the generally low rates of positive peer interaction of multiply physically handicapped children, to "spillover" effects in a treatment classroom and to the importance of oral communication and play skills in a social skills training program.

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INTRODUCTION

The Importance of Peer Interaction

The ability of a child to initiate positive social interaction with a peer and maintain a satisfactory relationship for even a short period of time is an important developmental achievement. In a more global sense McCandless (1967) stated that "Adequate socialization is perhaps the human beings most important single accomplishment" (p. 17). Peer social interaction should be a major component of this socialization. In many studies of childhood socialization peer interaction has often appeared to be incidental to future development compared to the emphasis given to parent-child interaction (Lewis & Rosenblum, 1975).

There has been a recent trend noted in the literature towards more investigations into the actual importance of peer relationships (Conger & Keane, 1981; Kent & Rolf, 1979). Some researchers indicated that complex social development is a direct function of increased participation in peer interaction (Mueller, 1972). There has been supporting data which indicates that peer interaction provides unique learning experiences for the developing child which are independent of parental influence (Lewis & Rosenblum, 1975; Mueller & Brenner, 1977). The quality of a child's relationships with his peers is a significant factor contributing to the child's psychosocial adjustment (Rolf, Sells & Golden, 1972). The recent recognition of the role of minimal social interaction in behaviour

disorders has been the impetus for peer-based research (Conger & Keane, 1981).

Developmental Problems of Social Withdrawal

Several researchers have noted that there seems to be a range of opinion regarding the validity of a positive association between childhood social isolation and significant problems in adult social functioning (Kohn, 1977; Kohn & Clausen, 1955; Rolf & Hasazi, 1977). One end of this continuum has been the historical association between autism and the general failure of the child to develop appropriate speech and social play behaviour (Lovaas, Freitas, Nelson & Whalen, 1974). Possibly at mid-point would be the evidence indicating that unpopular elementary grade children where disproportionately represented in contacts with psychiatric facilities as young adults. This evidence was from an eleven year follow-up study by Cowen, Pederson, Babigan, Izzo and Trost (1973). However the reader is cautioned against drawing firm conclusions from such a retrospective study because of possible methodological limitations (Hops, Walker & Greenwood, 1979; Strain, Cooke & Apolloni, 1976). Strain et al., (1976) in their review of relevant studies indicated that social withdrawal was a problem in fifteen percent or more of the referrals made of children to psychological services. The other end of the scale has been the evidence which suggested that socially withdrawn children generally grow up to live in a quiet manner, but with only minor restrictions in social contact (Michael, Morris & Soroker, 1957; Morris, Soroker & Burns, 1954). It seemed that evidence linking childhood social withdrawal with inadequate adult socialization was somewhat equivocal.

Some of the controversy about childhood social withdrawal and the lack of firm evidence regarding its implications may have been related to general referral processes. Hops, Fleischman, Guild, Paine, Walker and Greenwood (1978) wrote:

> Lonely, friendless children, who interact infrequently with their peers, either on the playground or in the classroom, are not easily identifiable, and consequently, are seldom referred for special services in the school setting (p. 2).

Perhaps such children remained not easily identifiable as adults also.

There was considerable evidence which indicated that there is a general consistency to patterns of peer interaction, at least during the childhood years (Keasy, Note 1; Waldrop & Halverson, 1975). With regards to a "positive-outgoing" behavioural pattern, there seemed to be general agreement that such social competency was related to superior academic achievement and adequate social adjustment (Michelson & Wood, 1980). However a pattern of social isolation was characterized as a "handicapping condition" (Hops et al., 1979, p. 49). Social experience with peers has been thought to be a "necessity in childhood socialization" (Hartup, 1976, p. 203). As such there is a real need to modify the social behaviour of socially withdrawn children, rather than just to wait until they are "ready" to play (Strain et al., 1976). The need for such modification seems clear, even if it is just on the basis of facilitating relatively short term social adjustments or giving experience at having a friend (Conger & Keane, 1981). It is not enough to simply encourage the child into more peer activities; appropriate instruction in how to socially interact must be given (La Greca & Santogrossi, 1980; O'Conner, 1972).

Social Skills Training with Handicapped Children

Historically social skills instruction has received little emphasis in schools (Cartledge & Milburn, 1978), but recently the condition of social withdrawal/isolation has been recognized as an important problem (Conger & Keane, 1981; Michelson & Wood, 1980). Teachers apparently did not previously view social withdrawal as a handicapping condition (Coo & Apolloni, 1976). This view may be because such children do not tend to be disruptive (Hops, et al., 1979).

In terms of special education populations social withdrawal/isolation may be especially problematic. An association between poor peer acceptance and inadequate social skills has been found with the intellectually handicapped (Gottilieb, Semmell & Veldman, 1978), children with learning disabilities (Bruininks, 1978; Bryan, 1978) and emotionally disturbed youngsters (Morgan, 1977). As well, since physically handicapped children do not participate in as wide a range of physical and social settings as nonhandicapped children, their opportunities for initiating peer interaction are reduced (Baker & Wright, 1955); and as a result, this limited participation does "impoverish the experiences necessary for childhood socialization" (Hurlock, 1978, p. 1061).

If the physically handicapped child feels rebuffed or unwanted when they do attempt peer interaction, this could set up a cycle of discouragement and anxiety which reinforces avoidance responses and further impedes social skill development and peer acceptance (Hurlock, 1978; O'Conner, 1972). When children are deprived of peer group acceptance they tend to try and fulfill their companionship

needs with family members (Hurlock, 1978). However adults do not tend towards extended periods of play with children (Hartup, 1976). The handicapped child will not usually have similarly handicapped siblings who could possibly provide the necessary experience to develop specific peer interaction skills (Hurlock, 1978). Given that experience with peers usually provides the context for many motor, language and social skills needed as an adult (Reese & Lipsitt, 1970), the multiply handicapped child may be deprived of many naturally rewarding opportunities to overcome aspects of his developmental delays.

The increased deprivation that the socially withdrawn handicapped child may experience is especially distressing when the child has oral communication difficulties, as "language can not develop in a social vacuum" (Allen, 1974, p. 154). In normal child development the rapid acquisition of language is intimately related to social interactions (Smart & Smart, 1973). As such there have been several investigations with children who have language deficits:

> Communicative competence, the understanding of rules that govern socially appropriate speech, is critical to the child's ability to establish and maintain adequate and appropriate interpersonal relationships (Bryan, Donahue & Pearl, 1981, p. 384).

It is unclear whether social interaction with adults is sufficient to develop the child's communicative competence.

There is a strong possibility that a withdrawn preschooler with speech and language delays will be restricted during his/her opportunities to observe other children interact and to obtain normal amounts of positive reinforcement for attempts at communicating with his/her peers (Strain, Shores & Kerr, 1976). Other studies have

indicated that communication skills, such as: extending an invitation to interact, verbally expressing affection, paying compliments and sustaining a conversation, have been related to peer acceptance (La Greca & Mesibov, 1979; Strain & Fox, 1981). Goodman (1964) explained how the inhibited response of the nonhandicapped to those children who had communication disorders seemed to reduce the range of social behaviours that the handicapped were exposed to. Again it seems that the socially withdrawn child with a communication disorder could get caught easily into a cycle of having decreased opportunities and limited reinforcement to help overcome his/her speech and language disability and/or social isolation.

Having a speech and/or language disorder can be extremely traumatic. Kaufman (1977) explains that:

> People with speech defects sometimes pay a heavy price in terms of rejection, exclusion, attack, overprotection, condescension, and so on (p. 263).

This does not necessarily have to be the situation for children with communication disorders. Such a child can usually acquire a functional range of social communication skills with early detection and treatment of the speech and/or language disorder, reliance on other information processing modalities and special training to stimulate social development (Allen, 1974).

Educational institutions have neglected promotion of social-emotional aspects of child development in special education (Bradtke, Kirkpatrick & Rosenblatt, 1972). Mainstreaming handicapped children into a regular classroom poses a similar problem related to social-emotional development. The common assumption is that mainstreaming will naturally result in increased

positive social interaction and acceptance between the handicapped and their peers (Gresham, 1981). However both La Greca and Santogrossi (1980) and Gresham (1981) in their reviews of numerous related studies found that both these outcomes were problematic for the handicapped. Gresham (1981) suggests that:

> Handicapped children do not vicariously acquire social skills via observation of nonhandicapped models unless they are instructed, trained or reinforced for doing so....These special children are in need of social skills training to increase their rates of positive social interaction, decrease rates of negative social interaction and/or enhance their social acceptance by nonhandicapped peers (p. 140).

These social skills training procedures should be evaluated as to their effectiveness with handicapped children in increasing positive peer interaction and social acceptance.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction to Socialization

For children with multiple physical handicaps, such as speech and/or language delays and motor incoordination, who are described also as socially withdrawn/isolated, a real need exists to determine and evaluate effective social skills training procedures. This is necessary for children who are experiencing problems in being mainstreamed in regular settings and as a preventive measure for such child still institutionalized or still in special classes (Gresham, 1981).

A review of some of the research pertaining to the concept of social withdrawal and to the development of positive peer interaction skills with young children follows. Consideration has been given to issues regarding assessment of social skill deficits and provision of effective and socially valid psychological treatment. Particular emphasis has been placed on the PEERS Program (Procedures for Establishing Effective Relationship Skills) as developed by Hops, et al. (1978). This school-based treatment program has been described and considered with regards to its utility in developing necessary social skills with socially withdrawn children who have multiple physical handicaps.

Conceptualizations of Social Skills and Deficits

The concept of social skill has been a difficult one to define (Conger & Keane, 1981; Gresham, 1981, 1982; Michelson & Wood, 1980) with several definitions being offered (Bellack & Hersen, 1979; Cartledge & Milburn, 1978). Fostery and Ritchey (1979) defined

social competence as follows:

> For the purposes of discussion, let us define socially competent behaviour as those responses which, within a given situation, prove effective, or in other words maximize the probability of producing, maintaining, or enhancing positive effects for the interactor (p. 626).

However this definition is so general that it provides limited clarification of those variables that might determine whether or not one is socially skilled such as:

> a. role, sex, age and social class of those interacting,
> b. the criterion being used for such evaluation, e.g., sociometrics, teacher ratings or behavioural observation or
> c. whether the behaviour is being evaluated in terms of rate, frequency, duration or effects.

Such variables may be important in defining whether or not a child has social skill deficits (Conger & Keane, 1981).

Michelson and Wood (1980) offered their conception of social skills in seven elements:

> (1) Specific, discrete verbal and nonverbal response components determine the adequacy of social behaviour; (2) behavioural repertoires involved in interpersonal situations are primarily learned response capabilities, i.e., skills; (3) as the parameters of adequate social behaviour vary from situation to situation, socially skilled behaviour is situationally specific; (4) socially adept children behave in ways that are both appropriate and effective; (5) social competency obtains maximized reinforcement from the social environment; (6) social skills involve social interactions that have been described as interdependent and reciprocal in nature; and (7) deficits and excesses in social behaviour that are dysfunctional for the individual can be identified, targeted, and remediated by training (p. 251).

There are numerous methods for selecting appropriate social skills for purpose of determining positive treatment goals.

Correlational methods have been used in an attempt to validate social behaviours against sociometric status, teacher ratings and behavioural analysis of outcomes. However differences of opinion regarding what actually constitutes a social skill seemed to confound such investigations as they relate to social withdrawal. For example teachers seemed to value skills related to positive peer interaction considerably less than those associated with classroom order and ease of classroom control (Milburn, Note 2). Other researchers have preferred simply to develop taxonomies and lists of basic social skills based on their own clinical judgment. Both La Greca and Mesibov (1979) and Rinn and Markle (1979) have developed such taxonomies.

Just as some conceptualizations of social skill related to assessment procedures as indicated above, other conceptualizations related more to treatment concerns. Gresham (Note 3) claimed to have borrowed heavily from the "acquisition versus performance" distinction of Bandura (1969, 1977) to develop a conceptualization of social skill difficulties along the following three dimensions:

1. social skill deficits - which are related to not knowing how to interact or not being able to successfully integrate the necessary behaviours, both of which may be associated with social anxiety,
2. performance deficits - which are related to having the requisite social skills, but not performing them at appropriate levels, this probably being associated with lack of opportunities and/or low intrinsic and/or extrinsic motivation factors, and
3. self-control deficits - which are related to having a lack of

adequate behavioural controls to inhibit impulsive, disruptive or aggressive social behaviour.

Descriptions of Socially Skilled and Socially Withdrawn Children

One indication of the social skill level of a child is the degree to which the child is accepted by his/her peers. Social acceptance has been predicted by the amount of giving and receiving of positive social reinforcement (Charlesworth & Hartup, 1967; Keller & Carson, 1974). Similarly social rejection has been predicted by the amount of negative social interaction that occurs (Shores & Strain, 1977; Strain, Shores & Kerr, 1976). This quality of interdependency and reciprocity is a principal characteristic in child-child interaction (Greenwood, Walker, Todd & Hops, 1978; Shores & Strain, 1977).

Certain other specific social skills facilitate positive peer interaction. Behaviours related to participation, cooperation, communication and validation/support have been reported. Such behaviours have been exhibited more by socially accepted than socially rejected children. Specific verbal behaviours like greeting others, asking for information, giving information and effective leave taking have been reported by Gottman, Gonso and Rasmussen (1975) as highly predictive of social acceptance. However investigations into intervention directed at modifying a child's low sociometric status often show that initial positive treatment effects last only for a very short time, particularly if there is followup longer than 2 weeks after postassessment (Asher, Oden & Gottman, 1976).

Socially withdrawn children have been operationally defined in terms of their having rates of social interaction at levels

considerably lower than their peers (O'Conner, 1969, 1972). Such rates are often determined through daily observation and recording and they are compared to normative levels of observed social interaction (Hops et al., 1978).

Normative factors are important, as both theoretical and empirically based conceptions of socially skilled and socially withdrawn children have been criticized for their "lack of sensitivity to developmental issues in the selection of target behaviour deemed relevant for intervention" (Conger & Keane, 1981, p. 493). There are differential rates and types of peer interactions associated with age and sex factors. A preference for same-sex interaction has been documented across all levels of childhood (Hartup, 1970). Hops and Greenwood (1981) reviewed several studies and concluded that "females prefer more sedentary interaction, with fewer peers; in contrast, males are more active, with wider ranging contacts" (p. 352). Age has been cited as a factor related to both frequency and quality of interaction (O'Conner, 1975; Rubin, Maioni & Hornug, 1976). Data related to preschoolers does not necessarily generalize to school-age children (Achenbach, 1978). It is important to determine the specific social skills necessary at particular age levels (Conger & Keane, 1981). Combs and Slaby (1977) believed that:

> Social skills cannot be trained, practiced, or researched effectively in isolation from the total "normal" peer group setting (p. 164).

There seems to be considerable variation in the literature as to what behaviours or qualities qualify a child to be described as socially withdrawn. Very often children participating in peer

interaction research have been identified by sociometric procedures or rates of interaction and occasionally by both approaches (Gresham and Nagle, 1980; La Greca & Santogrossi, 1980). Gottman (1977) expressed concern that children identified by either approach may not be equivalent:

> There is no relationship between relative frequency of peer interaction and acceptance...the two definitions of social isolation may be tapping two fundamentally different constructs (p. 515).

Gottman (1977) conceptualized the withdrawn child as "tuned out" (alone and off task) and as "hovering" (shy and fearful), but he could find "no support for describing a low-frequency of peer interaction as [characteristic of] a withdrawn child" (p. 517). Of apparent crucial importance to this description of a socially withdrawn child is that the child is actually ignored by peers, rather than actively rejected (Conger and Keane, 1981).

Socially withdrawn children do not initiate peer interactions or respond to peer initiations (Patterson & Reid, 1969). Several researchers have characterized them by their poor academic performance (Bonney, 1971; Buswell, 1953) and learning difficulties (Amidon & Hoffman, 1965). Such education problems "may be, in part, a result of restrictions in sensory stimulation associated with low social-performance levels" (Strain, Cooke & Appoloni, 1976, p. 101). Their social interaction is usually less verbally oriented than other children and they are more often found in solitary activities (Greenwood et al., 1978). When such a child is alone, adults may reinforce the nonsocial behaviour by focusing attention on the child (Hops, et al., 1978). Sometimes such a child is referred to as

independent and self-sufficient by teachers because he may work independently for long periods of time (Hops, et al., 1978). Kaufman (1977) describes the mildly or moderately withdrawn child as being anxious and having a low self-concept probably as a result of a lack of social competence. Kaufman (1977) added that:

> They are friendless loners who are apparently unable to avail themselves of the joy and satisfaction of social reciprocity (p. 207).

Given the variety of descriptions/definitions of the socially withdrawn child, there certainly is a need for "research designed to discriminate among accepted, rejected, and isolated children" (Conger & Keane, 1981). Until this is accomplished and for the purposes of this literature review the descriptor "socially withdrawn" will apply to all the friendless loners. They were also previously referred to as socially isolated, as having low rates of peer interaction and/or being socially ignored.

Developmental Handicaps and Social Withdrawal

Strain, Cooke and Appoloni (1976) reported that children deficient in social behaviour frequently have other deficits such as motor, intellectual and/or language delays. They described them as having "not acquired the basic vocal and motor-response topographies necessary for mutually reinforcing interactions with peers" (p. 98). Research has suggested that handicapped children are poorly accepted in mainstream classrooms (Gresham, 1981). It may be that the motor, intellectual and/or language delays are associated with this poor acceptance. For example, Hops et al. (1978), described the following scenario:

> When asked to join a game, they may not know the rules, or stumble, play poorly, perhaps losing

> the game for their team. Consequently they are asked to play less frequently in the future (p. 3).

There are additional factors that probably have contributed to a particular handicapped child learning to play in isolation such as: "parental over-restrictiveness, lack of opportunity for social play and early rebuffs in social interaction with peers" (Kaufman, 1977, p. 208).

So far this review has indicated that the theoretical concepts and clinical practices regarding what constitutes being socially skilled or socially withdrawn have been quite varied. Issues related to assessment, treatment and normal development have been complicating factors in agreements being reached. Consideration was given to the specific problem of social withdrawal for those children who have motor incoordination and/or speech/language deficits. It was proposed that they may have lacked many essential opportunities and considerable reinforcement necessary for the development of appropriate peer interaction skills. The socially unskilled child who is alone not by choice is seen as categorically different than another child who has the necessary skills and yet chooses to play alone. It is the premise of this study that the handicapped child is generally less skilled at peer interaction and hence less successful. As a result he or she may become quite discouraged or anxious and consequently less willing to try. All these factors probably contribute to the observed social withdrawal. However it is proposed that the necessary social skills can be taught and reinforced and as such enhance the handicapped child's chances for more successful current and future social integration.

Assessment of Peer Interaction

Introduction

Effective and meaningful social skills training relies on the accurate feedback provided by reliable, valid and comprehensive assessment procedures (Combs & Slaby, 1977). Usually children are referred for treatment of problematic behaviour by parents or teachers through psychological evaluation or case conference. If such a child is labelled as "socially withdrawn", this may ignore the situational factors that affect the behaviours and not afford a "skill training prescription which is tailored to the individual skill assets and deficits of each youngster" (Spraſkin, 1980, p. 14). How a child is initially diagnosed as requiring treatment however has not been thoroughly investigated (Cone and Hawkins, 1977). This lack of investigation may be related to the "questionable utility of referral or screening information for behavioural intervention" (Greenwood, Walker, Todd & Hops, 1979, p. 639). Assessment should help to pinpoint specific treatment targets and/or to specify what factors are affecting the behaviour.

Three common methods of identifying socially withdrawn children and measuring their socially interactive behaviour are behavioural observation (Walker & Hops, 1976), peer sociometric ratings (Oden & Asher, 1977) and teacher ratings (Greenwood, Walker, Todd & Hops, 1977). Some investigations use one assessment measure solely, whereas others use various combinations.

Naturalistic Behaviour Observation

The use of naturalistic observation for the assessment of children's social skills has a great deal of face validity

(Gresham, 1981) and has been used to study social withdrawal (Cooke & Apolloni, 1976; Shores & Strain, 1977) and the effects on peer social interaction of integrating handicapped children with the nonhandicapped (Apolloni & Cooke, 1978). The numerous observational systems vary according to the recording technique, sampling strategy and the number of behaviours to be observed (Sacket, 1978). The data is often presented as simple frequency counts or as percentages of time. This may satisfy the clinician's need for a practical system to be employed by others in a school or mental health facility (Michelson & Wood, 1980). Researchers however often require the sequential recording of complex dyadic interactions in order to specify antecedent and consequent events in detail for program development. Michelson and Wood (1980) claim that:

> Most observation systems that target social skills have fallen between these two needs, as neither researchers nor the practitioners have adequate natural observation techniques (p. 259).

Direct observation methods have several advantages. First, they are particularly "sensitive" and are more likely to reflect changes as a result of treatment than teacher ratings or sociometrics (Gresham, 1981). Second, with refinements in observer codes and the training of observers, many of the sources of bias can be minimized and the reliability can be brought under control (see Foster & Cone, 1980; Kent & Foster, 1977, for a discussion of the methodological problems and solutions). The reliance on relatively objective operational definitions produces data that require a minimal amount of inference as to what the constructs mean. As such these data are the "bottom line" for establishing functional relationships between various aspects of social interaction (Foster & Ritchey, 1977).

Naturalistic observation procedures do have problems. Beyond the many sources of bias referred to previously, there are concerns as to its validity. These concerns are related to the various research designs associated with it and/or to the development of operationalized codes to describe the systems (Foster & Ritchey, 1977; Gottman, 1977). There are also concerns as to the social validity of these systems (Van Houten, 1979). Other concerns about direct observation methods relate to the following: the limitations of generalizing from behaviours observed in one situation to another (Goldstein & Kanfer, 1979), the relative cost efficiency of various procedures (Sprafkin, 1980), the generally limited information that is provided regarding the reliability and validity of various instruments (Walls, Werner & Bacon, 1977). In addition, studies have found that when global rates of peer interactions (e.g. frequency) are recorded, the corresponding correlations with measures of sociometric status suggest concurrent validity is equivocal at best (Asher & Hymel, 1980; Gottman, 1977). Foster and Ritchey (1977) concluded that:

> Given these disadvantages naturalistic assessments of social behaviour should not be used as sole indices of social skill level (p. 145).

Sociometric Procedures

Some researchers argue that low rates of social interaction are not as predictive of later social adjustment problems as are various sociometric measures (Gottman, Gonso & Rasmussen, 1975). Although sociometric status (e.g. peer nomination and peer rating) has not been a traditional assessment measure, there are increasing numbers of investigations in social skills training which are using them as

selection, outcome and social validation measures (Gresham & Nagle, 1980; La Greca & Santogrossi, 1980). The peer nomination technique (Moreno, 1934), as it is commonly used, asks children to name a number of their best friends or those whom they would like to play with. At times a negative peer nomination method has also been used as a means to identify those children who are actively disliked and/or those who are actually ignored by their peers (Hartup, Glasser & Charlesworth, 1967). Although this additional procedure seemed to improve test-retest reliabilities (Dunnington, 1957), it has been criticized on ethical grounds. It is possible that negative nominating could serve as a stimulus to increase negative interactions with unpopular children (Foster & Ritchey, 1977).

