
CLINICAL

THE VALUE OF INTEGRATING HANDICAPPED AND NONHANDICAPPED PRESCHOOL CHILDREN

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A conceptual and empirical framework is suggested to promote the development of handicapped preschool children through involvement with nonhandicapped peers. The need for systematically designed interaction is stressed, and related to research on peers as agents of change. Two studies are offered as examples of the effectiveness of nonhandicapped children as educational and therapeutic resources. A framework for future research is discussed, and relevant variables are identified.

Presently, large numbers of handicapped and nonhandicapped preschool children are being integrated in various programs, including Head Start, day care, model demonstration projects, and even programs formerly limited to handicapped children. In part, the emphasis on integration at the preschool level is a downward extension of mainstreaming efforts for older children, and arises out of many of the same concerns.^{19, 20} Although prominent among these are negative reactions to issues

such as labeling and placement practices, as well as a general disenchantment with the outcomes of self-contained special education classes,^{5, 7} a positively oriented rationale in support of the integration process can be identified.^{6, 7, 31}

One aspect of this positive conception concerns the increased understanding and sensitivity to individual differences that nonhandicapped children, their parents, and their teachers can develop out of involvement with handicapped

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children; a host of important attitudinal processes are likely to be positively affected.

A second aspect concerns the benefits to teachers that can arise from the opportunity to observe a mixed group of children, especially at the preschool level; integrated classrooms provide teachers with a ready framework for gauging child behaviors within a developmental context.

The third aspect involves the potential benefits to handicapped children from observing and interacting with more advanced peers. This may take the form of increased frequency and complexity of verbalizations and higher quality of play as a result of specific modeling and peer reinforcement experiences, or more frequent positive interactions with others due to the existence of more appropriate social consequences from peers. Bricker and Bricker⁶ have noted that:

The ways in which a non-delayed child plays with toys and other objects in the classroom and playground provide greater variation in the types of activity available than that provided by the more limited repertoires of the delayed youngsters. This modeling of object-relevant play may provide a better instructional medium than a teacher demonstrating the same activity directly, since both approximations to relevant use and greater variations in the use of objects are evident in the play behavior of the non-delayed child. (pp. 3-4)

This paper will explore the last aspect in detail, and will provide a conceptual and empirical framework relating to procedures that promote the development of handicapped preschool children as a direct result of their involvement with nonhandicapped peers. Certainly, information is needed to assist policy makers, program planners, and teachers

in their decision making in this area. Unfortunately, research designed to identify the specific conditions *unique to the mainstreamed setting* that relate to the development of the handicapped child is very limited. As will be noted shortly, however, the few studies on integrating handicapped and nonhandicapped preschool children, as well as data extrapolated from a variety of related investigations, suggest that the critical component is not the simple presence of nonhandicapped children in the class, but the way in which interactions among these children are *systematically* guided or encouraged.

PLANNED INTERACTIONS

An excellent example of the need to organize the environment systematically in this regard can be found in a recent study on the reduction of social withdrawal using symbolic modeling. After identifying a number of socially withdrawn children, O'Connor²¹ presented to half of them a film consisting of eleven scenes of peers interacting with each other in a very pleasant manner. After the showing of this film, peer interactions in the preschool increased markedly, while no change was detected in a control group which viewed an unrelated film. The question arises, however, as to why such an effect should occur, since the isolate child generally has available on a daily basis a large number of peer models playing happily. The answer seems to reside, as suggested above, in the systematic nature in which the scenes in the film were presented. As O'Connor²¹ noted,

The initial scenes involve very calm activities such as sharing a book or toy while two children are seated at a table. In the terminal scenes, as many as six children are shown

gleefully tossing play equipment around the room. (p. 18)

Accordingly, mere exposure to appropriate models is often insufficient to obtain the desired effect.

Interestingly, in 1924, Mary Cover Jones¹⁷ reported that the "method of social imitation" was highly successful in eliminating fear responses of very young children. This technique employed peers who modeled nonfearful behavior in a directed and controlled setting. As Jones noted,

By the method of social imitation we allowed the subject to share, under controlled conditions, the social activity of a group of children especially chosen with a view to prestige effect. (p. 390)

A similar result supporting the need for planned interactions was obtained in a recent study⁹ that evaluated the effects of integrating handicapped and nonhandicapped children on social play skills. Children were rated on a time-sampling basis, using a social play scale ranging from autistic-like and isolate play to cooperative play. After a variety of unsuccessful attempts to increase substantially the quality of the handicapped children's play, a group of nonhandicapped children were introduced into the play situation. Although the introduction of these children did improve the social play of the handicapped children to some extent, the change was not very substantial. Again, mere togetherness was not sufficient to produce the desired effect. However, when the teacher systematically structured the situation, using the nonhandicapped children to promote various interactions, a marked increase in the quality of play occurred.

