

## A Model Interdisciplinary Diagnostic and Treatment Nursery

Robert J. Thompson, Jr., Doris J. Garrett, Nancy Striffler,  
Inta A. Rutins, Sushma Palmer, and Carolyn S. Held  
*Georgetown University Medical Center*

**ABSTRACT:** A model interdisciplinary diagnostic and treatment nursery program for developmentally disabled children is objectively described to enable documentation of effectiveness and replication. The major components of the program were the parent-professional partnership and the objective specification by the interdisciplinary team of problems, treatment plan, and treatment methods for each youngster. The concept of efficiency index is used to document and compare program effectiveness for four treatment cases, one of which is presented in detail. Reasons for program effectiveness and potential problem areas are discussed.

The difficulty in documenting the assumed effectiveness of early intervention programs for developmentally disabled youngsters "because of the complex and confounding problems which characterize such children" [1: p. 474] has been recognized. However, with increasing demands for accountability from parents, consumer groups, and granting agencies, as well as from involved professionals, it has also been recognized that objective intervention strategies that can be documented, compared, and disseminated must be developed. As Si-meansson and Wiegerink [1: p. 475] point out: "The most basic issue in evaluating intervention programs for the handicapped is the communicability and replicability of those interventions. If an interven-

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Dr. Thompson is now Assistant Professor of Medical Psychology and Administrative Director, Developmental Evaluation Clinic, Duke University Medical Center, 2213 Elba Street, Durham, North Carolina 27705. The authors gratefully acknowledge the contributions to the program by the following staff and students: Lynn Bradford, Sandy Crampton, Gwen Grossmiller, Sharron Hill, Thomas Leigh, Alan McFarland, Alix Myerson, Gloria Panton, Frederick Siegert, and Pamela Wilson. The program was supported by Maternal and Child Health Project 925 and Social Rehabilitation Services Grant 59-P-15295/3-03.

tion is to have value for more than one child, that program must be operationally defined and measured in terms which can be implemented by a variety of people in a variety of settings."

In addition to facilitating evaluation and replication, operational definitions of objectives and treatment plans and methods are necessary for coordination and communication among the multiple disciplines involved in the diagnosis and treatment of developmental disabilities.

This paper objectively describes an interdisciplinary diagnostic and treatment program for developmentally disabled preschool children designed so that effectiveness could be documented and the program replicated.

### Objectives of the Program

The program was developed at the Georgetown University Affiliated Program for Child Development (GUAPCD). The objectives were to: (a) provide a wide range of developmentally handicapped children with exemplary interdisciplinary evaluations and treatment and subsequently to assist in appropriate educational placement in the community; (b) demonstrate and teach the interdisciplinary diagnostic and treatment process with developmentally disabled children to students from many disciplines; (c) develop community outreach components, such as being a diagnostic resource for local community day-care centers; and (d) evaluate diagnostic, treatment, and program effectiveness.

### Method

#### *Setting and Subjects*

Because diagnosis and treatment of the developmentally disabled child are complex and difficult, extended observation is required along with an opportunity to evaluate group or peer interaction. It was believed that a nursery situation affords the opportunity for extended evaluation and observation under a variety of situations and stimuli. Therefore, to accomplish the program objectives, a clinical-educational nursery was established and supported by an interdisciplinary team composed of a special education teacher and aide, speech pathologist, social worker, psychologist, nutritionist, community service representative, and consulting psychiatrist, physical therapist, pediatrician, occupational therapist, and neurologist.

The nursery population consisted of a maximum of 10 youngsters, from 2 to 6 years old, 6 of whom were long-term treatment cases. The other 4 positions were for diagnostic cases, with the average stay being 6 to 8 weeks. The nursery

sessions were held 3 mornings a week. A parent group, led by the psychologist, was held in conjunction with the long-term treatment cases, and parental participation was a requirement for acceptance of the youngster into the program. The purpose of the group was to facilitate two-way communication between the program and the parents and to discuss child-rearing problems as well as to provide specific suggestions for home programs. Observation sessions of the nursery were held twice a week and led by the social worker. These sessions were recommended for the parents of both the treatment and diagnostic cases and were intended to help parents integrate their perceptions of the child and his needs with the treatment goals designed by the team and to help them carry out their parental roles. As an interdisciplinary training program, students from the various disciplines participated on the team and in the staffings as well as in diagnostic and treatment endeavors, including experience as parent group coterapists.