Peer rating procedures (Roistacher, 1974) require that each child is to be rated by every other child on a three to seven point Likert type scale with reference to a specific question such as "How much would you like to play with ..... at recess?". Several studies suggested that peer rating sociometrics tend to be more stable than the nomination procedures described above (Asher, Oden & Gottman, 1976). For the "play with" rating scale a test-retest correlation of .82 (Oden & Asher, 1977) and a stability coefficient of .81 (Asher & Singleton, 1979) have been reported. Such sociometric measures have reasonable predictive validity (Cowen et al., 1973) and they have an advantage over nomination methods in that each child is considered by every other child (Greenwood, Walker & Hops, 1977).

Sociometrics do have several disadvantages. First, they seem to be impractical and because of reactivity they are also inappropriate for various single subject or time series designs (Gresham, 1981). Second, they do not provide information on the child's difficulties

or competencies or on situational determinants, all of which are needed to design intervention strategies (Foster & Ritchey, 1977). Third, sociometrics are less cost efficient and possibly less valid than teacher rating systems (Hops & Greenwood, 1981). However when sociometrics are not used as the only criteria, they can be useful for both screening and social validity purposes (Foster & Ritchey, 1977). They provide a general view regarding the overall consequences of the child's pattern of social interaction. The child could be accepted, rejected or neglected by peers.

Teacher Ratings

As mentioned previously teacher ratings are a cost efficient way of providing initial screening and subsequent referral of child for further evaluation of social interaction difficulties (Michelson & Wood, 1980). The value of such ratings depends upon the opportunities that the teacher has had to actually observe situations where the specified behaviours might occur. Other factors that might detract from the value of the ratings include "demand characteristics, personal biases, expectancies, operational understanding of the behaviour to be rated, response set, and carelessness" (Michelson & Wood, 1980, p. 256). Serious considerations have been raised by Kazdin (1977b) regarding the general lack of attention to determining the psychometric qualities of the rating scales beyond that of face validity. Accordingly Gresham (1981) suggests that teacher ratings should not be used as primary outcome measures, however they do provide a measure of how the child is viewed by others, which is one aspect of social validation.

Social Validity

Kazdin (1977b) stated that: "Social validation helps bridge experimentation and clinical work and research and practice which is an important advance" (p. 438). When used to evaluate treatment effectiveness naturalistic observations, sociometric procedures and teacher ratings all provide relative degrees of social validity. In many cases of treatment evaluation, raw assessment or behaviour observation data is judged by statistical or graphic analysis techniques. Another criteria for evaluating psychological treatment is its social acceptability or social validity.

Kazdin (1977b) and Wolf (1978) have suggested that there are four questions basic to social validity issues:

> (1) Are the behaviours selected for treatment important to, or consistent with the goals of, the child or significant adults in the child's environment? Parent, teacher and child interviews are useful in determining the social significance.
>
> (2) Do the goals of treatment justify the procedures used, such as reward systems or aversive techniques? Again interviews help to determine the social appropriateness of the procedures.
>
> (3) How does the performance of the child compare with peers that do not require treatment? Social comparisons are made by developing normative standards through behavioural observation.
>
> (4) What do judges with special expertise have to say about the behaviours of the child before and after treatment? Such subjective evaluation makes use of teacher and peer rating procedures.

Rather than simply determining the child's need for treatment according to interview and rating data, the use of normative comparisons can be a valuable addition to the decision making

process. Normative data could be collected on peers within the same setting and at the same time as it is collected on the target child (Patterson, 1974; Walker & Hops, 1976). Careful scrutiny of such normative data may indicate the presence of normal, but fluctuating, stimulus conditions which are affecting the target child's behaviour. Sometimes normative data reflects a large scale sampling procedure within similar settings but across a wide variety of actual locations (Hops & Greenwood, 1981). One difficulty with normative data however is that it is not usually possible to compare various measures of social interaction because of the differing operational definitions and collection procedures used.

There are potential problems in using normative data to evaluate treatment variables. It is possible that the peer standards of socially acceptable behaviour are not necessarily acceptable to society at large (Foster & Ritchey, 1977). Also there may be times when normative levels of performance are actually inadequate if the therapeutic goal is to raise the overall standards. Generally however "treatment programs focus upon individuals who might function in natural settings if their behaviours conformed to normative standards" (Kazdin, 1977b, p. 440). As such normative peer data on social interaction variables could be a valuable criterion to help evaluate the clinical significance or social validity of treatment intervention for socially withdrawn children.

Relative Contributions of Various Assessment Procedures

Although the value of assessment in identifying socialization problems seems well established (Combs & Slaby, 1977; Sprafkin, 1980), problems have been identified for each of naturalistic

observation, sociometric procedures and teacher ratings. Both peer and teacher ratings appear to be less "sensitive" than behavioural observations in measuring change during and after treatment (Greenwood, Walker & Hops, 1977) and to be less able to pinpoint specific behaviours that need to be changed (Hops & Greenwood, 1981). Observational procedures on the other hand seem to be mostly based on face validity considerations (Conger & Keane, 1981). Some researchers argue that low rates of peer interaction as determined by behavioural observation are not necessarily even problematic (Gottman, Gonso & Schuler, 1976). In addition the use of observation data solely might lead to invalid conclusions of effectiveness. For example Oden and Asher (1977) stated that:

> A child's interaction with peers could increase and the peers might still not like or even accept the child (p. 496).

It is difficult to determine which measure to use. One research study did compare them directly against each other and found significant positive correlations between behaviour observations, sociometric nomination scores and teacher rankings (Greenwood, Walker, Todd & Hops, 1977).

If the three various measures are positively correlated then possibly little new information is gained by administration of more than one of them. However Gresham (Note 3) and Michelson and Wood (1980) both indicated that most recent reviews and research studies support the use of multipurpose-multimethod assessment. In particular Greenwood, Walker and Hops (1977) stated:

> Observation data provide information on the frequency and topography of social behaviour. Sociometrics measure popularity and the way in which a child is perceived by peers. Teacher

> ratings usually provide information on behavioural pinpoints descriptive of social withdrawal/social isolation (e.g. "has no friends"). It is probable that all three sources of information are important to a comprehensive, thorough description of social withdrawal. The covariation of these three variables in the description, identification, and assessment of social withdrawal certainly needs to be thoroughly investigated" (p. 491).

Multipurpose-multimethod assessment might help to decrease confusion caused by calling a target child "socially withdrawn" as assessed by one of these measures and expecting this child to be equivalent to another "socially withdrawn" child as assessed by one of the other single measures (Conger & Keane, 1981). One such identified child might be quite different from the other, but without multiple assessment measures these possible differences might not be described. As such a child might be socially withdrawn and ignored because of a lack of peer interaction skills, while another child might be withdrawn and rejected because of inappropriate social behaviour (e.g. aggression). Alternatively a child might be socially withdrawn by his or her own choice of preferring more solitary activities. Each of these children may need a different form of treatment or possibly no treatment at all. As such treatment intervention and assessment bear a close relationship to each other, although this is sometimes ignored (Mash & Terdal, 1976). Multipurpose-multimethod assessment could include naturalistic behaviour observation, a peer sociometric procedure as well as a teacher rating scale.

Treatment of Social Withdrawal in Children

Introduction

There has been a considerable growth in studies which attempt to

increase the amount of children's interaction with peers and/or to improve the quality of their social relationships. Conger and Keane (1981) and Gresham (1981) have both extensively reviewed and categorized the range of assessment and treatment procedures of various researcher/clinicians. Treatment procedures have been conceptualized by Gresham (1981) under four broad categories: manipulation of antecedents, manipulation of consequences, cognitive-behavioural treatment and modeling procedures. It seemed that the manipulation of consequences (reinforcement based) and modeling types of procedures were most frequently used by researcher-clinicians. However social skills training often involved a combination of techniques, such as instructions, coaching, modeling, role playing and social praise. For the purposes of this review regarding treatment procedures an emphasis will be placed on those techniques that seem to have the most relevance to remediation of specific social skill deficits. As discussed previously such social skill deficits are probably a major contributing factor to social withdrawal in the multiply physically handicapped child.

Historically the classic study in this area was by Chittenden (1942) who used direct observation procedures in the natural setting to develop an assertiveness type of training program which met with moderate success for children. Hops and Greenwood (1981) stated that further interest in treating children's disorders of peer interaction did not arise until the mid 1960's. From that time there was an increasing diversity and complexity in both research and clinical investigations into how best to develop social skills. This trend continues today, however social skills training procedures still only

demonstrate moderate success (Hops, 1982).

Manipulation of Antecedents

In terms of controlling antecedent events and settings to develop peer interaction skills one of the major techniques consists of assigning the target child's peer(s) to interact with him/her. Sometimes structured social activities are provided, and at other times it is sufficient to furnish the children's play setting with cooperative oriented materials (see Quilitch & Risley, 1973). Paine, Hops, Fleischman, Guild, Walker and Greenwood (1978) conceptualized treatment procedures involving manipulation of antecedents as follows:

> In each of these cases, it is assumed that the structure imposed by the peer pairing, the assigned activity, or the materials provided will be sufficient to trigger interaction between two or more children, and that once triggered, the interaction will be maintained by the continued presence of the setting structure and by the natural community of reinforcement which begins to flow between the children (Baer and Wolf, 1970)(p. 8).

Adamsky (Note 4) reported on the use of dyadic treatment techniques with ten isolated preschool children which resulted in increased parallel and cooperative play and in increased verbal interaction. A one year follow-up with informal observations and teacher reports suggested maintenance of the reported gains. However, such maintenance across time was not demonstrated in other initially successful peer pairing studies (Lilly, 1971; Strain, Shores & Timm, 1977). As such the efficacy of treatment procedures which basically manipulate antecedent conditions can be short lived unless maintenance and generalization are specifically programmed (Paine et al., 1978).

Manipulation of Consequences

The use of adult praise in the remediation of low levels of peer interaction has been extensively researched and the effectiveness of the procedure is well established (Paine, et al., 1978). However this degree of effectiveness is dependent on attention being contingent upon the child's increasingly appropriate responses as a means of "shaping" the required social behaviour (Hart, Reynolds, Baer, Brawley & Harris, 1968). Adult praise is more efficient than use of primary or token reinforcement systems (Gresham, 1981). Concerns have been raised regarding the long term maintenance of such behavioural changes (Combs & Slaby, 1977), but gradual fading of reinforcement might help to maintain the new behaviours longer (Baer & Wolf, 1972).

Social reinforcement given by peers (Wahler, 1967) also plays an important role in a child's development of play skills (Charlesworth & Hartup, 1967; Guralnick & Paul-Brown, 1977), especially as adults are often completely absent from children's activities. In as much as peers have considerable influence on the natural development of social interaction skills related to equitable or reciprocal exchange of social reinforcement (Mueller, 1972), peers should be utilized to develop withdrawn children's social skills (Strain & Fox, 1981). The provision of social reinforcement by peers rather than by adults may be considerably more effective as "each delivery of praise and attention [from an adult] requires the child to withdraw from peer interaction to some extent" (O'Conner, 1972, p. 333). Recently Roedell, Slaby and Robinson (1977) suggested some specific ideas that adults can use to decrease their possibly disruptive impact when

attempting to reinforce peer interaction. These ideas included only offering brief comments, bringing additional play materials, moving away from the socially withdrawn child after suggesting a possible source of interaction and/or making attention contingent upon the socially withdrawn child engaging in social interaction. In addition social reinforcement is given to a peer for his/her play with the socially withdrawn child only after the interaction (Strain & Timm, 1974). As an alternative to dyadic interaction, in some studies group-oriented contingencies involving token systems have been used effectively to increase the frequency of appropriate social skills in a target child (Weinrott, Corson & Wilchesky, 1979).

Cognitive-Behavioral

A distinction can be made between children who have the requisite social skills to maintain positive peer interaction, but who do not use them, and children who still need to learn the specific skills. The former children may benefit from reinforcement techniques alone, but such a strategy has been criticized as inadequate for developing complex peer interaction skills such as required by the latter children. To develop these skills "requires inclusion of cognitive aspects, using techniques such as modeling, rehearsal and cognitive instruction" (Michelson & Wood, 1980, p. 269). In this regard Gresham (1981) categorized coaching or social tutoring techniques as cognitive-behavioural. These techniques involve children being taught specific cues, concepts and rules of social behaviour. Then roleplaying or rehearsal situations are provided with an adult and/or peer coach. Finally the child learning the new complex social skill(s) is given performance feedback and suggestions.

One of the initial coaching studies (Oden & Asher, 1977) trained a group of third and fourth grade children in participation, cooperation, communication and validation support types of social skills. This method was found to be effective in increasing the target children's sociometric acceptance on a "play with" peer rating scale, but corresponding increases in the rate of peer interaction were not demonstrated. The gains in social acceptance were maintained at a 1 year follow-up. However since the training was with a non-handicapped sample, the findings should be viewed with caution in any such application. Gottman, Gonso and Schuler (1976) used a video-taped teaching sequence in their treatment of two socially withdrawn grade three children. Their results suggested that social tutoring procedures may positively affect sociometric acceptance but not the overall frequency of peer contact. Paine et al., (1978) sharply criticized the use of coaching as a sole treatment procedure with socially withdrawn children given its apparently limited impact on the frequency of children's interactions. In addition they cautioned that the positive sociometric outcomes that were reported relate only to "what children say they will do in a given situation" (p. 27) and hence may not reflect meaningful behaviour change.

Several investigations combined a variety of treatment techniques to develop effective social skills. Cooke and Apolloni (1976) used a combination of instructions, coaching, live modeling and social praise with four learning disabled elementary school children to effectively increase rates of smiling, sharing and positive physical contact. Gresham and Nagle (1980) found that coaching, modeling or a

combination of both were all equally effective in terms of improved sociometric acceptance and observed rates of interaction. The most important treatment concern is that positive behaviour changes indeed do occur and that these are maintained after treatment is discontinued.

Modeling

The other major treatment category discussed in the social skills training literature is known as modeling. It involves both "live" and "symbolic" procedures. In live modeling the socially withdrawn child observes peers socially interacting in classroom, play or laboratory/clinical settings. Symbolic modeling typically involves ing a videotape/film format. Although the cognitive processes of verbal and imaginal coding and rehearsal which facilitate the modeling effects are thought to be identical regardless of which procedure is used (Bandura, 1966), it may be that children with underdeveloped conceptual and verbal skills can benefit more from live modeling (Gresham, 1981). Such may be the case with children experiencing language disorders.

In terms of assisting the socially handicapped child in emulating appropriate peer interaction skills when mainstreamed, Gresham (1981) suggested specific teaching procedures such as "calling attention to the model, reinforcing the model and using competent models" (p. 159). However Strain, Cooke and Apolloni (1976) have a caution about such observational learning with children:

> Observational learning operates in the determination of those responses that will be "tried", not those that will become characteristic aspects of the observer's repertoire (p. 127).

Possibly to ensure that the appropriate social skills do develop, it is important that positive consequences also occur contingent upon the observer trying the behaviours.

Strain, Shores and Kerr (1976) used a live modeling procedure in conjunction with prompting and social reinforcement to increase positive social interaction rates. It was noted in this study as in others (Kazdin, 1973; Strain & Timm, 1974) that with modification of the target children's behaviour there can be desirable behaviour changes in nonreinforced peers as a "spillover" effect. This has been explained as nontarget children imitating behaviours they have seen being reinforced for others, as vicarious reinforcement (Bandura, 1971). At times therefore social skills training procedures using modelling and reinforcement techniques might develop as follows: the appropriate model is reinforced, which then facilitates the target child trying the appropriate behaviours and being reinforced and in turn other nontarget children improving or developing the repertoire of social skills.

Generalization

Throughout the foregoing description of various treatment procedures, for withdrawn children, it seemed that initial intervention effects could be reliably produced, but that considerably less was known about ensuring the endurance of these effects. With this type of concern in mind Baer, Wolf and Risley (1968) made the following statement:

> Generality is not automatically accomplished whenever behaviour is changed... In general, generalization should be programmed, rather than expected or lamented (p. 96).

Stokes and Baer (1977) conceptualized generalization as follows:

> [Generalization is] the occurrence of relevant behaviour under different, nontraining conditions (i.e., across subjects, settings, people, behaviours and/or time) without the scheduling of the same events in those conditions as had been scheduled in the training conditions. Thus generalization may be claimed when no extra-training manipulations are needed for extra-training changes; or may be claimed when some extra manipulations are necessary, but their cost or extent is clearly less than that of the direct intervention" (p. 350).

A very important dimension of generalization is that the behaviour change endures over time; this phenomenon is known as maintenance (Paine et al., 1978). One means to evaluate maintenance is to compare post-treatment assessment data with treatment and pre-treatment data. The child should still be functioning closer to or above the levels observed at the end of treatment then before beginning treatment. Paine et al. (1978) indicated that:

> If the follow-up is conducted more than a few days after the post-test, if it includes more than a single measurement, if the level of responding has not fallen off too sharply since intervention, and if follow-up data is not trending in a counter-therapeutic direction, then it could be concluded that a socially significant level of maintenance has been achieved (p. 34).

Another procedure to evaluate maintenance is to compare follow-up data with appropriate normative data (Walker & Hops, 1976) or against a nonwithdrawn group's baseline data (O'Conner, 1972).

One of the paradoxes of successful behaviour therapy relates to using assessment data generated through various single subject experimental designs, such as reversal or multiple baseline, to demonstrate both treatment control and eventual lack of control i.e. generalization (Hartmann & Atkinson, 1973). One suggested procedure to accomplish both aims "was to use changes in stimuli or behaviours

to demonstrate experimental control and to measure generalization in the other domain (stimuli or behaviours)" (Kendall, 1981, p. 318). Rusch and Kazdin (1981) described various designs which utilized a sequential, total and/or partial withdrawal of treatment components to demonstrate both treatment control and generalization. Greenwood, Hops and Walker (1977) used the procedure of systematically fading treatment components. They demonstrated considerable maintenance of behaviour change regarding academic survival skills learned by elementary school children. Other procedures to gradually reduce the discriminability of reinforcement contingencies are "altering the schedule of reinforcement, increasing the delay of reinforcement, using non-contingent reinforcement, and gradually removing or fading the contingency" (Paine et al., p. 39).

The use of natural contingencies and sources of reinforcement was discussed by Baer and Wolf (1970) as "entrapment" theory. The idea is to teach the child specific skills/responses (e.g. play skills) that will facilitate entry into an ongoing community of reinforcement that has not been programmed for. Other researchers attempt to maximize the likelihood of the child being "trapped" in the more natural environment by including peers in the social skills training program as tutors or simple playmates, by teaching the withdrawn child in the natural play environment and/or using toys and language during training that can be also utilized in the natural play environment. However it has been noted that there has been considerable difficulty in demonstrating maintenance/generalization effects in [illegible]dicapped-only settings because the peers themselves may be socially unresponsive (Strain & Kerr, in press).

Another treatment procedure "mediated generalization" (Stokes & Baer, 1977) holds some promise for facilitating the endurance of positive behaviour change over time. The technique involves bringing motor behaviour under verbal mediated self control by providing reinforcement for the child's verbal reports which accurately reflect his/her nonverbal behaviour. Stokes and Baer (1977) refer to the training of language related to the child's behaviour which provides a "salient common stimulus, to be carried from any training setting to any generalization setting that the child may ever enter" (p. 361). This treatment procedure has been utilized by several researchers (Risley & Hart, 1968; Rogers-Warren & Baer, 1976) with success, but the issue of maintenance of treatment effects was not specifically evaluated.

In the preceding review of the social skills training literature as it relates to socially withdrawn children, the use of multipurpose-multimethod assessment procedures was recommended. This provided the functional basis by which the treatment goals and procedures matched the specific clinical needs of a child while providing a means to systematically evaluate whether these needs were being met. Numerous treatment techniques such as peer pairing, social reinforcement, coaching and modelling were discussed in terms of their general utility in remediating social skill deficits. It was indicated that single treatment procedures were often effective in producing increases in rates of positive peer interaction and/or in peer acceptance, but generalization was not always evident. It seemed that no one treatment procedure was wholly adequate to develop the complex social interaction skills and to change the environmental

contingencies necessary for the socially withdrawn child in order to become "trapped" into naturally maintaining peer relationships. There seems to be a need for a multi-faceted treatment program particularly for those children who also labour under other handicaps such as speech and language delays and/or motor incoordination.

PEERS Program

One particularly relevant multicomponent treatment package is the PEERS Program (Procedures for Establishing Effective Relationship Skills) (Hops, et al., 1978). This researcher-clinician's previous experience with the PEERS program includes using several of the treatment components in combination with some nonprogram ideas to remediate social skill deficits of multiply physically handicapped children who were identified as socially withdrawn. This partial use of the program was not systematically evaluated at that time. Personal consideration of the procedures used from the PEERS Program suggested that the total treatment package held considerable clinical value for such children.

The PEERS Program was developed at the Center at Oregon for Research in the Behavioral Education of the Handicapped at the University of Oregon (C.O.R.B.E.H.). It was the result of five years of research involving component analysis of various procedures in both special education and regular classroom settings with a total of 16 children receiving treatment (Hops, Walker & Greenwood, 1979). Initially a treatment program involving a recess and classroom intervention, which also programmed for maintenance effects, was developed. The children who performed best were those with some level of social skills already developed. Success with these

children was explained by the "entrapment" theory (Baer & Wolf, 1970). Hops, et al. (1978) explained:

> The program was found to be less effective for the three children who lacked social skills and/or showed deficits in motor coordination, language and other skill areas.... Another child who had various physical and developmental deficits had trouble because the peer group was not readily motivated to play with her. Reinforcing peers for playing ball with a child whose ball handling abilities are severely underdeveloped may produce conflicting contingencies for the peer group (p. 14).

The treatment program was expanded to include both a social skills tutoring component and a self report (mediated generalization) component.

By 1978 the PEERS Program involved five basic treatment procedures: social skills tutoring, recess point system, self report, classroom group reward and joint task. Assessment procedures included a screening process involving teacher referral and teacher behaviour ratings and a period of naturalistic behaviour observation. Trained educational consultants provided direct treament and they also taught the referring teachers how to provide these treatment procedures most relevant to the classroom.