PEERS AS AGENTS OF CHANGE

The studies described above are examples of procedures that employed peers as the primary agents of change in an educational or therapeutic program. In fact, a large number of studies have explored the roles peers play in the development, maintenance, and modification of behavioral patterns, especially their function as reinforcing agents.¹⁴ One example can be found in the work of Solomon and Wahler,²⁴ who investigated peer interactions in a sixth-grade classroom. In this study, strong evidence was found indicating that peer reinforcement helped to maintain disruptive behaviors in the classroom. Of greater significance, instructions to nondisruptive peers to selectively reinforce socially appropriate behaviors and to ignore deviant behaviors resulted in a marked reduction of the disruptive ones.

Similarly, there have been a few demonstrations emphasizing nonhandicapped children as agents of change in promoting positive behavior in children classified as handicapped. In one, nonhandicapped primary grade children were paired with children classified as emotionally disturbed in a regular classroom setting.⁸ Peers modeled appropriate behaviors and selectively reinforced only the appropriate behavior of these problem children. Although a multiple baseline design would have permitted some cause and effect statements,¹² a substantial reduction in deviant behavior did occur. Wagner,²⁶ in a review of the literature on children tutoring children, suggested that some benefits can be obtained with normal children assisting handicapped children, but there was little useful empirical data available.

Hopefully, future research will determine if some of the dramatic effects found by Gartner, Kohler and Riessman¹¹ on cross-age tutoring can be obtained with peer tutoring among nonhandicapped and handicapped children.

In a series of experiments that have served as prototypes for some of our work, Wahler²⁷ conducted an experimental analysis of nonhandicapped preschoolers' interactions in free-field settings. A number of behaviors were identified that were correlated with high and low frequencies of contingent peer reinforcement. Peers were then instructed verbally and through role-playing exercises to attend selectively to certain classes of behavior. With this procedure, Wahler was able to modify the type and quality of play, speech to peers, and the passive and aggressive behaviors of various children.

Summarizing work of this sort, Hartup¹⁴ stated that

... direct reinforcement from peers is a potent form of social influence during childhood. The effects of social influence are evident in very early childhood. *In addition, very young children can serve effectively as the confederates of teachers and experimenters in bringing about behavior change through this medium.* (p. 429, italics added)

NONHANDICAPPED PRESCHOOL PEERS AS RESOURCES

Although programs in which handicapped and nonhandicapped preschool children have been integrated often report instances of positive changes in the handicapped children as a result of specific forms of peer interaction,¹⁰ most of the observations have not been conducted in a systematic fashion. The preceding discussion does strongly suggest, however, that under properly arranged conditions such benefits can occur as a

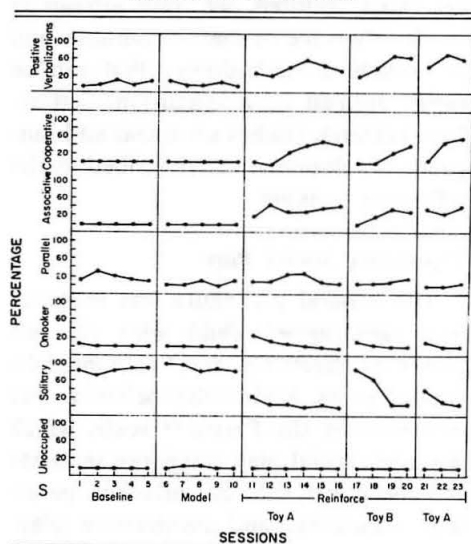
direct effect of integration activities. Consequently, as part of a more extensive project investigating the interactions of nonhandicapped and handicapped preschool children, we have attempted to identify some of these conditions and to provide a methodology that can be easily applied in a classroom setting. Two research studies on social and language development are described in the following sections.