### *Diagnostic Procedures*

An effort was made to select cases for inclusion in the nursery that were varied and representative of the range of developmental disabilities. Cases were chosen from the population seeking services from the GUAPCD. A comprehensive interdisciplinary intake interview was conducted for each child. Subsequently, this information was presented at a team staffing, and a list of problems, according to the Weed problem-oriented approach [2], was generated. From this problem list, a determination was made of what specific evaluations were necessary. At this point, the youngster began attending the nursery sessions. The teacher and aide focused their attention on the problem areas identified for the child and how these influenced his functioning. Having the youngster available in the nursery afforded the opportunity for additional observation by those involved in the diagnostic process over and above the normal diagnostic evaluations. Subsequent to the completion of the diagnostic evaluations the findings were presented at a team staffing. An integration and formulation were made, although frequently placement in a formal diagnostic category was not possible. Short- and long-term goals were specified for each child. Depending upon program needs and the availability of community resources, the youngster was placed in a nursery treatment position or referred to appropriate community resources. The specification of objective treatment goals along with the initial measures of functioning level derived from the formal diagnostic evaluations (e.g., speech and language, intellectual, fine and gross motor) allowed for assessment of program effectiveness in accomplishing the goals and in fostering development.

### *Treatment Plan*

For each child accepted into the nursery for treatment, an objective treatment plan was devised by the interdisciplinary team to meet the specified goals and objectives. The plan involved devising and coordinating therapeutic goals for implementation in the nursery, parent group, therapy sessions conducted by trained therapists (e.g., speech therapy), and home programs.

The method for implementing the plan consisted of utilizing the manifold techniques and variety of materials available in a nursery to promote intellectual,

motor, language, and emotional development. The activities planned for each child followed a developmental hierarchical progression from early sensorimotor to higher cognitive functioning in each area of deficit. In addition, there were regularly planned group activities in the nursery that provided opportunities for peer interaction as well as other treatment endeavors such as work on nutrition problems in behavior or intake during snack time. When appropriate and necessary, home programs in the areas of language, motor, nutrition, and behavior were devised, and the parents were given instruction and guidance in implementing them.

The parent group was a forum for determining parental readiness to implement home programs as well as to discuss the progress and difficulties that ensued. The parent group was used to foster information exchange about each youngster's progress in general and to develop appropriate child management techniques as well as to provide emotional support. The nursery observation sessions allowed an opportunity for the parents to clarify interaction approaches and their applicability to the home situation, with an ongoing interpretation by the social worker facilitator. Occasionally, parents had personal or marital difficulties that necessitated individual therapy in addition to the parent group. Appropriate provision for this type of intervention was included in the treatment plan and was provided by appropriate team members.

The interdisciplinary team met weekly to evaluate progress and refine plans when necessary. These meetings and the objective treatment goals and plans allowed systematic coordination of input from the various disciplines, including feedback from the parent group leader. During the 1st year of operation, four treatment cases and eight diagnostic cases were seen.

## Results

To document the effectiveness of this program three treatment cases are presented briefly, and to facilitate replication a fourth is presented in detail. The index of efficiency developed by Simeansson and Wiegerink [1: p. 480] is an excellent tool for comparative analysis and evaluation "of individualized program effects on children whose abilities are substantially different in one or more dimensions. . . . It further allows differential assessment of programs serving different levels of handicapped populations." The index is computed by comparing real gain during the treatment period with that expected on the basis of developmental age at the outset of the program:

$$\text{efficiency} = \frac{\text{actual gain}}{\text{ideal gain}} \div \frac{\text{Mental Developmental Index}}{100}.$$

In these cases, the child's IQ score on the Stanford Binet (1972 norms) was used as the Mental Developmental Index. Table 1 presents the efficiency index data for the nursery treatment cases.

TABLE 1: Efficiency Comparisons with Nursery Treatment Cases

<i>Child</i>	<i>CA</i> <i>months</i>	<i>MA</i> <i>months</i>	<i>Stanford</i> <i>Binet</i> <i>IQ</i>	<i>Pre-Post</i> <i>Evaluation</i> <i>Interval</i> <i>months</i>	<i>MA</i> <i>Gain</i> <i>months</i>	<i>Efficiency</i> <i>Index</i>
A.M.	45	52	113	11	19	1.52
F.S.	45	29	54	11	5	0.84
S.H.	27	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
S.C.	37	22	55 <sup>2</sup>	14	25	3.24

<sup>1</sup>Not determinable.<sup>2</sup>Value if MA is assumed to be 24 months.*Case 1*

A.M., a 4-year-old male, presented with poor fine and gross motor functioning, dependency in the area of self-help skills, and dietary imbalance. These problems were related to the inordinate amount of time that A.M. spent in fantasy and his use of well-developed verbal abilities to avoid dealing with and mastering developmentally appropriate skills. Subsequent to the program, reevaluations revealed significant gains. A.M. is more reality oriented and spends relatively little time in fantasy; significant progress was noted in the area of gross and fine motor activities and in general self-help skills. Vitamin A and iron deficiency and nutrient imbalance identified initially were successfully corrected through nutrition counseling sessions. The efficiency index indicates that substantial gains were noted in his overall level of functioning.