In terms of the various treatment components, the social skills tutoring procedure was based on the direct instruction model by Engelmann and Becker (1978) and utilized some aspects of coaching (Oden & Asher, 1977). The lessons by the consultant involved both initiating social contact and responding to peers' initiations, maintaining positive interactions, sharing and giving praise. The latter two lessons were not a part of any C.O.R.B.E.H. evaluation study. The recess point system involved the consultant prompting and

praising both the target child and special helper children for performance of appropriate social skills. The language of the lessons could be used as cues. The target child was awarded points according to the amount of time spent in positive peer interaction. After the recess period the target child was expected to give a self report about his positive social interaction experiences. Thereafter a classroom group reward would be provided by the teacher if a specified daily criterion level for points had been reached. The recess period was judged to be a better environment than regular classroom activities as academic related behaviour often conflicts or competes with peer social interactive behaviour and decreases opportunities for practicing social interaction skills (Fleischman, Hops & Street, 1976). To develop specific opportunities for social skills practice the joint task procedure was introduced into the classroom. This process involved pairing the socially withdrawn child with individual classmates to complete a ten minute academic related assignment and to receive prompts and praise from the teacher for their efforts. The individual treatment components are introduced and faded in a systematic manner to build the socially withdrawn child's level of peer interaction to at least normative levels for the child's peers. The entire program requires approximately 24 to 40 days to be carried out successfully.

The whole PEERS treatment package was administered to three socially withdrawn children in regular classes. They all demonstrated immediate positive effects on their social behaviour with gains being maintained at normative levels after all the treatment components had been faded out (Hops et al., 1979). A

follow-up investigation at three months of two of the subjects indicated that only one was still within the normal range (Hops, 1982). Thereafter there were follow-up studies to determined if "booster shots" (of the social skills tutoring and the recess component involving tokens, social praise and group backup rewards) would be effective in facilitating maintenance in children who were previously untreated or who had been treated with at least some components of the total package. Using a reversal design with four baseline phases alternating with three treatment phases behavioural observation results indicated that four of five previously treated children and one of the four previously untreated children were maintained at normative levels. Sociometric data did not correspond well to the behavioural observations. One of the outcome suggestions of this study was that longer and more comprehensive interventions may be necessary to insure greater effectiveness and generalization (Paine et al., 1978). There has also been field-testing of the entire packaged program where educational consultants from various school districts were trained to implement the whole process (Greenwood et al., 1979; Hops et al., 1979). It was demonstrated that the procedures could be taught to others in 2 - 4 day workshops and that these resource people could successfully implement the program. There still lacks conclusive experimental research however that "the program has lasting benefits or is superior to the gains of an untreated control group" (Hops, 1982, p. 55).

In terms of the PEERS Program's possible effectiveness with those children who have multiple presenting problems Hops et al. (1979) have suggested that "[It] may work successfully under modified

conditions or in conjunction with other skill training...No data are available yet to substantiate this point" (p. 79). They suggested operating the program with young peers at the same level of development plus providing training in motor skills to facilitate play interaction. Presumably this would include speech and language training also for a child experiencing such a communication disorder.

The C.O.R.B.E.H. packaged programs, of which PEERS is just one, have been criticized by Michelson and Wood (1980) as follows:

> Limitations in the package mainly involve the lack of specific lessons or components directed towards more sophisticated social skills, such as assertiveness, refusal, modifying peer and adult behaviour, requesting behavioural change on the part of others, etc. (p. 280)...It is also common for children to have anxieties related to their performing of social skills. A social skills program that includes relaxation training, conflict resolution training, and self-coping strategies would provide the children with a more comprehensive and perhaps less anxiety-provoking treatment (p. 281).

The addition of such social skills might facilitate the sort of longer and more comprehensive interventions suggested by Paine et al. (1978) above to improve the generalization of the PEERS Program. However the task of the PEERS Program as published seems basically to be directed at simply facilitating the entry of socially withdrawn children into their peer group within the school setting. As such these additional social skills indicated by Michelson and Wood (1980) above may also be unnecessary for some children who become "entrapped" by natural contingencies. It is quite likely that social skills training with multiply physically handicapped children will only be realistically effective if they are also receiving appropriate remedial treatment for their other develomental

handicaps. There is a need for further experimental research with the PEERS Program regarding its efficacy to produce maintenance of treatment gains over time and particularly, its ability to meet the social skills training needs of multiply physically handicapped children receiving special remediation services for their handicaps. Such multiply handicapped children have not been the object of systematic evaluation commonly.

CHAPTER THREE

RATIONALE

Although the longterm significance of limited childhood peer interaction for later adulthood seemed to be somewhat equivocal in the literature (Strain, Cooke & Apolloni, 1976), there was a growing research interest in the role of minimal social interaction in behaviour disorders (Conger & Keane, 1981). Some studies indicated that peer interaction provided unique learning experiences for the developing child (Lewis & Rosenblum, 1975). This was particularly so for the physically handicapped child who might be deprived of many naturally rewarding opportunities to overcome aspects of his/her developmental difficulties. It is possible that the child's rehabilitative treatment program for speech, language and/or motor delays may be hampered without the experiences and/or incentives provided by peer interaction. Social withdrawal has been characterized as a "handicapping condition" (Hops et al., 1979, p. 44) itself. Social experiences with peers was thought to be a "necessity in childhood socialization" (Hartup, 1976, p. 203).

It is vitally important for the educators, parents and therapists of such physically handicapped children with limited peer social interaction to ensure that the child's interpersonal and play skills are adequately developed and that the social environment continues to facilitate and reinforce such interaction. Every effort must be made to help the handicapped child function in the least restricted environment with as great a measure of self reliance as possible. Having adequate and appropriate social interaction skills must be a major component in the realization of such an ideal.

At the Glenrose School Hospital there are twenty-four grade one students receiving professional treatment for speech, language and/or motor development problems within a small class special education setting. Four of these children were referred for psychological treatment regarding limited peer interaction. The hospital's treatment principles recognize that a child's social and emotional development is an essential component of his/her successful integration into a less restrictive academic environment and eventually into adult social and/or employment relationships. Research was cited regarding social skills in children with speech and/or language disabilities or with motor incoordination, however no studies were located which focused upon the multiply physically handicapped.

The four children who were referred for treatment had received weekly small group social experience in a special playroom under a psychologist's direction during the previous school year. However it was the treatment team's opinion that the children were still very limited in their peer interaction during free play periods such as at recess or noon hour. As such it was hypothesized that there had been a lack of generalization of their ability to interact from the structured playroom setting to the relatively unstructured and more natural free play setting. In order to meet such a clinical goal, it was necessary to determine effective and socially appropriate treatment procedures that would facilitate these children developing peer interaction skills and attitudes which would lead them towards natural social play for their own sake. In providing such a treatment regime it was necessary also to systematically evaluate its

degree of effectiveness with each child.

Although there have been some encouraging increases in positive peer interaction with application of the PEERS Program to socially withdrawn children, it has been found to be less effective with developmentally handicapped children (Hops et al., 1978). It is proposed that if such children were receiving intensive treatment for their other disabilities, then application of PEERS Program may be sufficient to increase their rates of positive peer interaction. Most importantly an investigation of this nature must endeavour to demonstrate that there are socially valid benefits to the children which are superior to not receiving specific social skills treatment (Hops, 1982).

There seems to be a need for further research and evaluation of the PEERS Program particularly as it might apply to socially withdrawn children with multiple physical handicaps. There has been considerable effort made so far to demonstrate the efficacy, replicability and transportability of the PEERS Program (Greenwood et al., 1979; Hops, 1982; Hops et al., 1978; Hops et al., 1979; Paine et al., 1978). In addition to O'Connor's research efforts (O'Connor, 1969; O'Conner, 1972) and the specific follow-up investigations (Evers & Schwarz, 1973; Gottman, 1977), most social skill treatment programs have not been systematically re-evaluated by independent investigators. Michelson and Wood (1980) suggest that such re-evaluation could involve divergent child populations in various geographic regions. In addition there seems to be a need for a greater research focus on elementary school populations (La Greca & Santogrossi, 1980). Other deficiencies that have been noted in the

social skills training literature include the lack of information regarding the actual impact of such treatment on children in terms of social validity concerns and in terms of maintenance of treatment gains over time.

The preceding literature review suggested that the use of multipurpose-multimethod assessment procedures and the provision of a multi-faceted treatment program would be most recommended for such multiply handicapped children. The PEERS Program was seen as an excellent treatment package for the four multiply handicapped children as it incorporated many effective assessment and treatment components such as follows:

a) manipulation of antecedents: the classroom joint tasks and the use of peer helpers to initiate and maintain interaction during recess periods;
b) manipulation of consequences: the praise from the child's parents and teacher and from the psychological consultant and the group activity rewards;
c) live modeling: the social skills tutoring/rehearsal and the consultant's recess time intervention;
d) cognitive-behavioral: the coaching script, the verbal mediation procedure and the consultant's and teacher's use of the script cue words;
e) assessment: teacher ratings and daily behaviour observation procedures with norms provided.

The five lessons of the social skill tutoring component of the PEERS Program were seen as being congruent with the socials skills of participating, cooperating, communicating and validating which have been identified as related to children's peer acceptance (Asher, Oden & Gottman, 1976). It is believed that this tutoring of specific phrases to use in play interaction with peers, particularly for those children with speech and language handicaps, would provide a

necessary structure within which the socially withdrawn children can more easily and successfully become included in others play. One other advantage of the PEERS Program was that it was designed for use in the child's natural school play setting. With the planned introduction and fading of treatment contingencies, the program would provide considerable opportunity to program both maintenance and generalization of the treatment gains.

In addition to using the Social Interaction Rating Scale (SIRS) and the Consultant's Social Interaction Code (CSIC), both of which were developed for use with the PEERS Program, if a roster-rating picture sociometric procedure was administered then other social validity concerns regarding social acceptance could also be addressed. The addition of local normative data on the four treatment children's peers would help to set clinically meaningful criterion levels. The collection of such normative data at the Glenrose School Hospital might provide a starting point for comparisons to observed regular community school, free play interaction rates as given in the PEERS Program consultant manual (Hops, et al., 1978).

The use of such a multipurpose-multimethod assessment procedure is likely to satisfy the clinician's need for a practical system for monitoring changes in the child's behaviour over time both with and without the programmed intervention (Michelson & Wood, 1980). In addition ongoing clinical evaluation of a treatment program's effectiveness is not only ethically proper but also necessary in order to meet consumers' demands for quality assurance. The goal of

this study is to produce new knowledge about the PEERS Program by systematically evaluating its effectiveness with multiply handicapped children. There will be an emphasis on examining the social validity of the program by using developmental normative standards and teacher and peer ratings. It is recognized however that utilization of the total treatment package across several subjects precludes systematic component analysis at this time.

It was proposed that the PEERS Program would be applied to the four socially withdrawn children using a multiple-baseline across-subjects experimental design (Kratochwill, 1978). The prime goal of this therapeutic intervention was to increase the percentage of time that each child engaged in positive peer interaction during recess periods. The criterion for success was a level of interaction one standard deviation above that of the child's peer group. This would closely approximate more normal levels of peer interaction found in community schools.

The following research questions are subsumed under the general task of systematically evaluating the clinical effectiveness of the PEERS Program with the physically handicapped children who were referred for psychological treatment of peer social withdrawal:

1a. What is the relationship between the normative rates of positive social behaviour as determined by the CSIC, for the ambulatory and speaking grade one children at the Glenrose School Hospital, and the normative rates collected by C.O.R.B.E.H. on regular class grade one children in Oregon?

1b. What is the relationship between the rate of positive social behaviour for each treatment child and the normative rate

collected at the Glenrose School Hospital and the normative rate collected by C.O.R.B.E.H. in Oregon?

1c. What effect do these relationships in 1b above have on the criterion level of successful performance that is set for the physically handicapped children receiving treatment?

2a. To what extent is each of the treatment children's rate of positive social behaviour as determined by the CSIC stable during the pre-treatment assessment phase?

2b. Can each treatment child successfully attain a rate of positive social behaviour at least one standard deviation above the mean for the child's grade?

2c. Can each treatment child adequately maintain this rate of positive social behaviour, according to PEERS Program criteria, throughout the fading treatment components ie. until the end of the maintenance treatment phase?

2d. To what extent is the rate of positive social behaviour for the child in the attention control condition (child 2) stable in relation to the rate of positive social behaviour of child 1 during each of the four research phases?

2e. Are specific changes in the established PEERS Program required in order to facilitate more adequate gains in rate of positive social behaviour for any of the treatment children?

2f. To what extent does the change in rate of positive social behaviour in each treatment child maintain over a post-treatment assessment phase of two to three months?

3. After a period of successful treatment according to the

PEERS Program criteria and after corresponding maintenance of the positive social behaviour over a post-treatment assessment period, does the "play value" of each child as determined by peer roster rating totals and by rank order placements also reflect a more positive trend than during the pre-treatment assessment phase?

4. After a period of successful treatment, as per question 3 above, does each child's teacher also rate each child as being more socially interactive with their classroom peers than during the pre-treatment assessment phase?

5. To what extent are the rates of positive social behaviour for the no-treatment children of the normative group stable between the pre-treatment assessment phase and the post-treatment assessment phase?

CHAPTER FOUR

METHODS AND PROCEDURES

Purpose

The purpose of this study was to investigate the application of the PEERS Program to multiply handicapped children who exhibited low rates of peer social interaction in a special education institution. The treatment goal was to develop and maintain higher levels of positive peer interaction which would be consistent with interaction rates of non-handicapped children in regular classes. In order to evaluate the efficacy of the psychological treatment a multiple-baseline across-subjects, time series design was used (Kratochwill, 1978). This study involved three children who were each in different classrooms and started the treatment program at two to three week intervals. A fourth child from one of the three classrooms was assigned to an attention control strategy (Ladd, 1981).

Participants

The population of interest included children at the Glenrose School Hospital who receive considerable assessment, stimulation and/or remediation services related to their various developmental disorders. These services are provided by a speech pathologist, psychologist, occupational therapist, physiotherapist, audiologist, nurse, special education teacher and/or pediatrician. Of particular interest to this study were the four multiply handicapped chi ren who were referred by consensus of their treatment team for psychological intervention related to social withdrawal from peers. Interviews conducted with each of the parents by the various treatment teams confirmed concerns that the four children interacted

very little with children other than siblings. Each of the parents gave informed consent for their children to receive the psychological treatment.

The study focused on four ambulatory children who had average intellectual potential. They were all day-patients from the grade one classes at the Glenrose School Hospital. They were the only four referred for such socialization treatment. A description of each child as of October, 1981, would be as follows:

Child 1 - female, 6 years 0 months
- diagnosis: spastic diplegia (mild) language delay and pectus excavatum
- middle of three siblings, two parents
- average cognitive skills as determined by the Leiter International Performance Scale.

Child 2 - male, 5 years 11 months
- diagnosis: amblyopia, hypotonia and mild developmental delay
- an only child, two parents
- dull normal cognitive functioning as determined by the Stanford Binet Intelligence Scale.

Child 3 - male, 7 years 4 months
- diagnosis: moderate to severe speech and language delay, motor incoordination and attentional disorder
- youngest of three siblings, two parents

- dull normal cognitive functioning as determined by the Stanford Binet Intelligence Scale (L-M).

Child 4 - female, 5 years 11 months
- diagnosis: speech disorder, language delay and motor incoordination subsequent to pneumocial meningitis
- middle of three siblings, two parents
- dull normal cognitive functioning as determined by the Stanford Binet Intelligence Scale (L-M).

Each of these children were receiving intensive treatment from a speech pathologist, occupational therapist and special education teacher in addition to the present psychological treatment.

During the previous school year (1980-81) they had all participated in separate social play groups in the Department of Psychology treatment rooms. Each group consisted of four to five children who were encouraged to play together with various toys for thirty minutes each week. This treatment was reported to have been successful at stimulating positive peer interaction within that structured setting, but there had been little or no generalization to other settings that required more self-initiated and spontaneous peer interaction, i.e. recess periods.

Setting and Scheduling

The Glenrose School Hospital is a relatively unique blend of special education classes and rehabilitation services. It provides treatment for a wide variety of physically and/or emotionally

handicapped persons of all ages. In terms of this particular study, the social skills tutoring treatment component was conducted in the researcher-clinician's office. Joint task activities were conducted in each child's classroom (six children maximum). The recess intervention occurred in the hallways near the classrooms. The children do not go outside to play at recess. They are provided with numerous developmentally appropriate toys to use at this time however.

The total investigation was preceded by a two week period that involved the training of observers for the normative data collection and for team interviews with parents. The four phases of the investigation were designated as follows: pre-treatment assessment, treatment-training, treatment-maintenance and post-treatment assessment. In addition to the structured behavioural observations that occurred almost daily throughout the four phases, there were teacher and peer ratings obtained both immediately before any child received training and after the end of all the behavioural observations. Observational data for normative comparisons was collected on all the other ambulatory grade one students who were oral communicators (15 children) before any child received treatment. When the PEERS Program had been completed with the children, normative data was again collected but only on two of the four classrooms (8 children).

All behaviour observations collected during the pre-treatment assessment phase were done at either morning or afternoon recess times, whereas all observations during the other periods were conducted at morning recess. All social skill tutoring sessions were scheduled before morning recess, whereas classroom joint task

activities occurred at anytime each day. The recess point system occurred at morning recess with the self-report procedure immediately thereafter. Group rewards were scheduled by the teacher for anytime in the day after morning recess.

Dependent Variables

Behaviour Observation

The major dependent variable was the behaviour observation procedure known as the Consultant Social Interaction Code (CSIC), as provided in the consultant's manual of the PEERS Program by Hops et al. (1978). This manual was developed at the Center of Oregon for Research in the Behavioral Education of the Handicapped (C.O.R.B.E.H.). At this time psychometric data related to reliability and standard error of measurement are not available on the CSIC (Hops, Note 5). For concurrent validity date see Appendix A.

This study used only a portion of the total published coding procedure (CSIC) which was designed to monitor children's verbal and nonverbal interaction with peers during recess periods. Data was collected on the percentage of positive social behaviour that each of the four target children demonstrated during recess periods (for the adapted format see Appendix A). Data was not collected on the following: percentage of talk, rate of initiations by target child, rate of target responses to peer initiations, rate of interaction or ratio of initiations to responses. Only the two primary codes were used: positive social behaviour (PSB) and negative/alone (NA).

The two codes were operationally defined as a simple dichotomy with socially interactive behaviours directed at others, which may be both verbal and/or nonverbal, (PSB), contrasted with negative,

aggressive and/or nonsocial behaviours, (N/A). The interpretative burden regarding these two codes were decreased by the clear operational definitions and the practise exercise that was provided in the manual. According to Hops and Greenwood (1981):

> [This] simple dichotomy allows consultants to learn the system in a short period with minimal training and is sufficient to identify socially withdrawn primary-grade children (p. 367).

Another reason for simplifying the code is that normative data has been published on positive social (PSB) behaviours but not on the other possible target behaviours.

The CSIC provides a procedure to monitor behaviours that are believed to be important to peer interaction from the previous review of the relevant literature and that occur during periods of increased peer interaction such as recess. The positive social behaviour code included talking, touching, smiling and game playing, while the negative/alone category included aggression, roughhousing, taunts, talking with adults and standing or playing alone. It was unclear from the manual if the specific behaviours were included as a result of specific research by the authors or of a prior conclusion based on the authors' experience and theoretical framework.

The four treatment children were always observed by this researcher-clinician who is a psychometrist with over four years clinical experience in the Department of Psychology of the Glenrose School Hospital. They were observed in the following manner: whichever child was found first in the hallway received 1-1/2 minutes of continuous observation, then observation rotated through the other 3 children for an equal period of time and then the procedure was repeated once. As such a total of three minutes observation for each

child afforded extra time to locate them in turn during the fifteen minute morning recess. This occurred each school day throughout the study barring absence of a child due to sickness. There were approximately 66 days of observation for each child which provided about 198 minutes of observation for each child. The CSIC seemed to be a simple but systematic procedure for measuring the on-going effects of treatment on each child's rate of positive peer interaction and for generating normative data for social validity purposes.

Behaviour Observation Concerns

Replicating the use of any behaviour observation procedure in a different setting and with different observers than it was originally developed entails many difficulties. These difficulties include provision of adequate training for observers, maintaining acceptable levels of observer agreement and counteracting experimenter biases as well as those associated with observer reactivity with observees (Hersen & Barlow, 1976).

In terms of providing adequate training for the observers several steps were taken. The researcher-clinician's training consisted of practice with the C.O.R.B.E.H. designed training materials, discussion with two non-observer psychologists regarding any interpretation of the code's operational definitions and finally considerable practice on a video/audio tape designed at the Glenrose School Hospital for the purpose of this study.

The tape was coded by consensus of this researcher-clinician and the two non-observer psychologists using the CSIC syste There was a standardized starting point and the tape included 5

continuous observation of one child taken during recess social interaction. This involved 60 observation segments of 5 seconds duration. It included approximately 22 percent PSB and the rest was coded as negative/alone (NA).

The five clinical psychologists who provided the normative observation data practiced wi h the C.O.R.B.E.H. examples and discussed any discrepancies with the researcher-clinician. Next there were two practice sessions for each observer with the audio/video tape, each four days apart. Percentages for inter-observer agreements were calculated for both occurrence and nonoccurrence (Kratochwill & Wetzel, 1977) of PSB respectively as follows:

a. first session 84.6% to 100%, 95.7% to 100% and

b. second session 92.3% to 100%, 95.7% to 100%.

Thereafter there was at least one in-vivo practice session completed by each observer working in pairs. This was thought to be sufficient practice before actually collecting the normative data as the latter obtained indices of inter-observer agreement were all above 85%.

Considerable effort was made to develop a training procedure that would increase the likelihood of obtaining valid and reliable observations. However it was recognized that "simply providing category definitions and practice materials does not guarantee that different groups of observers will use an observational system in similar fashion" (Foster & Cone, 1980, p. 320). Although it was conceivable that the use of the CSIC at the Glenrose School Hospital was different than as designed at C.O.R.B.E.H., the risk of this was thought to be rather limited. Two points in favour of this were that the comprehensive coding categories were mutually exclusive and the

six observers had an average of five years clinical experience each (Hersen & Barlow, 1976).

In terms of maintaining adequate reliability to counteract observer drift (Foster & Cone, 1980) there were thirteen inter-observer reliability checks provided by one of the five previously mentioned psychologists. These were conducted at approximately weekly intervals and represented about twenty percent of all observations. Percentages for inter-observer agreements were calculated for both occurrence and nonoccurrence of PSB as was done during training of observers. The indices ranged from 81.8% to 100% for occurrence ratings with an average of 95.2% and from 95.2% to 100% with an average of 98.1% for nonoccurrence.