Promoting Social Play

The general procedure was to select one handicapped child who did not play very effectively, and two nonhandicapped peers. Social play behavior was measured by the Parten²² scale, which describes social play categories in terms of unoccupied, solitary, onlooker, parallel, associative, and cooperative play. This scale was utilized in a manner similar to that recently described by Wintre and Webster.³⁰ Accordingly, play behavior was measured on a time-sampling basis, with the handicapped child's play being rated for a ten-second interval followed by a five-second recording interval. Only one category rating was permitted per ten-second interval. Similarly, the existence of any positive verbalizations to peers by the handicapped child was recorded for each observation interval. Reliability was measured by having a second observer rate the same behaviors during at least fifteen percent of the sessions, and agreement by intervals never fell below 87%. All children were four- and five-year-old preschoolers. Both handicapped children participating in the social play study had relatively mild handicaps, one having an IQ of 58 and the other 78.

The play behavior of the handicapped

Figure 1
CHANGES IN SOCIAL PLAY BEHAVIOR AND
POSITIVE VERBALIZATIONS FOR ONE CHILD
AS A RESULT OF PEER MODELING
AND REINFORCEMENT



child was measured in a group composed of two nonhandicapped children with three types of toys available. As FIGURE 1 indicates, during baseline the handicapped child spent virtually all of his time in solitary play. This was accomplished by either selecting a toy not used by the others or by vigorously preventing them from interacting with him when he was playing with a toy that was also of interest to them. We then attempted to determine if simple observation of the play of the nonhandicapped children, which was usually of the associative or cooperative type, would have any effect. Consequently, the handicapped child was asked to watch this play for the first five minutes of each fifteen-minute play period. This component was designed so the children played with each of the three different toys about the same amount of time to ensure modeling of

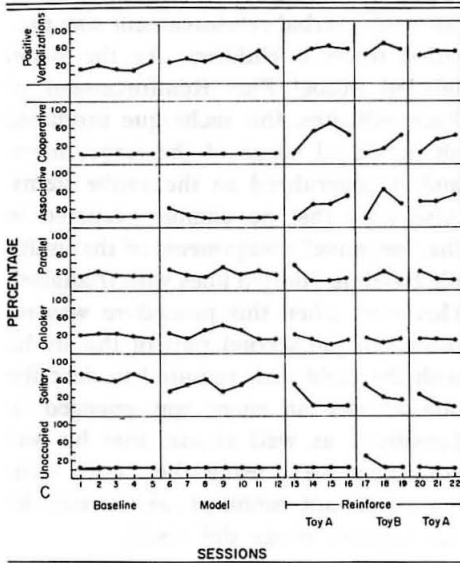
all toys. As the figure indicates, this procedure had no effect.

The next step, then, was to provide separate training sessions, using role-playing and verbal descriptions to instruct the nonhandicapped children how to attend selectively to the handicapped child's appropriate behaviors and how to encourage him to interact with them. This procedure was followed prior to each play session as well. The toy most preferred by the handicapped child was selected as the context for the play behavior, and the nonhandicapped children were instructed to play only with that toy. The data in the figure for Toy A reflect the changes in the target child's play behavior. After a few sessions, his solitary play had been reduced markedly and he was engaging in very appropriate play behavior. To evaluate the degree of control exerted by this procedure, another toy was selected and the same procedure followed. The panel referred to as Toy B illustrates that this was successful, as was a final return to Toy A, again demonstrating control of appropriate play behaviors by peers. Notice also that the frequency of the child's positive verbalizations increased with the introduction of the peer reinforcement procedure and correlated with the increase in higher level play.

FIGURE 2 shows a similar result for an entirely different group of children. It should be noted that since these two groups were administered different numbers of peer modeling and reinforcement sessions, with change only occurring upon implementation of the reinforcement condition, this constituted a multiple baseline procedure as well as a replication.

The fact that modeling was not sufficient to produce any change in social

Figure 2
 CHANGES IN SOCIAL PLAY BEHAVIOR AND
 POSITIVE VERBALIZATIONS FOR A SECOND
 CHILD AS A RESULT OF PEER MODELING
 AND REINFORCEMENT



play behavior suggests the following. First, it is possible that more basic social approach and interaction skills were not part of the handicapped children's repertoires and, consequently, even if the modeled play behaviors were transmitted, they would not be exhibited. Second, the modeling truly may not have been effective as presented here, perhaps being too complex or unsystematic. Of course, it is possible that modeling *per se* is not an effective way to communicate these skills, but this is quite unlikely. As Bandura³ pointed out,

Indeed, research conducted within the framework of social learning theory shows that virtually all learning phenomena resulting from direct experience can occur on a vicarious basis by observing other people's behavior and its consequences for them. (p. 864)

Moreover, it should be noted that modeling of a more informal, dynamic, and

interactive type than simple demonstration was actually an essential component of the process during the reinforcement conditions. Specifically, the nonhandicapped children often demonstrated a play activity and then encouraged the handicapped child to duplicate it. In any event, the peer reinforcement procedure as described here seems to be an effective means of developing social play behavior.