*Case 2*

F.S., a 4-year-old female, had several problems: general developmental delay of approximately 2 years in all areas of functioning; dietary intake lacking variety and quality of foods with pica and disruptive mealtime behavior; unusual behavior characteristics including little purposeful behavior, difficulty responding to demands, and showing extremes of affection, aggression, and withdrawal. Subsequent to the program, reevaluations revealed minimal gains. It was believed that F.S.'s sporadic classroom attendance (88%) and the parents' difficulty in maintaining involvement in the home program, parent group, and their individual therapy hindered her progress.

*Case 3*

S.H., a 2½-year-old male, presented with lack of speech and generally unmanageable behavior. Initial evaluations were diagnostically inconclusive because S.H. was essentially untestable. He exhibited a marked delay in language areas with no concomitant delays in gross and fine motor coordination, and no hearing impairment. Disturbed personal relationships were evidenced by withdrawal from inter-

action with peers and adults, practically no eye contact, autistic-like features, and unmanageable behavior. The working assumption was that much of S.H.'s behavior was related to an angry rejection of human interaction. Treatment was directed toward the psychological-emotional area with secondary emphasis being placed upon imitative skills beginning at the most elementary level. The prerequisite positive personal interaction was established gradually on a one-to-one basis at the level of innately pleasurable body contact games and moved to looking to adults for approval.

During the program, significant improvement was seen in interaction with parents, peers, and other adults. Verbalizations are connected with specific activities and events. There is some response to language without gestures and some apparent attempts to mimic specific words. S.H. will continue in the program with primary treatment focus being shifted to differential diagnosis of language development and implementation of an effective language intervention program.

#### *Case 4*

S.C. was a 3½-year-old male. The parents' primary concerns were delayed language and poor motor control, with resulting frustration at his inability to express himself or accomplish tasks. Also, there was apprehension that he might be retarded.

*Problems.* Diagnostic evaluations revealed the following problems:

1. Intellectual functioning level was delayed approximately 2 years.
2. Receptive and expressive language skills were delayed 8 to 12 months and 18 to 24 months, respectively, with severely delayed articulation skills.
3. Motor planning was impaired, and there was mild incoordination in fine motor skills, with marked delay in self-help skills.
4. Nutritionally, S.C. evidenced a diet deficient in some essential nutrients (calcium, riboflavin, and vitamin A) and high in sweets, refined carbohydrates, and convenience foods.
5. Behaviorally, S.C. was highly anxious, overly dependent, and demonstrated frequent tantrums and manipulative behavior. He evidenced a low frustration tolerance and did not play appropriately with peers.

*Treatment plan.* Therapeutic goals established were to: (a) reduce delays in receptive and expressive language, articulation, fine motor, and self-help skills, and increase coordination and planning skills; (b) reduce anxiety level and foster development of self-confidence and self-reliance; (c) replace pathogenic child-management practices with effective and productive methods so that home programs could be implemented; (d) improve the general quality of the diet by increasing the intake of calcium, riboflavin, and vitamin A, and decreasing the intake of refined carbohydrates and convenience foods.

*Treatment method.* For his language difficulties S.C. had 55 individual treatment sessions, 20 conducted by a graduate trainee and observed by mother and 35 conducted by mother with the trainee's guidance. All sessions were followed by a 20-minute counseling period in which the events of the session were discussed and suggestions for home implementation were given.

Initially, mother observed interaction between S.C. and the clinician during play activities. After each sessions the clinician's methods for eliciting and reinforcing language were discussed, and mother was provided with specific suggestions for language stimulation in the home. Specific goals at this time included

teaching mother to: (a) speak in simple sentences, utilizing self-talk and parallel talk; (b) allow S.C. ample opportunity to verbalize, by diminishing her tendency to talk excessively; and (c) build upon S.C.'s interests and his attempts to initiate the direction of activity.

In the later sessions, with mother as clinician, videotapes and recordings of these sessions were discussed to help her gain insight into some of her behaviors that were inhibiting S.C.'s language development. As mother's play behavior became more appropriate, more specific linguistic goals were introduced into the therapy sessions. These progressed from the development of receptive and expressive vocabulary, to comprehension and expression of prepositions, pronouns, wh— questions, qualitative and quantitative concepts, noun-verb-object constructions, and finally to kernel sentences and early emerging transformations.

Weekly occupational therapy sessions were held to improve visual-motor coordination, with an emphasis on motor accuracy and motor planning. The development of efficient and refined use of the hands was stressed, with focus on developing a mature prehension pattern for improved pencil control. For motor planning, therapeutic activities were chosen that encouraged initiation and eventually self-initiation of motor patterns. Mother observed many of the therapy sessions and was given a home program. She was also shown techniques and methods to help S.C. become more independent in self-help skills such as dressing.