The psychologist who provided the reliability checks was aware of the nature of the research, but she was unaware of what stage treatment was at, nor even whether the observed child was being provided with treatment at that time. However the researcher-clinician was aware that inter-observer reliability checks were being made. Knowledge of such assessment has been identified as a possible source of bias (Foster & Cone, 1980). It is a confounding factor in the independent monitoring of observer drift. However "DeMaster, et al. (1972) have produced data to indicate that periodic recalibration via practice with criterion protocols can offset observer drift" (c.f. Foster & Cone, 1980, p. 320). There were recalibration sessions with the written and video taped material for both the researcher-clinician and the psychologist providing the inter-observer agreement assessments. These sessions occurred once in November, 1981, and again in January, 1982.

According to Hersen and Barlow (1976) "when observer bias is present, errors in recording are made systematically in a particular direction rather than appearing randomly around the mean" (p. 108). Although data can be faked, even with completely honest observers it is possible that a bias effect relating to expectancy of outcome can contribute to errors (Rosenthal, 1966). As such it is hardly the recommended practice that the researcher is also a primary observer. Circumstances of this study precluded the situation being otherwise. As much of the research information regarding this problem has been with relatively untrained undergraduate students, it is possible that a well-trained observer might not evidence such a bias (Johnston & Bolstad, 1973).

There is a considerable advantage in doing direct observation in the natural environment if the predictive validity of such observations is high, given a "close relationship between the target behaviours selected for modification and the actual process of modification" (Hersen & Barlow, 1976, p. 111). However there is the concern that there might be an observer reactivity effect on the subjects. In this case the behaviour of the children might not be the same while being observed as not being observed. In order to counteract this problem somewhat, stability of the data was achieved before intervention proceeded and an extended baseline for some of the children was used (Hersen & Barlow, 1976). In addition there has been a tendency demonstrated for older children to be more affected by observation than younger ones (Polansky, Freeman, Horowitz, Irwin, Papanis, Rappaport and Whaley, 1949).

Teacher and Peer Ratings

According to Foster and Cone (1980) one of the practical reasons for using multiple outcome measures relates to the problem that at times seemingly inconsistent outcomes are obtained with different assessment procedures. As such comparisons of behaviour observation data with ratings-by-others data can often help to provide social validity and validity information regarding the observations. Comparisons might also suggest previously undetected relationships between treatment and its outcomes. In this study the measures of change were utilized as follows: the Consultant's Social Interaction Code (SIC), the Social Interaction Rating Scale (SIRS) for teacher's ratings, and a roster-rating sociometric procedure for peer ratings. The two rating procedures were used to provide some subjective evaluations of the effects of treatment by significant others in each child's environment.

The SIRS was completed only by each treatment child's own teacher. The sociometric rating was completed by each of the child's classmates, as well as the child, with the researcher-clinician conducting the interviews separately. Each of these ratings were made once in the week preceding the start of any treatment for the first child and again in the week following the end of all the behaviour observations. As such the ratings occurred approximately twenty-three weeks apart.

The teacher rating scale (SIRS) was developed at C.C.P.B.Clin. The SIRS used in this study is the full fifty-item question version as published by Foote et al. (1978) rather than the eight question screening and published in the PEERS Program Consultant's Manual

(Hops et al., 1978) (see Appendix A). It correlates well with percent of positive social behaviour as assessed by the CSIC (See Appendix A for the correlation indices). "The SIRS items were empirically determined and each item was selected on the basis of its relationship with observed social interaction" (Hops, Note 5). The items had been used to discriminate between children referred for treatment at C.O.R.B.E.H. and their normal peers with ninety percent correctly classified as determined by observations with the CSIC.

The roster-rating procedure was most similar to ones developed by Asher et al. (1979) and by Odeh and Asher (1977). Each treatment child and his or her classroom peers were asked to assign color pictures of each other to one of three faces according to the following question: "How much do you like to play with this child at recess?". The sad, neutral and happy face each corresponded respectively to three statements, that the researcher-clinician read, of "I don't like to play with .... at recess", "I sometimes like to play with .... at recess" and "I usually like to play with .... at recess" respectively. Such a procedure has been found to be a reliable index of sociometric status with a test-retest correlation index of $r = .83$, significant at .01 level, when administered at a four week interval with four year olds. (Asher et al., 1979 see Appendix A for the roster-rating scale). For the purpose of analyzing the sociometric ratings, the following procedure was done. Each of the faces that corresponded to "don't, sometimes and usually" were assigned a numerical rating of 1, 2 and 3 respectively. These numerical ratings were used to determine a total "play value" that each of the four children were given by their classroom peers, and to

determine a rank order placement on "play value" as compared to their classroom peers.

Collecting Normative Data

Behavior observation data using the CSIC was collected on nontreatment children to provide normative information on positive social behaviour at the Glenrose School Hospital. This procedure provided information to help set criterion levels and to address social validity concerns (Kazdin, 1977a; Walker & Hops, 1976). On three separate occasions during the week preceding any treatment interventions, there was a four minute period of observation made on each of fifteen ambulatory and speaking grade one children. This procedure afforded a total of three hours of observation to generate the normative data. Each child was randomly assigned to one of five psychologists who were doing the data collection. The observations occurred in the hallway at recess under the same conditions as the treatment children. Normative observations were made again during the week immediately after all treatment period observations were made. Given time limits incurred by the researcher-clinician less children were observed the second time: only four from the class had child A and child B in it and four from a fourth grade one class that had no treatment children in it.

Although the CSIC had been used previously by C.C.B.B.E. to generate normative data for Oregon schools it was important to have local data. A decision had to be made as to what criterion level of competence each child's treatment goal should be set. According to the PEERS Program consultant manual this should be set at one standard deviation above the mean for the child's grade. When this

goal is reached fading out procedures can start (i.e. treatment-maintenance phase). C.O.R.B.E.H. proposes that the means and standard deviations of the manual are sufficient for most purposes. The researcher-clinician's concern was that this goal may be too stringent or unrealistic without knowledge of how the multiply physically handicapped child's peer interaction levels differed from the nonhandicapped.

Independent Variables

Treatment Procedures

There were five basic treatment procedures used in the PEERS Program: social skills tutoring, recess point system, self report, classroom group reward and joint task. Although the researcher-clinician assumed overall responsibility for the treatment program, each child's teacher was highly involved in the latter three procedures. They were all female certified teachers with a minimum of three years of Special Education experience. The entire program required from 28 - 32 days to be carried out with each child. The teacher and researcher-clinician were involved each day. The social skills tutoring component only lasted for the first five days of the program, whereas all other components continued daily until eventually faded out. When each child's level of positive social behaviour was found to maintain at or above the predetermined criterion level, then a gradual sequential withdrawal of specific treatment procedure began. This fading out process continued until all components were terminated and the child's social behaviour

remained within a normal range. The treatment procedures were provided according to the exhaustively detailed PEERS Program consultant's manual (Hops, et al., 1978) except for a few very minor alterations to be outlined later.

The social skills tutoring component of the PEERS PROGRAM was based on a direct instruction model (Engelmann, 1970; Engelmann and Becker, 1978). It involved some aspects of coaching procedures studied by Oden and Asher (1977). Social skills tutoring included instructions, behavioural rehearsal and feedback involving the researcher-clinician, the identified child and a socially skilled peer together in a structured office setting. The five lessons involved both initiating social contact and responding to a peer's social initiation, maintaining positive social interaction, sharing and finally praising. Specific responses were practiced until a pre-set criterion of proficiency was achieved.

The recess point system was also the researcher-clinician's sole responsibility. It involved observation and rating of each treatment child's peer interaction. This provided the basis for awarding the child points, explaining how the points were earned and giving him or her a recess point card (see Appendix B). One point was awarded for each one percent of positive peer interaction as determined by the CSIC. This point card was shown by the child to his teacher and parents. In addition this treatment component involved the experimenter prompting and positively reinforcing target behaviours learned previously in the tutoring lessons. The language of the lessons was used, such as: start, answer, keep it going, share, say something nice, etcetra. This generalization strategy seemed similar

to the procedure called "training sufficient exemplars" as labelled by Stokes and Baer (1977, p. 355). The recess point system did not involve repeated practice in this natural setting as such a process might interfere with and suppress overall social responding (Walker et al., 1979).

After each recess period the child, with recess point card in hand, was directed to verbally self-report to the researcher-clinician and the teacher about his or her positive peer interactions during recess. Sometime later that day a classroom group reward would be provided by the teacher, if a daily criterion level of positive peer interaction was met or exceeded. This reward, a dependent group contingency (Gresham, 1981) was determined by the class before the recess period, during a brief "pep talk" given by the teacher. Assignment of a special peer to help the withdrawn child with social play also occurred during this talk.

The teacher's final area of treatment involvement was the joint task activity which was provided once each day at a convenient time. The teacher paired the socially withdrawn child with each of his or her classmates to complete a ten minute academically related assignment. This also provided an opportunity for the teacher to have more specific practice in attending to and socially reinforcing positive social behaviours.

In terms of both the researcher-clinician's and the teacher's specific time involvement in providing treatment, the following list describes these commitments:

a. social skills training - 30 minutes for each of five lessons for researcher-clinician,

b. recess point system - 5 minutes per day for researcher-clinician,

c. self-report and peptalk - 4 minutes per day for teacher,

d. group reward - 10 to 15 minutes as required for teacher,

e. joint task - 5 to 10 minutes each day for teacher.

The outline of the introduction and removal of program components is given in Table I, page 66. The specific guidelines that controlled the fading of treatment components are given in Table II, page 67. The actual points that were required for treatment to be considered successful, as compared to what points were actually rewarded during each treatment program day or removal phase day, are given in Appendix C for each child that received the PEERS Program.

Adaptations to the PEERS Program

There were some modifications that were made to the PEERS Program as published in the consultant's manual by C.O.R.B.E.H.. At the Glenrose School Hospital there is no specifically assigned recess supervisor, so support staff, other than each child's teacher, were not directly involved in treatment. Given other treatment commitments of the researcher-clinician during the afternoon recess, a second self-report procedure at that time was not conducted, although this is suggested in the manual. Lastly, the other change involved the use of locally generated normative means and standard deviation to set a criterion level, rather than the norms provided in the consultant's manual. The decision to do so was based on the

TABLE I

OVERVIEW OF INTRODUCTION AND REMOVAL OF PROGRAM PROCEDURES

PROCEDURES	PROGRAM DAYS																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
SOCIAL SKILLS TUTORING	*	*	*	*	*																			
JOINT TASK ACTIVITIES	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
CHILD INTERVIEW				*																				
CLASS PRESENTATION			*																					
POINT RECESS																								
Consultant				*	*	*	*	*	*	*	*	*	*	*	*									
Pep Talk/Applause				*	*	*	*	*	*	*														
Special Helpers				*	*	*	*	*	*	*	*													
Self Report				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Group Reward				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

PROCEDURE	ENDING PROGRAM DAY
Tutoring	Earliest: Nineteen
Joint Task	One Time Event
Child Interview	One Time Event
Class Presentation	Sixteen
Point Recess	Earliest: Eleven
Consultation	Earliest: Twelve
Pep Talk/Applause	Earliest: Twenty-Four (End of Program)
Special Helpers	Earliest: Twenty-Four (End of Program)
Group Reward	

TABLE II

COMPONENTS REMOVAL CHART

Components Removal Phase	When to Remove Or Terminate	Criterion for Moving to Next Phase
POINT RECESS COMPONENTS:		
1. Prompting game behaviour during class meeting; announcement of points earned; applause.	Go minimum of 10 days on full program; last 3 consecutive days at grade level criterion.	1 success day at this level.
2. Special helpers	Begin fter 1 success day of Step 1 above.	2 consecutive success days.
3. Consultant	Begin after 2 consecutive success days of Step 2 above.	5 consecutive success days.
4. Group Rewards (2-day level)	Begin after 5 consecutive success days of Step 3 above.	2-consecutive success days using grade average (backup - delivered on the second of the two days).
Joint Task	Terminate on same day as two-day group rewards begin. (Step 4 above).	None
5. Group Rewards (3/5 day level)	Begin after 2 consecutive success days at 3 out of 5 points.	3 out of 5 days (with appropriate number of 20 point blocks earned.)
Self-Report	Ends with group rewards.	None.

FAILURE RULE: Continue at that phase until the criterion for that phase has been met.

researcher-clinician's judgment that the C.O.R.B.E.H. criterion would be unrealistically stringent for the multiply handicapped students.

Design

Time Series Research

A multiple-baseline across-subjects, time series design was used (Kratochwill, 1977, p. 71). This variant of a single-case experimental design (Hersen & Barlow, 1976) was applied to three of the treatment children, while a fourth child was assigned to an attention control condition (Ladd, 1981). These procedures were used to continuously evaluate the effectiveness of the treatment program in increasing each child's rate of positive peer interaction to normative grade levels. In addition to such normative comparisons, a pre-treatment and a post-treatment assessment by teacher and peer ratings was provided.

This study used a "unit-repetitive method of measuring a continuous intervention" (Kratochwill, 1977, pp. 9, 10). The CSIC procedure was used daily for between a two and seven week period to provide a relatively stable pre-treatment baseline with a range of variability limited to below fifty percent. Such a baseline was chosen in order to provide "an unequivocal departure for analyzing the subsequent efficacy of a treatment intervention" (Hersen & Barlow, 1976, p. 76).

Daily monitoring of each child's rates of positive peer interaction continued throughout the study by way of graphic analysis. During the treatment-training and treatment-maintenance phases of the study, this data provided immediate feedback to the researcher-clinician in order that appropriate adaptations in

treatment strategies could be tried to facilitate each child's continued increases in positive peer interaction levels. This data also provided the opportunity for the clinicial supervisor to monitor the apparent efficacy of the treatment. After the program had been operating in the treatment training phase for at least 10 program days and if the child's last three daily rates had been at or above the criterion level (50 points), then treatment components were sequentially withdrawn (Rusch & Kazdin, 1981). Fading continued as long as this criterion level was maintained (treatment-maintenance phase). This study also provided for up to thirteen weeks of follow-up observation during the post-assesment phase in order to evaluate generalization over time in the natural play environment.

One advantage of a single subject design is that it can minimize variability due to individual subject differences as each subject is repeatedly compared with himself/herself under various conditions such as separate phases of treament or nontreatment. According to Hersen and Barlow (1976):

> "As in all single case experimental research, the A phase involves a series of baseline observations of the natural frequency of the target behaviour(s) under study. In the B phase the treatment variable is introduced and changes in the dependent measure are noted. Thus with some major reservations, changes in the dependent variable are attributed to the effects of treatment" (p. 169).

For classification of some of these reservations see Campbell and Stanley (1966) and Kratochwill (1977). Essentially what is missing is some evidence that supports the causal link between treatment and associated change.

Hersen and Barlow (1976) contend that:

> "Whereas the A-B design only permits tentative conclusions as to a treatment's influence, the A-B-A design allows for an analysis of the controlling effects of its introduction and subsequent removal. If after baseline measurement (A) the application of a treatment (B) leads to improvement and conversely results in deterioration after it is withdrawn (A), one can conclude with a high degree of certainty that the treatment variable is the agent responsible for observed changes in the target behaviour" (p. 176).

However it seems that certain treatment procedures which result in "learning" can not be withdrawn (Hersen & Barlow, 1976). Another confounding factor is that the new behaviour may be maintained through naturally occurring environmental contingencies if the programming for generalization is effective (Gelfand & Hartmann, 1975; Krasner, 1971). This carryover effect is advantageous for clinical effectiveness, but it poses a problem in experimentation of controlling effects of treatment. "The multiple baseline strategy is ideally suited for studying such variables in that withdrawals of treatment are not required" (Hersen & Barlow, 1976, p. 106).

The time series design utilized in this study, the multiple-baseline across-subjects (Baer, Wolf & Risley, 1968), has had various clinical and educational applications (Frederiksen, Jenkins, Foy & Eisler, 1976; Hall, Cristler, Cranston & Tucker, 1970; Liberman, Terigen, Patterson and Baker, 1973). In such a study, baseline and treatment phases for each subject are actually separate A-B designs with extended follow-up observations of generalization over time. (For example, Paine et al., 1978). The length of the baseline increases for each succeeding child.

> "The controlling effects of the contingency are inferred from the rate changes in the treated subject, while rates remain unchanged in

> untreated subjects. When rate changes are sequentially observed in at least three subjects, but only after the treatment variable has been directly applied to each, the experimenter gains confidence in the efficacy of his procedure" (Hersen and Barlow, 1976, p. 240).

Attention Control Condition

In order to address many of the internal validity concerns related to time series research a decision was made by the researcher-clinician to employ an attention control condition for one child. Such control conditions have often been used in previous social skills training research (Ladd, 1976; La Greca & Santogrossi, 1980; Oden & Asher, 1977). In the attention control condition, Child 2 was also paired with the same socially skilled peer as was Child 1. The attention control Child 2 played with this peer for the same amount of time before morning recess on exactly the same days, as Child 1 had for her social skills tutoring lessons. Child 2, who was also in Child 1's class, was also provided with free play opportunities with his classmates for a time each day that equalled Child 1's joint task activity time, but this did not involve teacher praise of his social skills. During recess times the researcher-clinician talked to Child 2 about non-play issues for periods that approximated the contact that was being made with Child 1. Finally it should be noted that Child 2 participated in most classroom group rewards that were provided contingent on Child 1's peer social interaction. The point was to provide Child 2 with an equivalent amount of researcher-clinician and teacher contact plus play opportunities with his classmates, but without the specific treatment emphasis as was provided for Child 1. The teacher and the parents were made aware that Child 2 was receiving treatment, but

without specific elaboration beyond that required for the teacher to provide peer play time equivalent to the joint task. As in the Oden and Asher (1977) study:

> "This condition was included since previous research indicated that pairing isolated children with more liked peers in play activities may by itself increase the isolated children's social interaction (Levison, Note 6) and peer acceptance (Chennault, 1967)" p. 497.

Internal Validity

As this time series study was conducted in a naturalistic setting, it was difficult to establish effective controls to maximize internal validity. However, the PEERS Program comes with a history of highly controlled laboratory research which has demonstrated its cost-efficiency and effectiveness with socially withdrawn children (Greenwood et al., 1979; Hops, 1982; Hops et al, 1978; Hops et al., 1979; Paine et al., 1978). As such this investigation was basically a means of extending the treatment program to a clinical setting with socially withdrawn children who also experienced multiple physical handicaps.

In terms of multiple-baseline across-subjects studies, Kratochwill (1978) lists eight factors that can affect internal validity: "history, maturation, testing, instrumentation, instability, change in unit composition, reactive intervention and selection effects" (p. 19).

History could possibly be a confounding effect with regards to evaluation of treatment efficacy. However three weeks of treatment seems a short time for an event or events other than the treatment program to have produced the desired change, and to have done it more than once in sequence with provision of treatment. For each child

there are the other children's observational data to compare with, and in particular the data from the attention control condition, child C, could be useful. The researcher-clinician is aware of any possible confounding historical events that coincided with any of the phases of this study for any child.

In terms of maturation effects there was a concern that over time friendships with classmates might naturally develop as a result of increased experience. Again this confound was monitored by continuous monitoring of treatment and nontreatment children, including the attention control child. Treatment was only introduced when baseline data were stable.

Confounding as a result of testing procedures was a concern. The observer was in plain sight of the children at all times. In addition there were times when prompting and reinforcement was required of the researcher-clinician. Again a similar amount of intrusive contact was made with the attention control child. Johnston and Bolstad (1973) indicated that young children do not react to observation to the same degree as older children. Possible test confounding related to teacher or peer ratings was thought to be minimal. The children were only aware of the peer ratings and these occurred twenty-three weeks apart which would again reduce its significance (Kratochwill, 1978).

The use of the live observational system over such an extended period of time (twenty-three weeks) could make instrument decay a threat (Johnston & Bolstad, 1973). To counteract observer bias, drift and inaccurac[illegible] ere were regular inter-obse[illegible] reliability checks and periodi[illegible] oration of observers. Although

unintentional errors remained a possible confounding factor, it was believed that high observer agreement percentages helped to greatly limit this problem.

The threat to internal validity caused by instability of results was limited because the degree of change needed for clinical significance in normative terms would be quite dramatic. Results would be visually apparent for each child. Given that it was likely for each child to demonstrate variability of performance, the within-individual comparisons afforded by the time series design seemed ideal.

There was no mortality or attrition in the study so changes in experimental unit composition were not an issue.

Reactive intervention did not pose a strong threat as deliberate application of the intervention did not occur at times when the data was at extreme values. Rather intervention occurred sequentially in two to three week intervals and only if the individual's data was relatively stable.

Finally selection was a possible threat, although each child was assigned to the order of treatment by their names being pulled at random. This procedure was employed except for the attention control condition, which was assigned to the second draw from the class that had two children referred. However these four subjects were not random choices, but rather the only children identified as being socially withdrawn by their treatment teams. As such the degree to which they may not have matched to each other could be a confounding factor if differential treatment effects were demonstrated.

External Validity

External validity involves the extent to which the results and procedures of the investigation can be generalized to other groups and settings (population sample considerations) as well as "ecological or environmental invalidating influences" (Kratochwill, 1978, p. 20). With the multiple-baseline across-subjects design the same intervention is replicated over different, but relatively matched, subjects within the same experiment (Kratochwill, 1978, p. 23). This research design facilitates a greater degree of generalization or relevance to other cases than if experimental control had been demonstrated with a single child. The primary aim of this investigation was to demonstrate treatment effectiveness which could be applied to future Grade One socially withdrawn children at the Glenrose School Hospital, or possibly hold promise for other primary grade children. However as successful intervention with the PEERS Program has already been demonstrated at C.O.R.B.E.H., a successful intervention with multiply handicapped students would likely extend the applicability of the treatment procedures to various other socially withdrawn students. The extent to which the PEERS Program could be used to produce similar results with multiply handicapped and socially withdrawn children by other clinicians or in other settings should be discussed within the context of ten threats to ecological validity as listed by Kratochwill (1978, p. 24).

There was an explicit description of the independent variable made previously and reference was made of the exhaustively detailed PEERS Program consultant manual (Hops et al., 1978), so that this factor of ecological validity was upheld.

The Hawthorne effect was expected to be a very real confound to the ecological validity of the study, as each child was well aware of the contingencies operating during the treatment phases. However, as this was expected to help them alter their behaviour and as this would be the case for any child in this treatment program the invalidity effects were presumed to be minimal.

In terms of novelty and disruption effects there may have been a definite weakness. The observation procedure was obtrusive and the treatment procedures at times were intrusive. Again however, this would be the same for any program participant. In addition it would be possible to monitor somewhat the extent of this threat, given that some children were held in no-treatment and attention control conditions (Kratochwill, 1978).

The initial peer rating procedure could have pre-sensitized the children to the treatment and it might be a threat. Even though there was a two to seven week break before treatment was initiated, this pre-sensitization could confound generalization of the results to situations where no peer rating occurred. The original research of the PEERS Program did not include peer ratings. This current research included considerable baseline observation data which in combination with the peer rating may have also been a pre-sensitization factor. However such observation data had to stabilize before treatment proceeded.