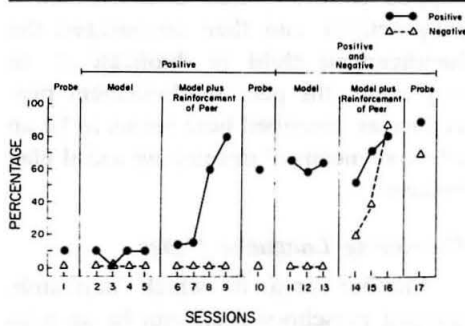
Promoting Language Usage

Another area in which nonhandicapped preschool peers can be an educational resource is that of language development. Since the frequency, length, and complexity of the nonhandicapped child's verbal behavior in social and academic interactions is generally greater than the handicapped child's, it may be possible to influence certain linguistic characteristics through peer modeling or reinforcement.

Accordingly, using a multiple baseline design, we investigated some of the parameters of peer influence on language behaviors with two children, one handicapped and the other not. The purpose here was to identify the conditions in which peer influence would be effective in modifying the verbal behavior of a mildly handicapped child who used brief and generally nondescriptive statements about common events. However, his linguistic competence far exceeded his usage.

In the initial part of this study the objective was to have the children describe the events in a complex picture using at least one *-ing* verb in conjunction with an appropriate subject (e.g., boy running) to the request, "Tell me about this." Thirty pictures were selected, ten being used as untrained

Figure 3
CHANGES IN LANGUAGE USAGE AS A
RESULT OF PEER MODELING AND
REINFORCEMENT OF PEER



probe items and twenty as training pictures. All fifteen-minute sessions were tape-recorded, and reliability was assessed by having an independent rater score 20% of the tapes in terms of usage of the target speech form. Reliability always exceeded 95%.

Following testing of the probe items with the handicapped child, the non-handicapped peer was introduced. Previously, this child had been trained to use the appropriate form of speech to these pictures and did so in all conditions at least 90% of the time. As illustrated in FIGURE 3 (looking only at the solid lines with circles), the target speech form was rarely used by the handicapped child during the initial probe. During modeling sessions, in which the children alternated in responding to the pictures, no feedback except non-evaluative comments and general encouragement was provided. Note that there was no change using this method. In the next step, verbal reinforcement was provided only to the nonhandicapped child. Appropriate sentences were followed by, "Good, you're saying it the right way." Again, non-

evaluative comments and general encouragement were given to the handicapped child. However, when the handicapped child produced at least six appropriate responses within the last ten trials, verbal reinforcement was provided to both children. As the panel labeled Model Plus Reinforcement of Peer indicates, this technique produced an increased usage of the target form, and it generalized to the probe items. Also note that no change occurred in the "negative" components of the multiple baseline (dotted lines with triangles). However, when this procedure was repeated in the second part of the study, with the child now required to describe one activity an agent was engaged in (positive) as well as one that he was not (negative), using the "not" term (e.g., man not running), an increase in the negative usage did result.

Consequently, we can see that by simply reinforcing a specific class of verbalizations of a more advanced peer, an increase in the use of that class of verbalizations was observed in the handicapped child. As noted, it was not necessary to reinforce the handicapped child directly to obtain a marked change in frequency of usage, although that may be needed in other instances. Certainly, we will need to determine the characteristics of children from whom this procedure will be effective and Bandura and Harris⁴ have suggested some conditions that should facilitate the modeling process in this area.

In addition, this procedure was used only for competencies (*i.e.*, comprehension of concepts and occasional appropriate usage) already existing in the child's repertoire, and it has been suggested that modeling procedures operate by remediating so-called production

deficiencies in these circumstances.²⁸ If this analysis is correct, this technique should be of significant value since developmentally delayed children have great difficulty in using their language skills in the appropriate situations. Presumably, other more direct procedures, such as imitation training and selective reinforcement, would be needed for the acquisition of new grammatical forms.²⁹

In any event, as Zimmerman and Rosenthal³² pointed out in their recent comprehensive review, a wide range of cognitive and linguistic behaviors can be taught successfully through modeling, and the outcome is rule-like behaviors and not low level imitative skills. It remains to be seen how well and under what conditions these behaviors can be transmitted through peer modeling.