Several nutrition counseling sessions were conducted to guide mother to add foods to S.C.'s diet that are high in calcium, riboflavin, and vitamin A.

Daily classroom activities designed to support individual therapies and accomplish specific treatment goals included: hidden object games and puppet play to encourage descriptive language; auditory tapes to develop listening skills and direction following; activities designed to teach the concepts of same, more, and less, numbers, and spatially oriented prepositions; motor activities to develop pencil control, from staying within raised lines to following dots and copying simple geometric shapes, cutting, and stringing beads; the introduction of new foods at snack time; and games to stimulate peer interaction, such as balloon ball and follow the leader, which require some degree of cooperation with at least one other child.

*Results.* Subsequent to the program, S.C.'s efficiency index revealed a gain in overall level of functioning of about 2 years. With S.C. now 4 years 4 months old, reevaluations revealed the following functioning levels:

1. Intellectual level showed a mental age of 3-11, exhibiting a gain of 2 years.
2. Receptive language was age appropriate, representing a 12-month gain in 9 months.
3. Expressive language was nearly age appropriate in the expression of common information, ideas, and concepts. Grammatical usage was placed at the 3-year level, representing a gain of 18 months in 9 months.
4. Visual perceptual skills were age appropriate (4 year 4 month level), indicating a gain of 18 months in 9 months. Fine motor development was nearing the 4-year level, although immaturity is still evident.
5. Nutrition was adequate in that S.C.'s diet meets 100% of the recommended daily requirements for all nutrients and the intake of refined carbohydrates was decreased to within acceptable limits.
6. Behaviorally, S.C. made significant gains in social-play skills. His range of interest in playthings has widened, and he makes appropriate use of a large number of classroom toys. He is still dependent upon someone's structuring his play

activity for him and seldom independently initiates play at any level. There are often confrontations over toys, and S.C. still tends to be possessive, but he is capable of parallel play and some cooperative play. Tantrums and manipulative behavior within the home have diminished significantly.

In summary, test results and classroom behavior reveal that this child has made significant gains in all areas during the nursery treatment program. The mother's constant efforts and receptivity to recommendations were extremely important to S.C.'s progress. She made remarkable progress in her ability to provide appropriate language stimulation. Parent-child interaction improved, and as a result there have been demonstrated gains in child management. The mother remains dependent upon professionals for guidance and reinforcement in her child-rearing practices.

A small full-time regular classroom placement where S.C. can continue to receive individual attention in the areas of articulation and fine motor planning skills was recommended. Additionally, parent-management and marital counseling was recommended so that the parents can develop a more satisfying relationship and agreement in child-rearing practices, providing more consistent parent-child interaction.

### Discussion

The results document the effectiveness of this nursery program for the treatment of youngsters with a variety of developmental disabilities and functioning levels. We believe that the reason for the program's effectiveness lies in the coordination and comprehensiveness of the interdisciplinary team and the inclusion of the parents in the program. Specification of an objective problem list and subsequent specification of objective treatment goals and plans not only provided for systematic coordination of the input from the various disciplines but provided the basis for program evaluation, documentation, and replication.

Feddman, Byalick, and Rosedale [3: p. 551] point out that the literature in special education has cited the need for parental involvement in educational and treatment programs for their children but "the literature does not point up the potential for growth which the parents provide." It was the strong conviction of the professionals involved in this program that this potential for growth did exist and that parents constituted an immense treatment resource that needed to be cultivated. The program's philosophy was to establish a parent-professional partnership in the remediation and treatment of youngsters with special problems. The parent group, observation sessions, parent training, and home programs were all aspects of the program designed to develop parents as major change agents and to foster genuine two-way communication and coordination with the interdisciplinary team. We do not believe that it is a mere artifact that the



youngster who made the most gains in the program had parents with high frequency of attendance in the parent group (82%) and most involvement in home programs while the youngster with the least gain had the least parental involvement, for a variety of reasons, in the parent group (54% attendance) and home programs.

Several problems areas were apparent. To ensure the degree of coordination necessary among the team members, consistent meeting times, with required attendance of all disciplines, were found to be essential. Also, it is believed that the team functioning would have been more efficient if the pediatrician and neurologist could have been full team members rather than consultants. This would have enabled more consistent, continuous input in these two vital areas. Physically, intervention techniques were hampered somewhat by the lack of an appropriate "time out" or "quiet room." This facility is especially needed when dealing with the severe behavioral problems seen in this program. Another problem was the lack of transportation or funds for transportation to allow some of the inner-city day-care youngsters to attend the program on a regular basis. We found the lack of funds for transportation to be a factor that prevented youngsters from becoming involved in the program even though they were thought to be good candidates in every other respect.

### References

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