Post-test sensitization with the second peer-rating procedure was possible only for Child 4 as every other child had this administered after all treatment phase observations were completed. It was expected that any such effects could be more easily detected given

the repeated nature of the daily observations.

Experimenter effects were acknowledged as possible threats. This would include unintentional active effects (eg. the differential effectiveness of the prompts and/or social reinforcement by clinicians with less or more skill) and passive effects (eg. age and sex) which remain undetermined.

The invalidating effects of two interaction variables, the interaction of history and intervention and the interaction of time of measurement and intervention, were quite limited. Three factors helped to decrease this threat. The treatment effectiveness would be demonstrated more than once and at different times. One child was in the attention control condition which made his history very similar to the treatment child in that class. Finally there was an extensive follow-up period to increase the ecological validity of the results.

The measurement of the dependent variable threat was decreased by the explicit description of the behaviour codes and procedures. Considerable effort was made to demonstrate that the researcher-clinician was gathering valid and reliable data with both the CSIC and the teacher and peer ratings.

Finally in terms of referent generality the conceptualized outcome of the study and hence its external validity might be considered to be weakened. There was no investigation of the differential effectiveness of the various treatment components, but rather of the program as a "packaged" whole. In other terms however this would be like a field-testing of the PEERS Program and this could possibly facilitate a greater application of the procedures to other handicapped groups or to non-academic settings. Referent

generality was also enhanced by provision of the teacher and peer ratings, not only in terms of social validity, but in terms of the possible effects of the program on a non-target behaviour such as peer acceptance.

CHAPTER FIVE

RESULTS

The purpose of this study was to investigate the application of the PEERS Program to multiply handicapped children who were referred for psychological treatment for peer social withdrawal at the Glenrose School Hospital. The major dependent variable for evaluation of individual treatment was the behaviour observation procedure known as the Consultant Social Interaction Code (CSIC). This assessment measure was also used to determine the practical/clinical significance of the behaviour change through the collection of local normative rates of positive social behaviour (PSB). Pre-treatment and post-treatment behavioural indices were provided by each treatment child's classroom peers and classroom teacher as an additional measure of social validity.

Normative Data Comparisons

The relationship between the normatives rates of PSB, as determined by the CSIC, at the Glenrose and the normative rates collected by C.O.R.B.E.H. on regular class grade one children in Oregon was examined first (Rationale, 1a).

Table III presents the normative rates of PSB collected during the pre-treatment assessment phase at the Glenrose, while Table IV shows the normative rates of PSB from Oregon. According to the mean percentages listed in Table III, there seemed to be considerable inter-individual and inter-classroom differences, but the overall mean of the no-treatment children at the Glenrose was 28.4 with a standard deviation of 21.7. The Glenrose mean and standard deviation was lower than the mean of 47 percent and a standard deviation of 20

TABLE III

Normative Mean Percentages of Positive Social Behavior (PSB) for No-Treatment Children[a] during Pre-Treatment Assessment Phase[b] in Edmonton

Class 1[c] Mean Percentages	Class 2[d] Mean Percentages	Class 3[e] Mean Percentages	Class 4[f] Mean Percentages
Peer 1 = 63	Peer 1 = 31	Peer 1 = 45	Peer 1 = 31
Peer 2 = 0	Peer 2 = 11	Peer 2 = 68	Peer 2 = 35
Peer 3 = 8	Peer 3 = 34	Peer 3 = 7	Peer 3 = 15
Peer 4 = 9	Peer 4 = 14		Peer 4 = 55
Overall Mean = 20.0	Overall Mean = 22.5	Overall Mean = 40.0	Overall Mean = 34.0

The overall mean for all four classrooms of %PSB is 28.4

The overall standard deviation of %PSB for all four classrooms is 21.7

a. Ambulatory and oral communicating grade one children at Glenrose Hospital
b. October 12 - 23, 1981, only
c. Same class as treatment children 1 and 2
d. Same class as treatment child 3
e. Same class as treatment child 4
f. This class did not have any treatment children

TABLE IV

Normative Data by C.O.R.B.E.H. for PEERS Program

Percent Social Behavior (PSB) Across Grades[a]

Grade	Mean	Standard Deviation
Kindergarten	44%	18
First	47%	20
Second	54%	16
Third	70%	18

a. Normative data collected by the Center at Oregon for Research in the Behavioral Education of the Handicapped (C.O.R.B.E.H.) using the Consultant's Social Interaction Code (CSIC) on the social behaviour of 134 children enrolled in regular classes in Eugene, Oregon, during recess periods (Hops et al., 1978).

percent for grade one Oregon children as Table IV indicates. If a range of plus and minus one standard deviation is considered, then the Glenrose children's average level of positive social interaction seemed to be at approximately the minus one standard deviation level compared to the Oregon children. As such it was judged that the multiply handicapped children at the Glenrose Hospital generally function at a considerably lower level of peer interaction than would be expected of the non-handicapped in a community school setting. There were however many individual children at the Glenrose who seemed to be functioning at a level of peer interaction consistent with that expected of most community children.

Next, the rate of positive social behaviour for each treatment child and the normative mean rate collected at the Glenrose School Hospital was compared to the normative mean rate collected in Oregon (Rationale, 1b)?

Table V indicates the individual rates of PSB for each treatment child collected during the same time period as the observations in Table III. Children 1, 2 and 3 had remarkedly similar mean rates of (PS). They ranged from 19.3 percent to 20.1 percent with standard deviations ranging from 7.1 to 9.2 percent. In comparison to the Glenrose normative rates of Table III, these three children seemed to be functioning at level consistent with the majority of their classroom peers. However in terms of the Oregon community school rates, these three children were judged as functioning below the normative average rates. The three children, even at plus one standard deviation, barely reached the level of minus one standard deviation of the Oregon community children.

Child 4 had a mean percentage of 5.4 with a standard deviation of 7.1. A[illegible]ch the normal rate of positive social behaviour for Child

TABLE V

Positive Social Behavior (PSB)

of Treatment Children during Normative Data

Collection Period of Pre-Treatment Assessment Phase[a]

	Mean Percentage	Standard Deviation
Child 1	20.1	7.2
Child 2	19.8	7.1
Child 3	19.3	9.2
Child 4	5.4	7.1

a. October 12 - 23, 1981

4 is generally below the average for the peers at the Glenrose and it is over two standard deviations below that expected munity school. Overall three out of the four treatment c l not seem particularly different than many of their peers e Glenrose with regard to positive social behaviour at recess, but all four children would have been seen as more socially withdrawn than the average child in a regular community classroom.

The last question examined from the normative data was: What effect did these relationships between positive social behaviour rates for the treatment children and both the Glenrose and Oregon normative rates, as indicated above, have on the criterion level for successful performance set for the treatment children (Rationale, 1c)?

It was decid[illegible] the above comparisons that all the treatment children were st[illegible] opriate for psychological intervention, although only one of them had a rate [illegible] SB substantially lower than their Glenrose peers. This judgement by the researcher/clinician was based upon the fact that it seemed important to improve the rates of PSB to a level consistent with that expected in the community. The eventual goal of the treatment program was to prepare these children to be successfully mainstreamed and adequate social behaviour would be extremely important for survival in the class and on the playground.

The Peers Program manual (Hops et al., 1978) [illegible]gested that the criterion level should be set at one standard deviation above the child's grade mean. With reference to Table IV this criterion level would be 67 percent, i.e. 47 plus 20. However such a level was judged by the researcher/clinician as being too stringent for the treatment children when so many of their peers had similarly low rates of positive peer interaction. As such, a level of plus one

standard deviation using the Glenrose normative rates shown in Table III was finally set as the criterion of successful performance i.e. 28.4 plus 21.7 resulting in 50 as the criterion level. If the treatment children could be maintained at 50 percent PSB over time, then they would be functioning at the normative level of the community children in Oregon as seen in Table IV.

Analysis of Graphed Data

The major purpose of this investigation was to evaluate t treatment effectiveness of the PEERS Program for each child. The basis for making ongoing research decisions, for judging the adequacy and meaningfulness of data and for drawing conclusions from the research was the analysis of graphed data. Figure 1 provides the individual rates of PSB across all conditions. These rates were determined by structured behaviour observation (CSIC) at morning recess periods. These individual rates were plotted against a horizontal background of normative rates of positive social behaviour (PSB) at the Glenrose. The plus one standard deviation level of 50 indicated the criterion point for treatment success. Step-wise introduction and removal of the PEERS Program treatment was employed as the multiple-baseline across-subjects research design. In addition the collection of the teacher and peer ratings and the normative observations is shown by the letters a and b where these occurred in the study.

Parsonson and Baer (1978) in their description of the analytical process for graphed data indicated:

> The analysis is essentially a visual process; determination of change is dependent on the change being of sufficient magnitude to be apparent to the eye. Compared with the potential

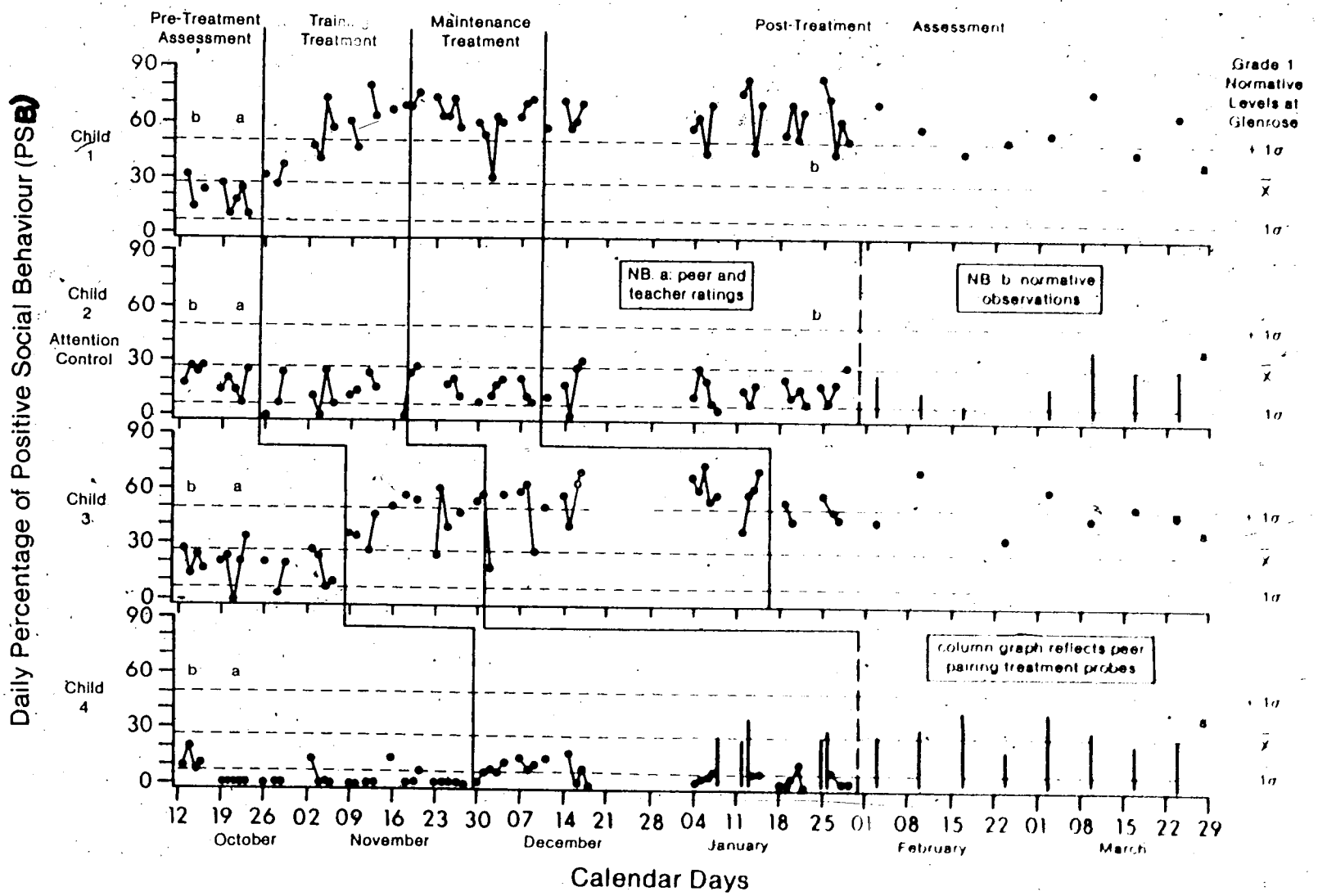

Figure 1. Individual rates of positive peer interaction across all conditions

> algebraic sophistication of statistical tests of significance (not always realized in practice), the above procedure usually is relatively insensitive, yet that very lack of refinement may have important and valuable consequences for the analysis of behavior (Baer, 1977)(p. 111).

Parsonson and Baer (1978) go on to argue that analysis of graphed data "has a built in bias against the selection of weak and unstable variables" (p. 113). In fact such a research design as used in this study included replications of the treatment program with several children which gave further evidence of the functional relationships involved. However with analysis of graphed data the probability of making the error of accepting a null hypothesis when it should have been rejected (Type II) could be higher (Parsonson & Baer, 1978) than desired.

The individual data paths of Figure 1, as represented by the dots, were used to estimate the trends in the effectiveness of the treatment program. Breaks in the data path for each child reflect days of absence from school and weekends. The vertical and horizontal step-wise lines indicate the specific treatment phase changes for each child. The introduction of a peer pairing treatment strategy for Child 2 and Child 4 is indicated by the use of a vertical column graph instead of dots.

Pre-Treatment Assessment Phase

The extent to which each of the treatment children's rate of PSB was stable during the pre-treatment assessment phase was examined (Rationale, 2a)?

With reference to Figure 1 and the pre-treatment assessment phase in particular, Children 1, 2 and 3 each have a data path that indicates rates of PSB which were quite variable but consistently within a range of functioning from the Glenrose mean to one standard

deviation below the mean. There did not seem to be any particular upward or downward trend to the data for Children 1 and 3, but there was a very slight downward trend for Child 2. Child 3 maintained this consistent range of variability for approximately a month while Children 1 and 2 maintained this range of variability for two weeks.

Child 4 had an initial range of functioning between 7 and 20 percent PSB for four consecutive days. However, rates then dropped to a 0 percent PSB, except for 3 minor interruptions and this 0 pattern was maintained over the next 6 weeks. Informal observation notes made of Child 4 during this phase indicated that each of these three days of relatively higher rates of PSB were associated with play with one specific other child. There was a socially skilled female peer, from the same class as Children 1 and 2, who made approaches and maintained short instances of peer interaction with Child 4. Child 4 did not seek out social interaction at all otherwise. In general it seemed that Child 4 had rates of PSB that stabilized near 0 during the pre-treatment assessment phase.

A close look at the specific variability of each child's rate of PSB on a particular day did not suggest any systematic occurrence or recurrence of any environmental event. There did not seem to be any particular response to the collection of peer and teacher ratings or the collection of normative rates of PSB. If there was any pattern suggested by comparing inter-subject data, it was that of an inverse relationship between rates of PSB for Child 1 and Child 2. It seemed that as one child's data path went up the other's went down and vice versa. It was noted that these two children tended not to play with each other.

Finally, in terms of making the decision to start treatment with Child 1, there was a period of two weeks baseline observation during which time the data path was consistently variable within the range described previously. In addition the trend of the data path for two of the three other children seemed relatively stable at that time, so it was an appropriate time to introduce the PEERS Program of treatment designed to increase Child 1's rate of PSB.

Training Treatment Phase

Did each child successfully attain a rate of PSB at least one standard deviation above the mean for the child's grade (Rationale, 2b)?

In terms of Figure 1, Child 1 did successfully attain the desired criterion point of 50% or one standard deviation above the mean. In fact the majority of the data points for Child 1 during the treatment phase were above this level. There were only two points which overlapped with data from the pre-treatment assessment phase. As soon as the PEERS Program was introduced there was a general upward trend in rates of PSB. By the end of the social skills tutoring procedure of the Peers Program (6 days), the criterion level had been attained. This result suggested a very positive and rapid response to the treatment procedures. The whole program of initial training took only 13 program days to complete (Appendix C presents the day by day program data). Informal observation notes indicated that her play was not just with the designated helper each day. Child 1 played with the female peer who acted as a tutor a great deal, just as had been observed during the pre-treatment assessment phase. Her social play also expanded to include two male classmates very often and another male classmate to a much lesser extent, but it only

rarely included Child 2. The shift to the maintenance treatment phase was dictated by the PEERS Program criteria more so than by specific trends in the data.

Visual analysis of the data path of Child 3 showed variability within a consistent range, with no specific upward or downward trends, during the same time period that Child 1 was attaining the criterion level. However when the treatment was introduced for Child 3, there was again a general upward trend. By the end of the social skills tutoring procedure of the PEERS Program Child 3 had also attained the criterion level of one standard deviation above the mean. Child 3 also successfully completed the treatment phase in 13 days, with the majority of the data points very close to or above the criterion level.

At the start of treatment for Child 3 there was also some initial overlap with the pre-treatment assessment phase and this occurred once again approximately half-way through treatment. Informal observation notes indicated that this one drop was associated with the designated helper being taken to treatment elsewhere. Child 3 seemed to be "lost" by this change of events. Child 3 tended to play more with various children designated as helpers each time than to play with just any classmate. Again the shift to the maintenance treatment phase was dictated by program criteria.

According to Figure 1 the baseline observations of Child 4 stayed at a rather stable but extremely low level throughout the introduction of treatment for Child 1 and Child 3. The response to introduction of treatment for Child 4 was a slight upward trend over ten days, then an apparent decline for the week before Christmas

holidays. Overall this result was very unsatisfactory and a rather unexpected response to the treatment program given the positive response already indicated by Child 1 and Child 3.

Informal observation notes during this phase indicated that commonly the designated helper would initially play with Child 4 then this dyad would apparently drift apart no matter which of classroom peers was playing with Child 4. It was as if they had their own established play patterns and this play relationship was not satisfying enough or was an imposition. There was play interaction observed occasionally with a child from another class. Given the nature of the researcher/clinician's time commitments during the recess period, there was only a very limited time for specific prompts and reinforcement of the social interaction that was observed in order to provide extra motivation for performance. Such time limitations were similar for all the treatment children however.

After the Christmas break there was still a very limited positive response to the treatment contingencies observed for Child 4. During the first week back at school there were extra pep talks given with the contingencies being thoroughly reviewed again. Every attempt was made to encourage peer interaction both in the classroom and at recess. There continued to be intermittent treatment success in terms of program criterion (Appendix C). However by January 8, the treatment data path for Child 1 was ranging from 0 to 17 percent PSB with a mean response of 5.7 percent PSB which was only .3 percent above the mean indicated during the normative period (Table V). This level was still below the minus one standard deviation point.

It had been noted that there had been one female peer from

another class who seemed interested in Child 4, so a peer-pairing procedure was tried as a probe of an alternative treatment strategy to the PEERS Program. This peer was requested to try and play with Child 4 for the whole recess period, even if Child 4 seemed to lose interest part way through the period. This peer seemed generally skilled in social play, although she did not already have a particularly well established social network for recess play. This treatment procedure was used for 5 morning recess periods as indicated by the vertical columns in Figure 1. Both the child and the peer were given praise for their efforts after each recess period, and occasional prompts or words of encouragement.

The first three treatment probes raised rates of positive social behaviour to the normative mean or above. The procedure was judged relatively successful. After these three probes, the treatment strategy reverted to the typical PEERS Program format. Again there was some limited success according to program criteria (Appendix C). Informal observation notes indicated that most of the positive social behaviour, observed for these 7 days of PEERS Program, was still associated with the peer from the peer-pairing strategy. Two more specific probes were introduced and rates of PSB again jumped to the normative mean level. Another introduction of the PEERS Program procedures brought very low levels of peer social interaction. The treatment procedures using the PEERS Program started November 30 and ended January 30 after 27 program days and 5 alternative treatment probes. Child 4 was judged to have had an unsatisfactory response to the PEERS Program so the program was discontinued.

Maintenance Treatment Phase

Did each treatment child adequately maintain the rate of positive social behaviour, according to PEERS Program criteria, throughout the fading of treatment components (Rationale, 2c)?

Examining the data in Figure 1, for Child 1, there seemed to be a downward trend in rate of PSB, then after one extreme drop to pre-treatment levels, the trend was towards improved performance. Such an initial downward trend was expected from previous research with the PEERS Program (Hops et al., 1978). According to informal observation notes, the unexpected extreme drop on the one day seemed to reflect a time when there were no toys available for the children to use, more so than the removal of any specific treatment component. This had not happened before and did not affect Child 3 who was away, nor did it affect Child 2 and Child 4 who were both exhibiting only very limited peer interaction at the time. The play of the latter two children may have been less dependent on play materials being present. The upward trend in Child 1's data path towards the end of the maintenance treatment phase seemed to reflect the friendships between the peers and Child 1 actually taking "hold" on a more natural basis. They were playing routinely together with established toys and activities. Overall the data path for Child 1 during the maintenance treatment phase, except for the one day, was above the criterion level of plus one standard deviation.

With Child 3 there seemed to be a slight upward trend to the data path in Figure 1 which even maintained over the Christmas break during the maintenance treatment phase. There were however several noteable exceptions. The three drops of the data path into the range of variability observed during the pre-treatment assessment phase

corresponded in time to the consecutive removal of phases one, three and five (see Table II). However it seemed that Child 3's response to the treatment program was still strong enough that PSB returned immediately. Each time the drop was not as far. Overall the data path continued to fluctuate around the criterion level of plus one standard deviation with the vast majority of points remaining above this level.

Attention Control Condition

The stability of the relationship between the rate of PSB for Child 2 in the attention control condition and the rate of PSB for Child 1 during each of the four research phases was also examined (Rationale, 2d)?

As indicated previously in the Pre-Treatment Assessment Phase results, the data paths for Child 1 and Child 2 each were equally variable but consistently close to a range of functioning from the normative mean to minus one standard deviation. If there was any pattern to be suggested by comparing this inter-subject data, it was that of an inverse relationship. It seemed that almost each day as one child's data path went up, the other's went down and vice versa.

During the first day of Child 1's treatment program, the data path for Child 2 sank to 0, but then it recovered to the same sort of variable but relatively stable range as observed previously. During this phase and during the last half of the post-treatment assessment phase, instead of an inverse relationship, there was some suggestion in the data paths of similarities in up and down variability. However the range of variability was at a considerably higher level for Child 1 than for Child 2 who had a range of observed PSB between 0 and 36 percent. Throughout post-treatment Child 1 was generally functioning at or above the criterion level of 50 percent PSB. This

apparent similarity in up and down variability during the latter half of the post-treatment assessment phase may not be accurate as it reflected data observations taken only once per week. No such relationship was suggested by the data paths for the maintenance treatment phase nor for almost the first two months of the post-treatment phase, both of which included almost daily behaviour observations.