A FRAMEWORK FOR FUTURE RESEARCH

Conceptually, then, we can view other children as potential educational and therapeutic resources. Of course, we must be sure that the nonhandicapped children are provided with an appropriate educational environment as well, and carefully applied feedback and reinforcement can avoid imitation of less well developed or maladaptive behaviors. However, it is necessary to determine how to utilize these resources in the best possible way in a manner similar to arranging other environmental events to promote certain goals.^{18, 23}

The preceding discussion was intended to provide some direction for research and programming in this highly complex area. There are numerous other variables and factors, however, which play a significant role in this process; these are briefly noted below.

1. *Chronological age of the peer group.* This factor is important, since it is difficult to engage the cooperation of very young children (say, three-year-olds) in some of the more structured activities described. Nevertheless, other types of peer interaction activities of very young children may be of value to handicapped children. Indeed, a review of the infant and toddler literature² has suggested that

. . . the pace and course of infants' social, verbal, and motor development could be considerably accelerated if situations were structured in which peers were provided with the opportunities to learn from one another. (p. 14)

In addition, the use of more advanced handicapped children as models for those less skillful may be useful, but one would need to define carefully their developmental skills.

2. *Level of observational skills.* Some handicapped children may simply not benefit from certain forms of modeling if their observational skills are not sufficiently well developed. Of course, the influence of this factor relates to the systematic way in which modeling experiences are introduced (*e.g.*, complexity, saliency, timing, etc.) and the provision of certain activities may even promote the development of these imitative skills.²

3. *Type of behavior.* It is quite possible that certain classes of behavior will be more susceptible to change through peer modeling and reinforcement than others (*e.g.*, social play as contrasted to language development). Factors such as salience, novelty, and "naturalness" of the modeled behaviors, among others, are certainly relevant here.

4. *Structure of the modeling context.* We do not know at this point the degree

of structure needed to produce behavioral changes through modeling. Certainly, this will interact with many of the variables noted above and perhaps others, but I suspect that the difficulty of the behavior to be acquired will be an important factor here, as it is in other teaching situations.

5. *Grouping.* The characteristics of the handicapped children, the severity of their handicaps, and the proportions of these children integrated with their nonhandicapped peers are likely to be significant variables. Not only will these variables interact with the available resources in the classroom, but differences in performance may well emerge when a handicapped child participates in lessons composed primarily of nonhandicapped children, as compared to those occasions in which the proportions are more equally distributed. Again, this grouping factor is related to numerous others such as the ability of the staff effectively to generate the "many streams"¹⁶ needed to individualize instruction properly and to establish an organizational structure for carrying out these instructional activities.¹⁸

6. *Characteristics of the models.* Relevant research has clearly suggested that the more competent the model, the more likely that an observer will imitate that model's behavior.^{1, 25} Accordingly, the design of procedures to enhance and clarify the competence of specific behaviors of peer models should increase the value of the models as educational and therapeutic resources.²⁵ Other factors such as the history of peer interactions, their frequency of occurrence, and the rewarding aspects of the interactions will govern the effectiveness of modeling to some extent, but, as Hartup and Coates¹⁵ have pointed

out, the relationship even among these variables is quite complex.

This outline was not intended to be exhaustive but to highlight the nature of the variables involved and their potential interactions. It also may suggest a strategy for a systematic approach to the many interesting and important questions raised by this analysis.

CONCLUSIONS

Although movements such as mainstreaming, at any level, are subject to the vicissitudes of the social and political actions of major interest groups, it may be useful to bear in mind the suggestion here that the handicapped child may derive benefits of an educational and therapeutic nature from this process that are *not* available without the involvement of more advanced peers. However, in order for this to occur, a careful and systematic arrangement of events and activities is needed. Future research on mainstreaming and early childhood intervention, perhaps conducted within the framework and methodology outlined here, may provide us with a set of procedures and strategies that can be applied to further enhance the development of handicapped children.

REFERENCES

1. AKAMATSU, T. AND THELEN, M. 1974. A review of the literature on observer characteristics and imitation. *Devlpm. Psychol.* 10:38-47.
2. APOLLONI, T. AND COOKE, T. 1975. Peer behavior conceptualized as a variable influencing infant and toddler development. *Amer. J. Orthopsychiat.* 45:4-17.
3. BANDURA, A. 1974. Behavior theory and the models of man. *Amer. Psychol.* 29:859-869.
4. BANDURA, A. AND HARRIS, M. 1966. Modification of syntactic style. *J. Exper. Child Psychol.* 4:341-352.

5. BIRCH, J. 1974. *Mainstreaming: Educable Mentally Retarded Children in Regular Classes*. Council for Exceptional Children, Reston, Va.
6. BRICKER, D. AND BRICKER, W. 1971. *Toddler Research and Intervention Project Report: Year I*. IMRID Behavioral Science Monograph No. 20, Institute on Mental Retardation and Intellectual Development, George Peabody College, Nashville, Tenn.
7. CHRISTOPOLOS, F. AND RENZ, P. 1969. A critical examination of special education programs. *J. Spec. Educ.* 3:371-379.
8. CSAPO, M. 1972. Peer models reverse the "One bad apple spoils the barrel" theory. *Teaching Except. Children* 5:20-24.
9. DEVONEY, R., GURALNICK, M. AND RUBIN, H. 1974. Integrating handicapped and non-handicapped preschool children: effects on social play. *Childhd Educ.* 50:360-364.
10. FINE, S. 1974. A high proportion of maladjusted preschool children in a group of normal preschoolers: results and implications. *Canada's Ment. Hlth* 22:3-4.
11. GARTNER, A. KOHLER, M. AND RIESSMAN, F. 1971. *Children Teach Children*. Harper & Row, New York.
12. GURALNICK, M. 1973. A research-service model for support of handicapped children. *Except. Children* 39:277-282.
13. GURALNICK, M. 1975. Early classroom-based intervention and the role of organizational structure. *Except. Children* 42:25-31.
14. HARTUP, W. 1970. Peer interaction and social organization. In Carmichael's *Manual of Child Psychology*, vol. II, P. Mussen, ed., John Wiley, New York.
15. HARTUP, W. AND COATES, B. 1967. Imitation of a peer as a function of reinforcement from the peer group and rewardingness of the model. *Child Devlpm.* 38:1003-1016.
16. HOBBS, N. 1975. *The Futures of Children*. Jossey-Bass, San Francisco.
17. JONES, M. 1924. The elimination of children's fears. *J. Exper. Psychol.* 7:383-390.
18. KEOGH, W., MILLER, R. AND LE BLANC, J. 1973. The effects of antecedent stimuli upon a preschool child's peer interaction. Presented to the Society for Research in Child Development, Philadelphia.
19. MACMILLAN, D. 1973. Issues and trends in special education. *Ment. Retard.* 11:3-8.
20. MARTIN, E. 1974. Some thoughts on mainstreaming. *Except. Children* 41:150-153.
21. O'CONNOR, R. 1969. Modification of social withdrawal through symbolic modeling. *J. Appl. Behav. Anal.* 2:15-22.
22. PARTEN, M. 1932. Social participation among preschool children. *J. Abnorm. Soc. Psychol.* 27:243-269.
23. QUILITCH, H. AND RISLEY, T. 1973. The effects of play materials on social play. *J. Appl. Behav. Anal.* 6:573-578.
24. SOLOMON, R. AND WAHLER, R. 1973. Peer reinforcement control of classroom problem behavior. *J. Appl. Behav. Anal.* 6:49-56.
25. STRICHART, S. 1974. Effects of competence and nurturance on imitation of non-retarded peers by retarded adolescents. *Amer. J. Ment. Defic.* 78:665-673.
26. WAGNER, P. 1974. Children tutoring children. *Ment. Retard.* 12:52-55.
27. WAHLER, R. 1967. Child-child interactions in free-field settings: Some experimental analyses. *J. Exper. Child Psychol.* 5:278-293.
28. WHITEHURST, G. T., IRONSMITH, M. AND GOLDFEIN, M. 1974. Selective imitation of the passive construction through modeling. *J. Exper. Child Psychol.* 17:288-302.
29. WHITEHURST, G. AND NOVAK, G. 1973. Modeling, imitation training, and the acquisition of sentence phrases. *J. Exper. Child Psychol.* 16:332-345.
30. WINTRE, M. AND WEBSTER, C. 1974. A brief report on using a traditional social behavior scale with disturbed children. *J. Appl. Behav. Anal.* 7:345-348.
31. WYNNE, S., ULFELDER, L. AND DAKOF, G. 1975. Mainstreaming and early childhood education for handicapped children: review and implications. Final Report, Contract No. OEC-74-9056, Bureau of Education for the Handicapped.
32. ZIMMERMAN, B. AND ROSENTHAL, T. 1974. Observational learning of rule-governed behavior by children. *Psychol. Bull.* 81:29-42.