Changes to Treatment Program

Were specific changes in the established PEERS Program required in order to facilitate more adequate gains in rate of positive social behaviour for any of the treatment children (Rationale, 2e)?

For Child 1 and Child 3 there were no changes or alterations required in the established treatment plans (see Independent Variables in Methods and Procedures section) in order to have a successful outcome. Some of the changes and decision-making that went into the treatment program for Child 4 have been indicated previously (see Training Treatment Phase of Results). When the PEERS Program was discontinued for Child 4, the decision was made to continue to use the peer-pairing treatment strategy, as Child 4 had demonstrated a relatively positive response to the techniques during the treatment probes. Child 4 was paired with the same peer as in the treatment probes, only this time the treatment occurred in the afternoon recess.

Peer-pairing sessions took place during each afternoon recess in the hallway with the other children playing about. Just as recess started the two girls were requested to play together. They always seemed interested to do so. At times they each brought simple toys, games or activities from home that they knew how to use well which

they shared with each other. The research/clinician's role was to prompt and praise the appropriate specific social skills, as in the PEERS Program tutoring component. At the end of the afternoon recess period Child 4 and the peer were prompted to play together at the next morning recess. The vertical columns after February 1 in Child 4's data of Figure 1, indicated observations of positive social behaviour taken weekly at morning recess.

Over the 8 week period of this peer-pairing treatment, the data path for Child 4 indicated that her rate of PSB maintained in the range of 16 to 40 percent. Her mean rate of PSB was approximately 29 percent, which was consistent with the normative level at the Glenrose. This mean rate was considerably better than any rate that was observed during the pre-treatment assessment phase or training treatment phase. Informal observation notes of her play indicated that over the 8 week period Child 4 increasingly initiated the social interaction with this peer and with other children attracted to their activities. Child 4 kept interaction going by asking and responding to simple questions and by following the progress of the games. The majority of her play interaction remained with the identified peer however. The researcher/clinician's role at the afternoon recess became considerably less intrusive after 3 weeks in order that the more natural contingencies of the play interaction might maintain the relationship.

Given Child 4's apparent positive response to the treatment probes, the peer-pairing strategy was also provided to Child 2 in the attentional control condition who needed to have treatment as soon as possible. An additional factor in the decision to use the

peer-pairing strategy was that reintroduction of the PEERS Program into the classroom, with its corresponding strong shift in focus towards playing with Child 2, might jeopardize the still fragile classroom peer relationships that Child 1 had built up. The treatment program for Child 2 started February 1. Child 2 was paired with the one male classmate who often sought interaction with him, although they never had played very long with each other during any one recess period. They were given the same sort of coaching at the afternoon recess as were Child 4 and her peer. As such each afternoon the researcher/clinician was involved with two pairs of children.

The height of the vertical columns for Child 2 in Figure 1 indicates the level of PSB observed once weekly at morning recess. Child 2's first month of observations indicated a negative trend. The classmate/peer chosen for Child 2 seemed quite different than the peer used with Child 4. Child 2 and his peer did not seem to have games or toys that they already knew how to play on their own. A great deal of time was spent teaching the specific game skills and the necessary social skills to both of the children. They would play together with considerable prompting and reinforcement during afternoon recesses, but they seemed to have increasing difficulty transferring this to the morning recess period. However, after about 4 weeks this researcher/clinician was able to intrude less and less in the afternoon. The morning play started to improve also. However the treatment seemed to have rather limited or no success overall for Child 2. The observed rates of PSB for the last 3 weeks was really not much higher than had been observed before this peer-pairing

treatment strategy had been introduced. Possibly the level of social play was more consistently near the mean for his grade, but this can not be confirmed as there was insufficient data collected to know what happened during all the other days of the week. Child 2 certainly did not attain the criterion level of 50 which approximated the levels of PSB observed in community children in the C.O.R.B.E.H. normative sample.

Post-Treatment Assessment Phase

To what extent did the change in rate of positive social behaviour in each treatment child maintain over the post-treatment assessment phase (Rationale, 2f)?

This question above refers to Child 1 and Child 3 as only they received the full PEERS Program. Child 1 was followed almost daily from December 11 to January 20, except for the Christmas break, and then weekly until the end of March. This was a 15 week period in all. Child 3 was followed for a 10 week period most of which was weekly observations.

Child 1 maintained a range of PSB that fluctuated from the plus 1 to the plus 2 standard deviation level, with only occasional days of functioning in higher or lower levels. Informal observation notes indicated that Child 1 played with most of her classmates, except with Child 2, and that her play extended on a reciprocal basis to nonclassroom children. There was no overlap with the pre-treatment data path and this range of functioning maintained well even over the Christmas break. Overall Child 1 maintained a level of PSB for at least four months that was consistent with the levels expected for nonhandicapped children in regular community schools in Oregon.

The data path for Child 3 maintained at a level near the

criterion point of plus one standard deviation during the two and one-half months of post-treatment assessment. This seemed to indicate a slight decay in the rate of (PSB) in comparison to the maintenance treatment phase. Informal observation notes indicated that Child 3 played in a reciprocal manner with several of his classmates, but his play did not often extend to nonclassroom peers. Child 3 was observed to make numerous successful approaches to other children to get them to play and to be able to assist at maintaining the interaction for most of the recess period. Child 3 also maintained at a level expected for nonhandicapped children.

In terms of inter-subject variability in the data paths for Child 1 and Child 2, there seemed to be a cyclical effect with gentle up and down movement in levels of (PSB) throughout the post-treatment assessment period. However, the peaks or valleys in one child's path did not seem to correspond directly to the other child's path. Unfortunately the data points are a week apart for each child so this apparent cyclical pattern may not reflect a real event, but rather it could just be random fluctuation.

Peer Roster Ratings

After a period of successful treatment and maintenance of improved positive social behaviour, did the "play value" of each child as determined by peer roster rating and by rank order placement also reflect a more positive trend than during the pre-treatment assessment phase (Rationale, 3)?

Table VI indicates the total sociometric score for each child both at pre-treatment and at post-treatment. These totals were the sum of all the scores assigned to each rating of the child made by each classroom peer. The statistical significance of the difference between pre-treatment and post-treatment rating was analyzed using

the Wilcoxin matched-pairs signed-ranks test (Ferguson, 1976, p. 390) at a .05 level of confidence with a directional test. The rank order placements indicated in Table VI were obtained by comparing the total scores assigned for each child to those assigned for each peer within a class. As only Child 1 and Child 3 completed the PEERS Program, there will be post-hoc analysis made on the peer ratings of Child 2 and 4.

After successful treatment and maintenance of positive social behaviour, Child 1 changed from being almost the least preferred to being the most preferred classmate to play with. The total of the peer roster ratings for Child 1 increased significantly. For Child 3 however there was no significant change i the total of the roster ratings. Child 3 had already received a total rating of 14 at pre-treatment, which was only 1 below the maximum possible. Hence there was very little or no opportunity for significant change, unless it was in a less valued direction. In fact the change in rank order placement of Child 3 suggested that he had become less preferred as a playmate at recess compared together classmates, after a period of successful treatment with the PEERS Program.

Child 2 did not complete a successful program of treatment with either the peer-pairing strategy or the PEERS Program. As his classmate, Child 1, increased in preference, his peer roster rating total decreased significantly and his rank order placement suggested that he was less preferred as a playmate at recess. Child 4 did not complete a successful PEERS Program but she did increase in observed PSB as a result of the peer-pairing strategy. The roster rating totals for Child 4 increased significantly and the post-treatment

TABLE VI

Peer Roster Rating Scale Summary[a]

	Classroom 1				Classroom 2		Classroom 3	
	Child 1		Child 2		Child 3		Child 4	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Within Each Classroom Peer 1	2	2	3	1	2	2	1	1
Within Each Classroom Peer 2	2		3	2	3	3	1	1
Within Each Classroom Peer 3	2	3	3	3	3	3	2	3
Within Each Classroom Peer 4	3	3	3	3	3	3	2	3
Within Each Classroom Peer 5	3	3	3	3	3	3	2	3
Child's Total Rating By All Classroom Peers	12	14[b]	15	12[b]	14	14	8	11[b]
Rank Order[c] For Child Within Each Classroom	5	1	1	3	1	2.5	6	3.5

a. scoring of peer roster rating (appendix A) = assigned score
   - I don't like to play with .... at recess. = 1
   - I sometimes like to play with .... at recess. = 2
   - I usually like to play with .... at recess. = 3

b. the difference between these totals for each child is significant at the .05 level using the Wilcoxon matched-pairs signed-ranks test (directional test) (Ferguson, 1976)

c. rank order: 1 = most preferred..to..6 = least preferred.

rank order suggested that she was more preferred as a playmate by her classmates at recess.

Teacher Ratings

After a period of successful treatment and maintenance of improved positive social behaviour, did each child's teacher also rate each child as being more socially interactive with their classroom peers than as rated during the pre-treatment assessment phase (Rationale, 4)?

As only Child 1 and Child 3 completed the PEERS Program the following will mostly be an analysis of their ratings. A post-hoc analysis will be made on the data of Child 2 and Child 4. Table VII indicated the trend of change in the teacher's rating of each child for each of the 15 SIRS questions between pre-treatment and post-treatment ratings.

Child 1 was rated by her teacher as having made no change for 11 of the 15 questions. However increases in peer verbal communication, willingness to take a leadership role and less attention seeking were all noted. Child 3 was also rated as essentially unchanged except for a positive trend in volunteering more for "show and tell" and for being less attention seeking. Data for Child 2 however suggested a negative trend for six questions and no positive trends. Negative changes were indicated for a variety of questions that reflect group participation and verbal communication skills. Although Child 2 did not complete a successful program of treatment his observed rates of (PS) did not reflect a negative trend as the teacher ratings did. Child 4 had some success with the peer-pairing strategy. Her teacher ratings indicated no change for ten of the fifteen questions. Two items (sharing laughter and responding to a child's initiation) showed a slight negative trend, while three items had a slight

TABLE VII

Summary of Teacher Ratings with SIRS[a]

SIRS items[b] (not descriptive or true ... moderately descriptive or true ... very descriptive or true; 1.....2.....3.....4.....5.....6.....7)	Child 1	Child 2	Child 3	Child 4
	T	T	T	T
	P P R R O E E S N T D	P P R R O E E S N T D	P P R R O E E S N T D	P P R R O E E S N T D
1. Physically isolates self from peers while in class.	2 1 .	5 4 .	1 2 .	4 2 +
2. Verbally responds to a child's initiation.	7 7 .	5 5 .	6 6 .	4 2 -
3. Has no friends.	3 2 .	4 5 .	1 1 .	4 4 .
4. Engages in long conversations (more than 30 seconds).	4 6 +	7 4 -	3 4 .	1 1 .
5. Talks with a peer(s) on the way to P.E., lunch, the library, recess.	4 6 +	4 4 .	3 4 .	1 2 .
6. Smiles at other children.	5 6 .	7 4 -	6 5 .	4 5 .
7. Shares laughter with classmates.	5 6 .	7 5 -	6 6 .	4 2 -
8. Does not engage in group activities.	3 2 .	2 5 -	2 2 .	6 2 +
9. Spontaneously contributes during a group discussion.	5 4 .	6 3 -	2 2 .	2 3 .
10. Volunteers for "show and tell".	6 6 .	7 6 .	3 5 +	2 3 .
11. Freely takes a leadership role.	4 6 +	4 5 .	1 2 .	1 1 .
12. Tries to avoid calling attention to him/herself.	3 6 +	3 4 .	3 6 +	2 4 +
13. Spontaneously works with a peer(s) on projects in class.	5 6 .	4 4 .	4 3 .	2 1 .
14. Verbally initiates to a peer(s).	3 4 .	3 3 .	4 4 .	1 2 .
15. Other children act as if he/she were taboo or tainted.	2 1 .	1 3 -	1 1 .	2 1 .

a. trend: a difference of 2 points between pre-treatment and post-treatment item ratings was required on an arbitrary basis for any significance with - being a negative trend, + being a positive trend towards inc peer interaction and . being no change.

b. From Paine et al., 1978.

positive trend (less peer isolation and attention seeking and more group participation). Overall results of the teacher ratings suggested that there was equivocal correspondence to the individual's observed behaviour change in rates of PSB from Figure 1. It seemed that even when there was considerable improvement in rates of PSB such as with Child 1 and Child 3, there was only a slightly more positive trend in the teacher ratings. For most items for each indiviual there was no change indicated in classroom peer interaction by the teacher ratings.

Post Treatment Normative Rates of Positive Social Behaviour (PSB)

To what extent did the rate of positive social behaviour for the no-treatment children of the normative group remain stable between the pre-treatment assessment phase and the post-treatment assessment phase (Rationale, 5)?

The data of Table VIII indicated observations made for children in Classroom 1 and Classroom 4 at morning recess. Classroom 4 did not have any treatment children in it. The range of minus two standard deviations to plus two standard deviations included a theoretical distribution of 96 percent of each child's and peer's rates of PSB.

The degree of stability in intra-child/peer normative rates of PSB, between pre-treatment and post-treatment periods, seemed quite variable overall. In Classroom One, Peer 1 and Peer 2 had only slight increases in their mean rate of (PS) at post-treatment and there was almost total overlap in the range of plus or minus two standard deviations. Peer 1, who was the social skills training tutor and good friend of Child 1, probably did not have a great deal of room for improvement as she was already functioning at a level considerably above her Glenrose School Hospital peers. Informal

TABLE VIII

Comparison of Means and Standard Deviation Ranges[a] of Pre-Treatment and Post-Treatment Normative Rates of Positive Social Behaviour (PSB)

		Pre-Treatment[b]	Post-Treatment[c]
CLASSROOM 1		Class Mean 20	Class Mean 42
Child 1	+2 Standard Deviations	34	87
	Mean	20	61
	-2 Standard Deviations	6	35
Child 2	+2 Standard Deviations	34	32
	Mean	20	16
	-2 Standard Deviations	6	0
Peer 1	+2 Standard Deviations	75	77
	Mean	63	67
	-2 Standard Deviations	51	57
Peer 2	+2 Standard Deviations	0	14
	Mean	0	6
	-2 Standard Deviations	0	0
Peer 3	+2 Standard Deviations	22	72
	Mean	8	50
	-2 Standard Deviations	0	28
Peer 4	+2 Standard Deviations	17	68
	Mean	9	50
	-2 Standard Deviations	1	32
CLASSROOM 4		Class Mean 34	Class Mean 32
Peer 1	+2 Standard Deviations	47	57
	Mean	31	39
	-2 Standard Deviations	15	21
Peer 2	+2 Standard Deviations	53	54
	Mean	35	40
	-2 Standard Deviations	17	26
Peer 3	+2 Standard Deviations	23	22
	Mean	15	8
	-2 Standard Deviations	7	0
Peer 4	+2 Standard Deviations	97	81
	Mean	55	39
	-2 Standard Deviations	13	0

a. Data rounded off to nearest whole number
b. October 12 - 23
c. January 18 - 29

observation notes suggested that Peer 2 had only very limited recess play contact with Child 1 during the treatment program.

Peer 3 and Peer 4 of Classroom One experienced dramatic increases in their mean rate of PSB at post-treatment, with no overlap in the range. Informal observation notes indicated that Peer 3 and Peer 4 created a regular playful foursome with Child 1 and Peer 1. Peer 3 and Peer 4 also seemed to become less negative in peer interaction and less adult attention seeking. Child 2, who was in the attention-control condition, seemed to experience a slight decline in his mean rate of PSB at post-treatment, although there was considerable overlap in the range. He was noted to have had only very limited play interaction with Child 1 during treatment, even though the same opportunities and rewards were provided for him as for the other peers in the classroom. In general the children of Classroom 1, who all participated in some way in the PEERS Program, increased at least slightly in rates of PSB with the exception of Child 2 who decreased slightly.

In Classroom 4, the degree of stability in normative rates of PSB was considerable for each peer. Peers 1 and 2 experienced slight increases in rates at post-treatment, whereas Peers 3 and 4 experienced slight decreases. For all four peers there was almost complete overlap in the ranges. Overall the no-treatment children of the no-treatment classroom (Classroom Four) maintained a relatively stable rate of (PS) over the three month period. This suggested that the normative rates collected at pre-treatment were still an adequate standard of the level of positive peer interaction for the ambulatory and oral speaking grade one children at the Glenrose during

post-treatment. It seemed that without any sort of specific treatment intervention for developing positive social behaviour the children of Classroom Four continued to interact at relatively stable rates of PSB, at least over a three month treatment period.

Summary

The purpose of this study was to investigate the application of the PEERS Program to four multiply handicapped children in grade one who were referred for psychological treatment for peer social withdrawal at the Glenrose School Hospital. The normative mean rate of PSB for their peers at the Glenrose was 28.4 percent (Table II). This level of peer interaction was approximately one standard deviation below the normative mean of 47 percent collected by C.O.R.B.E.H. on nonhandicapped community children (Table IV). Three of the four children referred for treatment had a rate of PSB consistent with the Glenrose normative mean, while the fourth child was at a minus one standard deviation level (Table V). A criterion level for successful performance with the PEERS Program was set at 50 percent PSB, which was one standard deviation above the mean for children at the Glenrose.

The major basis for making ongoing research decisions, for judging the adequacy and meaningfulness of data and for drawing conclusions from the research was the analysis of graphed data (Figure 1). Child 1 and Child 3 both demonstrated a successful response to the PEERS Program intervention by reaching the criterion level shortly after the social skills tutoring component was completed. The majority of their observed rates of PSB during the maintenance treatment phase were also above this plus one standard

deviation level. They continued to maintain these improved rates for two to three and one-half months of followup observations.

Child 4 did not demonstrate a successful response to the PEERS Program even after 27 days of treatment over a two month period. Treatment probes, on days that a peer-pairing procedure was used with Child 4, suggested a relatively positive response to treatment, but the criterion level of 50 percent PSB was not obtained. Child 2, who was in the attention control condition, maintained relatively stable rates of positive social behaviour during Child 1's successful response to the PEERS Program. Unfortunately the peer-pairing treatment strategy was not successful with Child 2 however. Overall, for Child 1 and Child 3, the introduction of the PEERS Program yielded an immediate positive trend for PSB. This improved peer interaction maintained at a level consistent with that expected for nonhandicapped children in the community.

Peer and teacher ratings of social interaction were equivocal at best at indicating a change in ratings that positively corresponded to the observed changes in PSB. Child 1's peer ratings suggested that she was more preferred as a recess playmates as a result of treatment, but for Child 3 there was no significant change and even a suggestion of being less preferred. Child 4's peer ratings did significantly improve and it was suggested that she was more preferred as a playmate, whereas Child 2's rates declined significantly. He appeared to be less preferred as a playmate. The teacher ratings for Child 2 also reflected a slightly negative trend, whereas the teacher ratings for Child 1 and 3 reflected a slightly positive trend. However overall the majority of items on each

child's teacher ratings indicated no change at all.

Finally there was the question of the stability of the normative rates of PSB over the treatment and post-treatment periods (Table VIII). In general the children of Classroom 1, who all participated in some way in Child 1's treatment program, increased at least slightly in rates of PSB with the exception of Child 2 who decreased slightly. Two peers in Classroom 1 increased dramatically in rates of PSB. The rates of PSB for the no-treatment children in the no-treatment Classroom (4) remained relatively stable over the treatment period. This finding suggests that the pre-treatment normative levels at the Glenrose were still an adequate standard for the comparison with post-treatment data. It seemed that without any sort of specific treatment intervention for developing positive social behaviour the children continued to interact at relatively stable rates of PSB, at least over the three month treatment period.

CHAPTER SIX

DISCUSSION

Normative Rates of Positive Social Behaviour

The comparison of results from Table III and Table IV leads to the conclusion that most of the multiply physically handicapped children in grade one at the Glenrose Hospital interact positively with their peers at recess considerably less often than would nonhandicapped children. These handicapped youngsters exhibited normative rates of positive social behaviour (PSB) that were one standard deviation below that observed of nonhandicapped children in community schools. It seems that a lack of socially acceptable peer interaction is a pervasive difficulty with these multiply handicapped children. It was not determined by this study whether the balance of their recess play was characterized by negative interaction or by isolated play, but informal observation suggested that for most children they were simply playing alone or interacting with adults.

It could be questioned whether this apparent lack of positive peer behaviour is related to some aspect of being in this segregated institution and/or to the children being multiply physically handicapped. Strain, Cooke and Appoloni (1976) described developmentally delayed children as often having "not acquired the basic vocal and motor-response topographies necessary for mutually reinforcing interactions with peers" (p. 98). Many of the children at the Glenrose were admitted partially because of the community school's concern over difficulties evident in their social develpment. It seems that the community school perceives the immature and atypical social behaviour of many physically handicapped

children as requiring "special" treatment away from the mainstream of more normal interaction patterns. In addition, even for those handicpped children who have been mainstreamed into regular community schools, there remain considerable social interaction difficulties that require specific social skills training. The difficulties in peer interaction of the Glenrose children seem more related to their being physically handicapped than to their being institutionalized. However it is still not clearly understood as to what impact such homogeneous grouping has on such children's response to social skills training programs. There was no attempt in this study to investigate what contribution "parental over-restrictiveness, lack of opportunity for social play and early rebuffs in social interactions with peers" (Kaufman, 1977, p. 208) might have had in the social development difficulties of the multiply physically handicapped.

It could also be questioned whether or not these multiply handicapped children must necessarily interact at these lower rates. It would seem an important task to generally improve the levels of positive peer interaction within the Glenrose to at least the standards currently accepted by the community. To meet such a goal it would be important to investigate the following:

> a. What is different about the multiply physically handicapped children who do interact at above average rates in comparison to their more socially withdrawn peers.
>
> b. If children's rate of interacting with adults or their rate of interacting with other children in a negative/aggressive manner were significantly reduced, would this necessarily increase their rates of positive peer interaction?

It is this researcher/clinician's opinion that even if adult attention seeking and/or negative peer interaction were reduced, this

would lead to more isolate play and a program of training alternative positive social and play skills would still be needed. Efforts to reduce such inappropriate behaviour would need to be made in conjunction with training the more appropriate alternative behaviours. It should be quite productive to determine why some children who have similarly significant speech, language and/or motor handicaps still can interact at such high rates. This researcher/clinician's opinion is that the higher interacting handicapped children would have well developed social skills for approaching other children and engaging them in play and they would be capable of pursuing a variety of typical children's activities. How and where they developed these skills would be of greatest interest. Have they had more opportunity and/or motivation to pursue peer interaction? Further research may suggest that general procedures should be taken to teach and encourage the basic fundamentals of play and communication with peers for all the handicapped children.

Comparison of the normative rates of PSB for the Glenrose children (Table III) and for the treatment children (Table V) leads to the result that three of the four treatment children had rates of PSB consistent with their grade peers at the Glenrose. There is therefore a concern of how/why these specific children were referred for psychological intervention. It is this researcher/clinician's opinion that the treatment children were truly isolated from their peers both at school and at home, because of their handicaps and their lack of social skills, and it was this observed social withdrawal that the referral was in response to. Other Glenrose

children who were also interacting at similarly delayed rates of PSB were not referred for treatment because of the following factors possibly:

a. they mostly engage in adult interaction and this is not a problem to many people,

b. they were seen as just rough or attention seeking with other children and they just needed to be punished or

c. their social interaction capabilities were unknown as they were new admissions.

It is possible that the four treatment children were referred for specific intervention more so because they had had socialization treatment in the past than for any other reason however.

It is this researcher/clinician's opinion that a screening procedure should be done with all the handicapped children which would include comparison of their observed rates of PSB with community accepted standards and of their ratings by significant others as to the extent of the problem. Such screening would have to occur after a "settling in" period and not restrict itself to peer social withdrawal, but also to rates of adult interaction and negative peer interaction. Since placement in the regular community is the eventual goal of admission to the school hospital for most of the children, it is necessary for social validity reasons to always use community levels of social interaction as a standard to attain, notwithstanding that they could probably be improved also.

PEERS Program Effectiveness

For Child 1 and Child 3 the PEERS Program was very effective. The graphed data from Figure 1 show a functional relationship between introduction of the treatment regime and improved rates of PSB.

These two children attained the same level of PSB that would be expected of nonhandicapped children in a community and they maintained this acceptable level for several months at least. This treatment effect for Child 1 was replicated by Child 3 which helps to increase the external validity of this functional relationship. Maturational factors do not appear to account for the improved rates.

In comparison to the attention control, Child 2, the benefits of the treatment program were superior for Children 1 and 3. The lasting gains of the intervention can not be attributed to simple attention from the researcher/clinician, to separation from the classroom or to peer pairing opportunities. The attention control, Child 2, had equivalent amounts of experience with the significant peers and adults during the social skills tutoring, joint task, classroom rewards, etcetra. As was expected, the absence of the specific treatment components such as coaching, modelling, praise, etcetra of the PEERS Program in Child 2's peer experience was associated with little or no improvement in PSB for him. This lack of long term treatment effect for a socially withdrawn child in an attention control condition of a comprehensive social skills training program has been found previously by Ladd (1981). It is not known as to how Child 2 may have benefitted from complete treatment with the PEERS Program. It is also not known as to what effect such an introduction of the treatment program might have had on Child 1 in the same classroom.

It is this researcher/clinician's opinion that the increased rates of PSB for Peers 3 and 4 in Classroom 1, in comparison to the no-treatment peers of Classroom 4 (Table III), are a function of

consistent opportunities and reinforcement gained from Child 1's treatment program which involved them in positive social behaviour. Some small maturational/developmental increases that might be expected could not account for the dramatic improvements in PSB for Peers 3 and 4 and there was no specific program of treatment provided to decrease adult attention seeking or negative/aggressive peer interaction with these two children. These increases in PSB are probably related to a "spillover" phenomenon (Strain, Shores & Kerr, 1976, p. 34) which implies a spreading out of effects of intervention to nontarget children under certain unspecified conditions. There does not appear to be any other event that would explain these behaviour improvements, especially as the observed normative rates in Classroom 4 remained relatively stable over the five months.

It could be questioned why this PEERS Program of treatment "spilled over" to Peers 3 and 4 and not to Peer 2 and Child 2 (attention control) in the same class. They all had the same opportunities to play and receive reinforcement. In fact they all participated in joint task activities and group rewards. Some tentative partial explanations of this differential "spillover" effect are as follows:

a. Peer 2 and Child 2 were rewarded for not playing with Child 1, as they partook in the daily classroom reward, but had little or no interaction with her. Peers 3 and 4 received rewards contingent upon their acceptable peer interaction with Child 1.

b. Maybe Peer 2 and Child 2 individually preferred not to play with their classmates or were rejected by their classmates.

c. Maybe Peers 3 and 4 were so much more responsive as they were not isolated or socially withdrawn from their peers, but rather they were

> negative/aggressive with high rates of peer contact and corresponding low rates of PSB. They received reinforcement and incidental training for alternative positive behaviour. Over time they developed more acceptable behaviour, while Peer 2 and Child 2 remained in isolation -- still lacking the fundamental social skills.
>
> d. Another factor in this lack of any "spillover" to Child 2 might be related to the observation that during the treatment-training phase there was an apparent inverse relationship between rates of PSB for Child 1 and Child 2. It may be that they had to compete for the same friends. As Child 1 became increasingly more involved with the other classmates, Child 2 was increasingly left out. Classmates stopped approaching him in favour of Child 1 who they would receive a reward for playing with. Without the necessary social skills and motivation, Child 2 just did not/could not break into this increasingly organized social group on his own.

The group dynamics of rejection and inclusion into a social play group for socially withdrawn children needs to be more thoroughly investigated. This may be particularly problematic for physically handicapped children who may have been rebuffed or isolated in a variety of settings or activities by others, and hence possibly not believe in themselves as worthy of inclusion in the group.

For as yet undetermined reasons the PEERS Program does not always simply "spillover" to other socially withdrawn children in a classroom receiving treatment. There was limited change in normative rates of PSB of Peer 2 (Table VIII). This Peer 2 was the child paired with Child 2 during the peer-pairing treatment and seemed quite lacking in social skills and socially withdrawn himself. The condition of social withdrawal with these multiply handicapped children is very stable and very difficult to improve significantly without a powerful treatment intervention such as the PEERS Program. This stability of social withdrawal behaviour in children has been

demonstrated before (Ladd, 1981; Oden & Asher, 1977).

The PEERS Program was not effective with Child 4. This seems at least partially related to the observation that none of her classmates apparently wanted to play with her. Two possible explanations might account for this. Children at this age tend to prefer to play with others of the same sex (Hartup, 1970). Possibly Child 4 covertly rejected her male classmates or she was rejected by them. There was one other girl in her class but she was observed (informally) to have very limited peer interaction also. In addition maybe the boys wanted to be more active at recess, while Child 4 preferred more sedantary play (Hops & Greenwood, 1981).

Differential Response to Treatment

There was a functional positive relationship between the successful application of the PEERS Program and considerably improved rates of PSB for Children 1 and 3. The PEERS Program was not successful for Child 4. It is not clear why there was this differential response to treatment. In previous reports of a differential response to social skills training, it was suggested that the most responsive children appeared to be those who initially possessed the highest level of social skill, and the least responsive children had the lowest level (Strain et al., 1977). This may have been a significant factor in this study also.

Child 4 was interacting at pre-treatment levels of PSB which were considerably lower overall than the other treatment children. This difference in rates of PSB might be accounted for by a corresponding difference in social skill level, but no pre-treatment assessment of specific social skill strengths or weaknesses was administered to

support such a difference one way or another. Certainly, however, initial rates of PSB may be a contributing factor because, in relation to Children 1 and 3, Child 4 was at a minus one standard deviation level for Glenrose norms. Possibly the PEERS Program is just not intensive or comprehensive enough for a multiply physically handicapped child who is so severely socially withdrawn.

Other possible factors that might contribute to differential treatment effects but which were not identified or controlled for were the following:

1. specific speech and language skills/deficits,
2. motor coordination skills/deficits,
3. specific skills/knowledge regarding play activities,
4. levels of anxiety experienced in peer interaction and
5. feelings of self-worth as a friend.

Another complication is that differential treatment effects may be as related to initial levels of the five factors above as to differential gains or improvements in these factors during the treatment and maintenance periods. These multiply handicapped children were receiving intensive therapeutic treatment from different speech pathologists and occupational therapists at the same time as the PEERS Program was provided. It is unknown what differences the children may have had in opportunities to receive positive practice of the social skills at nontreatment times such as at home with siblings. All the children were known to have only very limited contact with nonfamily peers except at school.

Finally it is unclear what effect number of siblings, sex, age

and measured intellectual level may have had on there being differential treatment effects. All three treatment children had two siblings and all had measured I.Q.'s in the dull normal to average range. Child 1 and Child 4 were each girls and only one month apart in age, yet each had a distinctly different response to treatment. Child 3 who was male and sixteen to seventeen months older than the others had almost as successful response to treatment as Child 1. Apparently these latter factors have rather weak or no effects at all in this study.

It is this researcher/clinician's opinion, based on informal observation and previous experience with social skills training of such multiply handicapped children, that the three most relevant factors regarding differential responses to treatment are as follows:

1. There is some basic minimum degree of oral communication competence that is needed to maintain adequate reciprocal interaction with other speaking children. This pre-requisite level is as yet undetermined.

2. There is some minimum level of successful experience with common childhood games and activities needed to provide an agreeable context for play. This would facilitate each child directing energy and attention towards specific social interaction, instead of getting "stuck" on having nothing to do.

3. There is a need for the child to have had numerous successful experiences at engaging other children in play. Children 1 and 3 all were observed to be able to initiate towards other children at recess before treatment started. Child 4 did not initiate to others, but she would respond to others' initiations for short periods of time.

Generalization and Maintenance Issues

During the maintenance treatment phase, the procedure of slowly fading out various treatment components seems to have been very

successful for Children 1 and 3 as most of their data path remained above the criterion point (Figure 1). The fading out of treatment components involved giving the child less and less cues as to how to perform appropriately. It also involved the delaying of the group rewards, until he or she had played adequately for two, and then ree out of five days thus altering the schedule of reinforcement.

Some factors in programming for this generalization over time subsequent to learning are: naturally maintaining contingencies, programming common stimuli, mediated generalization and training to generalize (Stokes & Baer, 1977).

Emphasis will be placed on the naturally maintaining contingencies and the hypothesis of entrapment (Baer & Wolf, 1970) particularly with regard to why the improved rates of PSB maintained successfully during the post-treatment period. The entrapment hypothesis suggests that "if the interactive behaviour of socially uninvolved children can be increased, thereby allowing them to participate in on-going peer group activities, such interaction possibly can be maintained by the naturally occurring reinforcers controlled by peers, even following discontinuation of a structured intervention" (Paine et al., 1978, p. 98). Supportive evidence for this hypothesis was found in the repeated treatment design that Paine et al. (1978) used to study the effects of booster shots of the PEERS Program on maintaining the positive peer interaction.

It is important that behavioural control transfer from the researcher/clinician to natural contingencies that could be trusted to operate at recess and at other times also. The treatment children and their peers were trusted to enjoy the increased amounts of time

in positive interaction. It was also expected that the supervising adults would accept and naturally facilitate such appropriate play. Children love to play and to be involved with others so this seems like a reasonable part of the explanation for the maintenance of treatment effects for Children 1 and 3. Presumably the naturally occurring reinforcers which can maintain newly acquired responses also can maintain undesirable, isolate type behaviours. Therefore it was necessary to intervene in the natural environment to make available positive social consequences that are contingent on appropriate social play.

There were several other factors in programming for generalization. In terms of programming common stimuli, as most of the training was conducted in the setting to which generalization was wanted there was common and salient stimuli in both. Other important factors were that the child's peers were used and that these peers received rewards for appropriate interaction. Also there was a regular assortment of common games and toys provided that would be available in other settings. Even the words that were used during the social skills tutoring procedure were stressed during all other aspects of in-vivo training. In terms of mediated generalization, the self report procedure was one of the last components to be faded out. "It requires establishing a response as part of a new learning that is likely to be utilized in other problems as well" (Stokes & Baer, 1977, p. 361). The children supposedly learned a cognitive strategy of solving the problem of social isolation by in fact playing with other children. Hopefully they would use this strategy in other situations. Finally instructions were regularly given to

the children by the teacher and researcher/clinician to generalize the positive play behaviour to other play periods, settings and children.

The question of whether or not this improved peer interaction, for Children 1 and 3, generalized to other settings was not systematically studied, except in terms of the teacher's ratings as will be discussed later. Informal observation suggested that the behaviour did generalize to nonclassroom peers for Child 1, but Child 3 still tended to occupy himself with his own classmates at the end of the study. This type of generalization to nonclassroom peers was not specifically programmed for. Presumably the game skills and social skills that were developed would prove exceptionally useful for each child in developing satisfying patterns of peer play at the afternoon recess and/or at noon hours. This is particularly so as the toys, children and staff were all the same throughout the day. In addition as common play activities were used as a context for intervention, it was hoped ("train and hope" Stokes & Baer, 1977, p. 351) that the children would use their new positive behaviours during peer play opportunities, as limited as they were, in community/home settings.

Strain and Fox (1981) indicated that there are at least three factors that can inhibit maintenance and generalization of improved peer interaction: "(a) the presence of socially unresponsive, similarly handicapped children; (b) a well-developed friendship network between children; and/or (c) a history of negative contact with target children" (p. 430). Interventions into social behavior have often failed to maintain or generalize in handicapped-only

settings (Strain & Kerr, in press).

Although the Glenrose is definately a setting where there is a strong presence of other socially unresponsive and similarly handicapped children, maintenance of treatment effects was obtained. One factor in favour of maintenance may have been that a well-developed friendship network was not observed for Child 1's and Child 3's respective classrooms. Attempts were made to change the peer's behaviours and to help them maintain positive attitudes towards the target children. This attempt, to alter the social history of interaction between treatment children and peers, involved having the peers develop their own positive social skills and having the peers be rewarded for appropriate peer play. There was however no systematic investigation regarding how successful these efforts were at altering any negative social history, nor even if there was a negative social history.

Difficulties with establishing maintenance in other "handicapped only" settings may have been the result of there having been no attempt to program for generalization and/or the social skills training interventions being too limited in scope/time. Successful treatment with Children 1 and 3 involved over six weeks of systematic intervention and treatment components were gradually faded. These children had had previous directed experience in small group peer socialization (however which had not generalized itself). The PEERS Program would seem to be the bare minimum of psychological intervention to significantly effect such multiply handicapped children with long standing histories of extreme isolation.

Peer Pairing

The PEERS Program has a peer-pairing type of treatment procedure when classroom peers are assigned as helpers to facilitate recess play. Previous research has demonstrated the efficacy of having a nonhandicapped peer initiate and maintain social play with a handicapped child, but it was not clearly determined in these studies whether or not increases in interaction rates generalized over time (Strain & Timm, 1974; Strain et al., 1977). It seemed for Child 4 that peer pairing with her classroom peers was considerably less successful at improving rates of PSB than was being paired with a nonclassroom peer who demonstrated interest in social play. Although Child 4 did not obtain the criterion level of 50 percent PSB, she did approximate average rates of PSB of her peers and she did develop a relatively reciprocal friendship with this nonclassroom peer.

Peer-pairing with Child 2 seemed relatively unsuccessful. Even after two months, his rates of PSB were still pre-treatment baseline rates. There are at least three hypotheses why this lack of treatment gain occurred. First, the peer paired with Child 2 was found to be even less socially skilled than Child 2. This observed lack of social skills meant that play was less reciprocal than necessary and hence probably social interaction did not easily maintain when the researcher/clinician was not providing reinforcement and coaching. Second, Child 2 did not have the benefit of the previously directed experience of the PEERS Program as Child 4 had. Maybe such social skills training experience is a pre-requisite for the simple peer-pairing procedure to be effective. Third, Child 2 was already functioning at a level of PSB reasonably consistent

with Glenrose normative mean rates, whereas Child 4 had started out significantly delayed. Possibly this peer-pairing treatment requires the use of a socially skilled and personally interested peer, plus a considerable amount of directed social skills training before it can improve rates of PSB even up to Glenrose normative rates.

Informal observation suggested that generalization from the afternoon recess treatment sessions was obtained for Child 4 at morning recess periods. The degree of positive peer interaction in the afternoon seemed only slightly better with the researcher/clinician present than was observed once weekly during the morning recess period (Figure 1). However no structured behaviour observations with the CSIC were obtained at afternoon recess to confirm this. Such generalization was not apparent for Child 2 who seemed to interact relatively well with his peer at afternoon recess during treatment, but who did not maintain this degree of play during the morning observation. Again it is not clear how detrimental this particular match of Child 2 and his relatively unskilled peer was to obtaining successful treatment intervention. In addition it is not clear how soon the researcher/clinician should fade out of the afternoon treatment sessions. During this study the intensity of intervention did wane for both Child 2 and Child 4, but treatment did not stop until after the study was over.

Under certain conditions, which as yet are not fully determined, the peer-pairing strategy seems a reasonably useful procedure. Specific important social skills, and possibly a sense of personal worth as a friend, can be developed. This seems similar to what might have occurred for Child 1 during the first week of the social

skills tutoring procedure of the PEERS Program, when she was paired with her socially skilled peer at recess and during the tutoring sessions. However with such multiply handicapped children peer-pairing may simply not be powerful enough to dramatically improve rates of PSB. Possibly if a nonhandicapped, socially competent and personally interested peer were used instead of the handicapped peer the effects might be more successful, but certainly less practical at the Glenrose.

This researcher/clinician remains concerned that the use of peer-pairing alone may not be very cost-effective. There was considerable risk that the observed play interaction was simply dependent on the adult doing the intervention. Conversely the adult might be interfering with the development of normal reciprocal interaction if coaching intrusion is too pervasive or occurs for too long. The peer-pairing strategy as used in this study involved the researcher/clinician for at least part of most afternoon recesses during the two month period. This was a greater time investment for less treatment gain than that of the PEERS Program.

Teacher and Peer Ratings

One of the general results obtained in this study was the equivocal correspondence or apparent agreement between improved rates of PSB and improved ratings by peers and/or teachers. It has been noted previously that generally teacher and peer ratings are not as sensitive as behaviour observation data at measuring treatment effects (Greenwood et al., 1977). In addition previous research has also found equivocal relationships between peer ratings of acceptance and observed behaviour (Gottman et al., 1976; Oden & Asher, 1977).

The peer rating used in this study asked how much a peer would like to play with the target child, not how much they did play, and hence such a rating question may not be sensitive enough. Intentions may not match actual behaviour. It may be that many of the children doing the rating were not able to realize their intention/desire to play with the treatment child because of insufficient social skills themselves.

This possible lack of sensitivity of peer ratings seems important for two reasons: (1) most of the treatment children were apparently well accepted by classmates during the pre-treatment phase and (2) less than half of the individual peer ratings of the treatment children actually evidenced change. Maybe the roster-ratings suggest that most of the treatment children were reasonably well accepted by the peers because they did already interact at Glenrose mean rates of PSB. However Child 4 was less well rated at the beginning and was also interacting less. At post-treatment assessment Child 2 was interacting less, relative to his classmates, and he was apparently less accepted then too. The equivocal rating for Child 3 may reflect a "ceiling type of effect" as there was so little room for more positive changes in rating to occur. Maybe these types of peer ratings need to be considered with respect to changes in the corresponding peer's rates of PSB with the target child, rather than simply to changes in the target child's rates, however this was not done. These ratings might be useful for identifying classroom peers who have a very positive orientation towards the target child to maximize the effectiveness of any peer-pairing activities.

As was indicated previously, teacher ratings may not be as

sensitive as direct behaviour observations for measuring treatment effects (Greenwood et al., 1977). Results of this study suggested that even when there was considerable improvement in rates of PSB for Children 1 and 3, there was only a slightly more positive trend in the teacher ratings as determined by the SIRS. For most items for each individual there was no change indicated in classroom peer interaction by the teachers.

Given the considerable significance of the correlations between the SIRS and the CSIC as indicated in Appendix A, it would appear that improvements in peer interactions at recess did not generalize to the classroom for which many of the SIRS items relate. Two concerns arise however. Possibly if the teachers at the Glenrose actually supervised recess periods, they may have had a more complete perspective on each child and hence they might have given ratings that reflected more improvement when there was improvement. It is just as probable however that there were not enough efforts made to obtain generalization to the classroom setting. There could be more use made of a child's free-time in class. The child could pick a friend and they could mutually decide on an activity to pursue, just as would occur at recess.

Although neither the peer roster-rating nor the teaching rating procedures were able to give clear social validation of the effectiveness of the PEERS Program, such aspects of a multi-method assessment should be administered. The effects of increased PSB at recess on the other children and on the treatment child in other settings must be considered. However given the apparent lack of direct correspondence between the ratings and the observed behaviour,

the ratings would not prove to be a cost-effective procedure in absence of the observations. In addition the observations are crucial to providing on-going feedback for making treatment decisions. The observations seemed to match the informal observation notes very well. By using the sampling procedure to collect the observations considerable time was saved.

Applicability of the PEERS Program

A functional positive relationship was demonstrated between application of the PEERS Program and considerable improvements in rates of PSB for Children 1 and 3. Such a replication of this positive treatment effect provides greater support for concluding that the treatment can be successful with multiply handicapped children too. The CSIC provides reliable data. When observations of the child's PSB are made repeatedly, then this data can be used to make ongoing adjustments to treatment procedures. This program is sufficiently well described in the consultant manual (Hops et al., 1978) that this effective treatment can be readily replicated by others.

The concern arises as to clarifying why the PEERS Program was apparently more effective for such developmentally delayed children at the Glenrose, than had been previously demonstrated by researchers with similar children who were already mainstreamed (Hops et al., 1978). Several possible factors come to mind as to why treatment may have been more effective at the Glenrose:

a. Was it because the target children were also receiving successful intensive treatment for their other handicaps?

b. Was it because they were better accepted by other handicapped peers in this homogeneous

setting, than would be expected in an integrated setting and this facilitated treatment?

c. Was it that these target children had had a previous year of small group social play experience in separate play rooms before the program was applied?

d. Was it that there were so few children in each class that the target children received so much greater contact with each peer than would be expected in a regular class?

e. Was it that expectations and actual requirements for speech, language and/or motor coordination skills are considerably less when all the others are also handicapped, and as such interaction can still be satisfying?

f. Was it that in this setting the handicapped children do not have to compete for social interaction time with nonhandicapped children against those who are considerably more verbally and motorically competent?

It is speculated that all of the above factors have had a positive impact on the effectiveness of the PEERS Program at the Glenrose. It certainly is not clear which factors are more important than others, nor if these are all the important factors.

The behaviours that are selected for treatment with the PEERS Program were important to the child and his/her significant adults, in so far as they were interested in seeing increased social play. Being able to successfully play with peers and to have friends is an important developmental achievement. The treatment procedures were appropriate to meeting this goal and they were acceptable to the children, their parents and their teachers as evidenced by their continued cooperation. In terms of the clinical importance of the treatment gains, Children 1 and 3 developed and maintained rates of PSB that were consistent with rates expected by nonhandicapped children at recess. It is less clear what impact this increased peer

interaction had on the child's "play value" or their classroom social behaviour as there was equivocal correspondence between peer and teacher ratings and observed PSB.

Successful application of the program to these two children does demonstrate however that it is not necessary to simply wait until the children are ready to play or to wait until the other developmental handicaps are finished being treated. This study did not evaluate what effects improved rates of PSB might have had on treatment progress for these physical handicaps. However it is clear that such children can develop adequate social skills to interact with their peers in a very acceptable fashion. These children developed reciprocal social interaction skills that allowed them to effectively initiate, maintain, change and stop play with their peers. It is presumed that these children would be viewed as less handicapped by the community and hence this could improve their chances at being successfully mainstreamed into a community school or at least into community play groups. Mainstreaming would likely be even more successful if their speech, language and motor coordination skills more closely approximate normal as a result of the intensive treatment at the Glenrose.

The PEERS Program can be used by experienced psychological/educational consultants without the benefit of specific training from C.O.R.B.E.H. if the program procedures are followed rigorously. The time and energy commitment needed to provide a successful program was quite acceptable to the teacher and the consultant. The fact that it required the children to be out of the

classroom only for very limited periods of time was important. There was one specific difficulty that arose in implementing the program. This problem occurred when the classmates of Child 4 were receiving group rewards, even though it was a nonclassmate peer who was actually helping to develop most of the positive social interaction. The treatment concern was to not discourage Child 4 for her efforts so the classroom reward was given, however it may have confounded treatment progress by rewarding her classmates for not interacting with her. Otherwise the treatment program was easy to implement.

Several other difficulties with providing social skills training to these multiply physically handicapped children were identified. It seems, that in such a setting with most other peers also having social skill deficits, it was difficult to have the children gain enough contact with appropriate role models. The apparent orientation of a target child's peers seems important, in that some children possibly do not care to interact, even given the rewards that were offered and obtained. The treatment children needed to have at least one socially skilled peer take an interest in pursuing the program objectives in order to get it adequately started. Afterwards less positively oriented or less socially skilled peers would/could become involved. Also collection of the global rates of PSB with the CSIC did not systematically provide information as to whether increased rates reflected more play with one peer or a similar level of play but with more peers. Either way the child could seem to be interacting successfully, but the ramifications of the treatment might be quite different in terms of generalization issues.

Finally of considerable concern to this researcher/clinician was the possible negative effects on a second socially withdrawn child in a classroom, such as Child 2. It seemed that Child 2 had to compete for peer contact wih Child 1, who had all the attention focussed on her, and that Child 2 was not able to compete. This strong focus on the one target child maybe had a discouraging or at least limiting effect on the other withdrawn child's eventual response to receiving treatment. There needs to be investigation as to how both childrens' need can be adequately met without detracting from each other. Possibly treatment attention could be focussed on each child separately at either a morning or afternoon recess. Maybe one could receive treatment at a noon time period instead of at recess. Clearly however the patterns of social interaction within a group of children can be altered with the PEERS Program, but the impact of the program may not be positive for everyone.

The PEERS Program is a multi-faceted treatment procedure that can be very clinically effective. It teaches important social skills and facilitates a socially withdrawn child's entry into a natural community of reinforcers involving successful peer interaction. The fading treatment also quickly allows the child to disengage from the adult imposed treatment regime. Particularly for brain injured children it is important to increase their contact with more "natural" contingencies, as their handicaps may have prevented reinforcement in activities that are relatively unavailable to the child such as peer social interaction (Hall & Broden, 1967).

Given that this study demonstrated a successful replication of the PEERS Program for two children from a divergent population in a

different geographical region than the original research, this study supports the further generalizability of the treatment procedures to at least special education placements. Possibly it would be quite useful for those socially withdrawn and physically handicapped children placed in segregated classrooms in regular community schools as a transition to greater social integration with nonhandicapped peers.

It is not clear how to predict who will probably benefit most from the program. As was the case with this study, possibly only those children who are close to, or within, one standard deviation of rates of PSB, as observed in nonhandicapped community children, can benefit with the program as it is now. Maybe application of the PEERS Program to Child 4, after her relatively successful response to the peer-pairing treament, would have yielded more successful results. In addition there was no attempt made to systematically investigate exactly how competitive the PEERS Program is against other alternative treament methods or programs. The conclusion of the previous review of the literature was that a multi-method multi-assessment procedure, as was provided in this study, was likely to have the best clinical effectiveness.

Limitations

Given that the children were referred for this treatment based on the opinions of parents, teachers and therapists, there was not a thorough investigation of their play habits and game skills, peer social interaction skills or the specific degree to which they were physically handicapped. Such a lack of identification information made inter-subject comparisons as to differential response to

treatment very speculative. In addition the researcher/clinician is only a little closer to being able to describe what "socially withdrawn" really means for a multiply physically handicapped child.

By only using one global behaviour (PSB) to describe the effectiveness of the child's attempts to interact with peers, all that was known was that the child was becoming more or becoming less successful. Particularly as a time sampling procedure was used, there was no way of indicating what specific effect the PEERS Progam was having on important reciprocal behaviours such as rates of initiations or of responding for either the child or peer(s). It is not possible to say in any definitive way how the child was getting better at socially interacting.

There was no specific investigation of how this improved peer interaction was generalizing to other settings where such social behaviour should also be facilitated such as afternoon recess, noon hours and/or play at home. In addition long term followup of the same treatment children, and of at least some of their no-treatment peers, under the same conditions as the pre-treatment normative assessment would have provided valuable data on the duration of treatment gains and maybe of developmental changes in rates of PSB in multiply physically handicapped children.

It was not possible to conclude that the PEERS Program was the best treatment approach for social withdrawal with such children. It was not possible to do any component analysis of treatment effects or to measure this program against any others. In addition there was only one replication of the positive treatment effects with this population so conclusions must be tempered by the need to demonstrate

its effectiveness with other similarly handicapped children. Finally, and most importantly, the study did not fulfill its mandate of providing effective and socially valid treatment to each child as Child 2 remained essentially the same.

Suggestions for Further Research

Given the generally consistent finding of how difficult it is to socially integrate handicapped children into the mainstream of childhood relationships particularly at school, any successful techniques that assist this normalization process are worthy of more extensive investigation. The extension of the treatment program from this multiply physically handicapped population to other special needs children could include children who are wheelchair bound, visually impaired or hearing impaired. It would be important to also attempt this program with multiply physically handicapped children who did not have a history of any treatment for social withdrawal in order to measure how powerful it can be as an initial treatment procedure.

Given that the rates of PSB for the children at the Glenrose were considerably lower than expected of nonhandicapped children, there is a need for overall improvements in peer interaction. This may mean direct instruction of important positive social skills for most children is needed. For some of these there would also need to be corresponding efforts to decrease negative/aggressive type behaviours. In order to do a broad range socialization program efficiently, there would need to be a screening evaluation or rating of those skills that parents, teachers and therapists judge as most relevant. Any such screening would have to account for developmental

factors of what would be appropriate prerequisites for successful peer interaction. It should also include evaluation of game playing and verbal communication skills as well as social skills. After general efforts to encourage more appropriate peer interaction, there may be particular children who still have specific social skill deficits and require a more individualized program of treatment.

One consideration in developing either a broad range or personalized social skills training program would be to observe the handicapped children's reciprocal pattern of interaction. This process would include how behaviours were exchanged, the qualities of these behaviours and their duration. This information would then need to be compared to developmental/normative information of nonhandicapped children. For example the apparent cyclical pattern of the PSB for the treatment children during the post-assessment period may prove to be a normal pattern or something peculiar to a socially handicapped population. In general a combination of behaviour rating and observation could significantly help to determine similarities and differences in social skills development between physically handicapped and nonhandicapped children. It may even be possible to start to identify relative strengths and weaknesses in social skills according to type of handicap with a view to primary prevention strategies.

Finally two cognitive factors related to social development need further investigation. What is the self-concept of a child who interacts with peers in only limited ways? Does this self-concept change in keeping with improvements in rates of PSB? Could a child's self-concept be a predictor of treatment success? In addition does a

child's cognitive knowledge of what social skills are important for successful or unsuccessful peer interaction change with a direct instruction/coaching treatment procedure such as the PEERS Program. Such knowledge might lead to greater generalization to other settings or to more adaptive social problem solving in future peer relationships.

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APPENDIX A

APPENDIX A
NATURALISTIC BEHAVIOUR OBSERVATION FORM

CONSULTANT SOCIAL INTERACTION CODE (CSIC)[a]

Name _____ School _____ Date _____

Teacher _____ Consultant _____ Recess: ___ AM ___ PM

PHASE: Pre-Treatment Assessment ___ Training Treatment ___
Maintenance Treatment ___ Post-Treatment Assessment ___

INSTRUCTIONS: to code a behaviour make a slash with coloured ink
PS: POSITIVE SOCIAL NA: NEGATIVE/ALONE

05 PS NA	10 PS NA	15 PS NA	20 PS NA	25 PS NA	30 PS NA
35 PS NA	40 PS NA	45 PS NA	50 PS NA	55 PS NA	00 PS NA
					1 MINUTE
05 PS NA	10 PS NA	15 PS NA	20 PS NA	25 PS NA	30 PS NA
35 PS NA	40 PS NA	45 PS NA	50 PS NA	55 PS NA	00 PS NA
					2 MINUTES
05 PS NA	10 PS NA	15 PS NA	20 PS NA	25 PS NA	30 PS NA
35 PS NA	40 PS NA	45 PS NA	50 PS NA	55 PS NA	00 PS NA
					3 MINUTES
05 PS NA	10 PS NA	15 PS NA	20 PS NA	25 PS NA	30 PS NA
35 PS NA	40 PS NA	45 PS NA	50 PS NA	55 PS NA	00 PS NA
					4 MINUTES
05 PS NA	10 PS NA	15 PS NA	20 PS NA	25 PS NA	30 PS NA
35 PS NA	40 PS NA	45 PS NA	50 PS NA	55 PS NA	00 PS NA
					5 MINUTES

COMMENTS:

RESULTS:

$$\frac{\text{\# of PS intervals}}{\text{total \# of intervals}} \times 100 = \%PS$$

a. as adapted by researcher/clinician from PEERS Program format for the CSIC

APPENDIX A

TEACHER BEHAVIOUR RATING SCALE

Social Interaction Rating Scale (S.I.R.S.)

Child's Name _____

School _____ Date _____

Teacher _____ Consultant _____

Rating Instructions

Please read each statement on the reverse side of this page carefully and circle the corresponding number that is descriptive or representative of the child's behavior. The numbers 1 through 7 are a continuous scale. Circling number 1 indicates that the statement is a false description of the child, circling number 4 states that the statement is moderately descriptive of the child, and circling number 7 indicates that the statement is truly descriptive of the child.

For example, an item may read as follows:

4. Smiles at other children.....

false description		moderately descriptive		true description
1	2	3	4	5	6	7

If you feel the child does not smile at other children, then by circling number 1, you would indicate that the statement ("Smiles at other children") is a false description and not true of that child.

Circling number 4 you would indicate that the statement ("Smiles at other children") is moderately descriptive.

Circling number 7 would indicate that the statement ("Smiles at other children") is very descriptive or true of the child. PLEASE DO NOT MAKE MARKS BETWEEN THE NUMBERS -- CIRCLE THE NUMBER THAT BEST DESCRIBES YOUR OPINION OF THE CHILD'S BEHAVIOR.

Social Interaction Rating Scale (S.I.P.S.)

false description — moderately descriptive — true description

1.....2.....3.....4.....5.....6.....7

1. Physically isolates self from peers while in class. 1....2....3....4....5....6....7
2. Verbally responds to a child's initiation. 1....2....3....4....5....6....7
3. Has no friends. 1....2....3....4....5....6....7
4. Engages in long conversations (more than 30 seconds). 1....2....3....4....5....6....7
5. Talks with a peer(s) on the way to P.E., lunch, the library, or recess. 1....2....3....4....5....6....7
6. Smiles at other children. 1....2....3....4....5....6....7
7. Shares laughter with classmates. 1....2....3....4....5....6....7
8. Does not engage in group activities. 1....2....3....4....5....6....7
9. Spontaneously contributes during a group discussion. 1....2....3....4....5....6....7
10. Volunteers for "show and tell". 1....2....3....4....5....6....7
11. Freely takes a leadership role. 1....2....3....4....5....6....7
12. Tries to avoid calling attention to him/herself. 1....2....3....4....5....6....7
13. Spontaneously works with a peer(s) on projects in class. 1....2....3....4....5....6....7
14. Verbally initiates to a peer(s). 1....2....3....4....5....6....7
15. Other children act as if he/she were taboo or tainted. 1....2....3....4....5....6....7

APPENDIX A

CORRELATION INDICES OF SIRS WITH CSIC

	Items From (SIRS) Social Interaction Rating Scale	Correlations with Percent Social Behavior (CSIC) 1975-76	1976-77	1975-77
1.	Physically isolates self from peers while in class.	-0.14	-0.45**	-0.31**
2.	Verbally responds to a child's initiation.	0.36**	0.47**	0.42**
3.	Has no friends.	-0.22	-0.41**	-0.32**
4.	Engages in long conversations (more than 30 seconds).	0.33*	0.49**	0.42**
5.	Talks with a peer(s) on the way to P.E., lunch, the library or recess.	-0.23	0.47**	0.35**
6.	Smiles at other children.	0.28*	0.50**	0.40**
7.	Shares in laughter with classmates.	0.30*	0.51**	0.42**
8.	Does not engage in group activities.	-0.30*	-0.37**	-0.34**
9.	Spontaneously contributes during group discussion.	0.33*	0.45**	0.40**
10.	Volunteers for "show and tell".	0.38**	0.49**	0.43**
11.	Freely takes a leadership role.	0.35*	0.50**	0.42**
12.	Tries to avoid calling attention to him/herself.	-0.19	-0.30*	-0.20*
13.	Spontaneously works with a peer(s) on projects in class.	0.42**	0.47**	0.45**
14.	Verbally initiates to a peer(s).	0.40**	0.54**	0.48**
15.	Other children act as if s/he were taboo or tainted.	-0.08	-0.40	-0.23

* p .05
**p .01

APPENDIX A

PEER ROSTER RATING SCALE

PLACE PICTURE OF PEER HERE

read:

"How much do you like to play with ..... (peer) at recess?"

a. "I don't like to play with ..... at recess."

b. "I sometimes like to play with ..... at recess."

c. "I usually like to play with ..... at recess."

	PEER'S NAME	/ RATER SCORE
1.		/
2.		/
3.		/
4.		/
5.		/

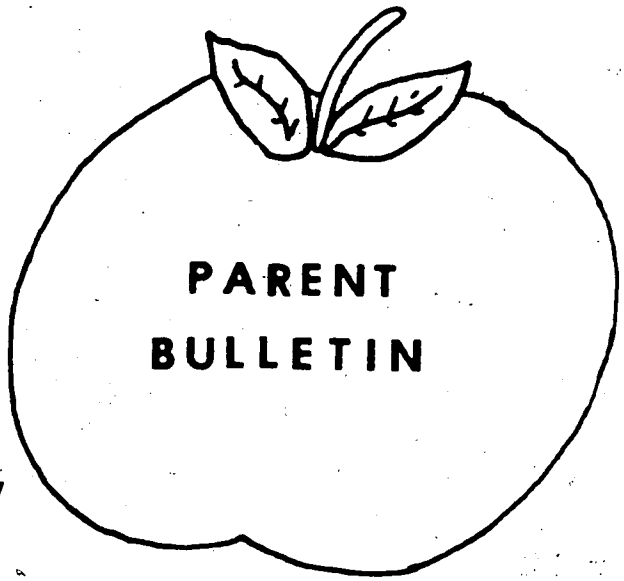
"Point to the face that says how much you like to play with ..... at recess."

CHILD: _____

DATE: _____

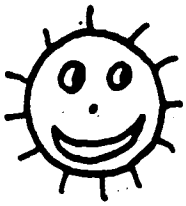
APPENDIX B

APPENDIX B
Recess Point Card : TRAINING



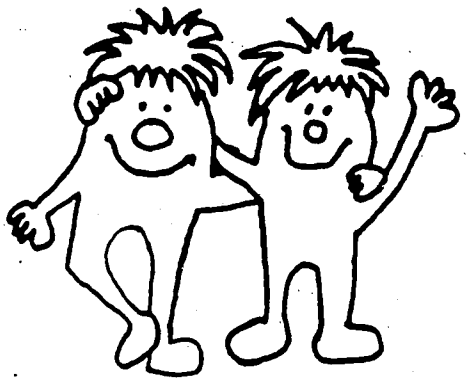
_____
date

_____ and
_____
_____
_____
have successfully
played together



_____ and friends
played _____
_____
_____

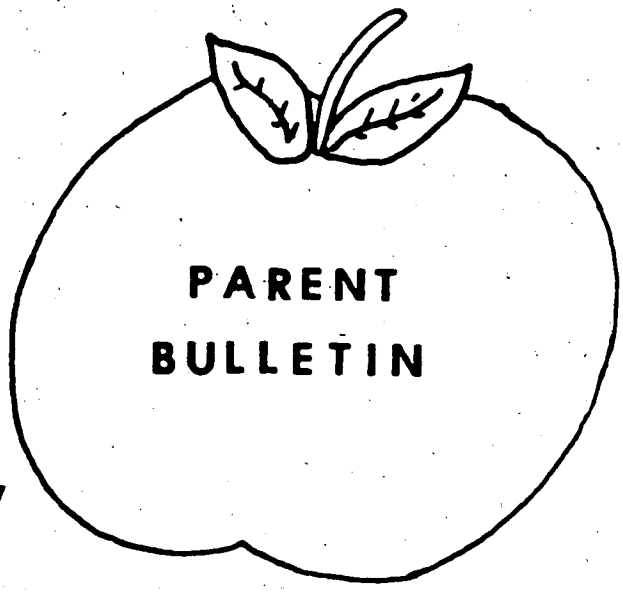
they were rewarded by: _____
_____
_____



Fantastic!

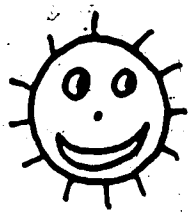
_____
signed

APPENDIX B
Recess Point Card : MAINTENANCE



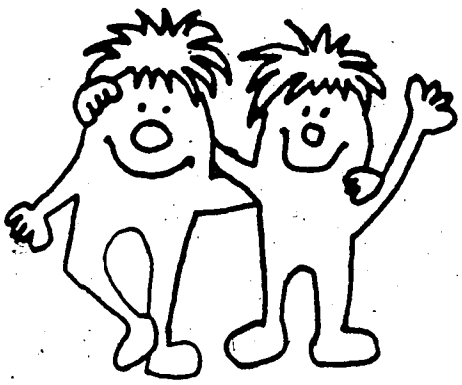
_____
date

_____ and
_____
_____
_____
have successfully
played together



_____ and friends
played: _____
_____
_____

_____ needs ___ more
cards before the
class can: _____



Fantastic!

_____
signed

APPENDIX C

APPENDIX C

CHILD 1 - PEERS PROGRAM TREATMENT DATA

Date	Oct 26	Oct 28	Oct 29	Nov 3	Nov 4	Nov 5	Nov 6	Nov 9	Nov 10	Nov 12	Nov 13	Nov 16
Points Awarded	31	28	36	47	39	72	56	61	47	81	64	67
Criterion Level Needed				32	37	40	48	57	62	57	62	65
Successful Treatment				yes	yes	yes	yes	yes	no	yes	yes	yes
Program Day	1	2	3	4	5	6	7	8		9	10	11
Component Removal Phase												

Date	Nov 19	Nov 20	Nov 23	Nov 24	Nov 25	Nov 26	Nov 27	Nov 30	Dec 1	Dec 2	Dec 3	Dec 4
Points Awarded	69	78	72	64	64	75	58	61	53	31	64	61
Criterion Level Needed	68	70	70	50	50	50	50	50	50	50	50	50
Successful Treatment	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes
Program Day												
Component Removal Phase	1	2	2	3	3	3	3	3	4	4	4	4

Date	Dec 7	Dec 8	Dec 9
Points Awarded	64	69	72
Criterion Level Needed	50	50	50
Successful Treatment	yes	yes	yes
Program Day			
Component Removal Phase	5	5	5

APPENDIX C

CHILD 3 - PEERS PROGRAM TREATMENT DATA

Date	Nov 9	Nov 10	Nov 12	Nov 13	Nov 16	Nov 18	Nov 20	Nov 23	Nov 24	Nov 25	Nov 27	Nov 30
Points Awarded	35	33	28	47	50	56	53	22	61	39	47	52
Criterion Level Needed				34	34	48	51	54	54	54	40	48
Successful Treatment				yes	yes	yes	yes	no	yes	no	yes	yes
Program Day	1	2	3	4	5	6	7	8	9	10	11	12
Component Removal Phase												

Date	Dec 1	Dec 2	Dec 3	Dec 7	Dec 8	Dec 9	Dec 11	Dec 14	Dec 15	Dec 16	Dec 17	Jan 4
Points Awarded	56	17	56	58	64	28	50	56	39	64	69	67
Criterion Level Needed	48	53	53	57	57	50	50	50	50	50	50	50
Successful Treatment	yes	no	yes	yes	yes	no	yes	yes	no	yes	yes	yes
Program Day	13											
Component Removal Phase		1	1	2	2	3	3	3	3	3	3	3

Date	Jan 5	Jan 6	Jan 7	Jan 8	Jan 12	Jan 13	Jan 14	Jan 15
Points Awarded	61	72	53	56	36	58	61	69
Criterion Level Needed	50	50	50	50	50	50	50	50
Successful Treatment	yes	yes	yes	yes	no	yes	yes	yes
Program Day								
Component Removal Phase	3	3	4	4	5	5	5	5

APPENDIX C

CHILD 4 - PEERS PROGRAM TREATMENT DATA

Date	Nov 30	Dec 1	Dec 2	Dec 3	Dec 4	Dec 7	Dec 8	Dec 9	Dec 11	Dec 14	Dec 15	Dec 16
Points Awarded	0	6	8	6	11	14	6	11	14	17	0	11
Criterion Level Needed				7	7	9	12	12	12	12	15	15
Successful Treatment				no	yes	yes	no	no	yes	yes	no	no
Program Day	1	2	3	4	5	6	7	8	9	10	11	12
Component Removal Phase												

Date	Dec 17	Jan 4	Jan 5	Jan 6	Jan 7	Jan 14	Jan 15	Jan 18	Jan 19	Jan 20	Jan 21	Jan 22
Points Awarded	0	0	3	3	8	6	8	0	0	3	11	0
Criterion Level Needed	12	1	2	1	4	4	7	9	7	1	1	4
Successful Treatment	no	no	yes	yes	yes	yes	yes	no	no	yes	yes	no
Program Day	13	14	15	16	17	18	19	20	21	22	23	24
Component Removal Phase												

Date	Jan 27	Jan 29	Jan 30
Points Awarded	8	0	0
Criterion Level Needed	4	9	1
Successful Treatment	yes	no	no
Program Day	25	26	27
Component Removal Phase			