

# Pediatric Residents and Young Handicapped Children: Curriculum Evaluation

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**Abstract**—The systematic evaluation of a curriculum designed to improve the knowledge, skills, attitudes, and clinical judgment of pediatric residents with regard to young handicapped children and their families is described. Residents were assigned to experimental and control groups, and changes were analyzed across several dimensions. The results revealed a number of significant changes due to the implementation of the curriculum. In particular, knowledge of various aspects of handicapping conditions increased as did the tendency to characterize the behavior of handicapped children in a positive manner. In addition, an experimental design is presented that is uniquely compatible with scheduling factors during residency training.

The increasing involvement of pediatricians over the past few years in meeting the developmental and health needs of young handicapped children and their families has generally been recognized (1, 2). This expanding role has highlighted the requirement for systematic training programs of an interdisciplinary nature as well as the need to increase training opportunities in continuing care for handicapped children, especially at the resident level (2). Despite this recognition, only a few preliminary attempts at developing such training programs have been reported in the literature (3, 4). In

fact, in a recent analysis of the literature the authors were unable to locate a single report of a systematic curriculum for pediatric residents relevant to these issues.

Initial efforts by the authors to develop a curriculum that addressed these needs and to evaluate its effectiveness produced a number of positive outcomes (5). Briefly, in this program pediatric residents from Children's Hospital National Medical Center in Washington, D.C., spent 12 hours at a model preschool program serving young handicapped children and their families. A series of objectives and activities, such as those relating to managing developmental and behavioral problems, using community resources, communicating with parents and teachers, counseling with parents, and assessing the social impact and social context of developmental disabilities, constituted parts of the program. Ratings by pediatric residents revealed that they perceived the program's objectives as

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being important, that the activities were effective in accomplishing these objectives, and that their confidence and competence in relation to each objective increased as a result of the training program.

The positive nature of these results warranted both a refinement of the initial objectives and activities as well as a more systematic evaluation of the program's effectiveness. Accordingly, in this study 18 second- and third-year pediatric residents participated in a program with an experimental design that permitted an assessment of the impact of the program on the residents' knowledge, skills, attitudes, and clinical approach toward handicapped preschool children.

### **Program Description**

The primary site of the program was the Experimental Preschool of the National Children's Center in Washington, D.C. A major aspect of this model demonstration preschool program is to serve as a focal point for interdisciplinary training activities with regard to handicapped preschool children and their families. Forty children, ages four to six years, participate in activities designed to promote cognitive and social growth (6). Children are deliberately selected to ensure representation of a wide variety of developmental levels at the training site, including a group of nonhandicapped children.

During the 1976-77 academic year, each of the pediatric residents was involved in the program's activities for a total of 12 hours over a four-week period. Although the importance of early intervention within a cognitive learning framework was a concept stressed throughout the training activities, eight specific objectives were identified. These objectives formed the basis for the design of the activities throughout the course of the training period.

Each of eight objectives (see reference 5 for details) was associated with one or more activity modules designed to provide experiences relevant to the objectives. A major aspect in the design of these activities was the requirement for the active participation of the resident. This included working directly with selected handicapped children as well as doing interviews and interacting with a parent, teacher, speech therapist, social worker, and related child development professionals. These activities were supplemented by providing a number of videotapes, slide-tapes, and selected readings such as Hobbs on the use and limits of labels (7) and Kanner on autism (8). In addition, the residents received specific and exemplary medical, psychological, educational, social work, and hearing and speech reports and attended occasional presentations on such subjects as psychoactive drugs and behavior management strategies (9).

Continuity throughout the training program was maintained by gearing the activities toward a counseling session with a parent of a designated handicapped child which took place on the final day of training. This session was videotaped through a one-way mirror and replayed in the presence of all of the child development professionals and the pediatric resident. This review and feedback session served to reemphasize the critical elements of the program's activities and provided the basis for final discussions, interpretations, and application of the various principles and information that were presented throughout the program.

### **Method**

A posttest only with control group design was selected for the objective evaluation of the program (10). The 18 pediatric residents were randomly divided into two

groups of nine each. To evaluate the curriculum using this design, tests were administered at the end of the program experience for the experimental group residents (posttest only) and before the experience had begun for the control group residents. Members of the experimental group were scheduled to participate in the program during the months of September, November, January, or March, whereas the control group members were scheduled during October, December, February, and April. In this manner, for example, two residents would have just completed the program (experimental group) and been given the posttest at the time that two control group residents just beginning the program would also receive the test. This sequence was repeated over the course of the year, with residents being added to each of the two groups at the times noted.

Although the same test was also administered at the end of the experience for the control group (thereby permitting a pretest posttest comparison as well), the critical comparison was between the control and experimental groups.

In the majority of instances the experiences of the two groups of residents were identical across the various segments of the year except for the participation of the experimental group residents at the posttesting point in the training program.

#### ASSESSMENT INSTRUMENTS

The effects of the curriculum were evaluated through the test referred to in the previous section in terms of the residents' knowledge, skills, attitudes, and clinical judgment.

With regard to the knowledge component (knowledge I), seven questions (linked primarily to the readings and lecture sessions) related to the definition

of IQ, its relationships to adaptive behavior, and the characteristics of autistic children were devised. In addition, answers to the following true/false question were analyzed separately (knowledge II): "In a 4-year-old child with delayed speech, it is crucial to establish the diagnosis (e.g., autism, moderate retardation, or expressive aphasia) in order to develop an appropriate educational intervention" (answer is false). The authors considered this to be a critical question since it reflected an understanding of issues of labeling, a sensitivity to behavioral diversity, and a recognition of the importance of a functional approach to developmental programs.

The remaining components, although evaluated separately, were all derived from the following open-ended questions based on a videotape of a handicapped child.

You are the pediatrician of a preschool child who has learning handicaps. You have an opportunity to visit the child's preschool and observe her behavior briefly in both the classroom and in a free-play setting (to be observed on videotape). [A brief videotape is then shown of a handicapped child interacting in these two situations. Immediately following this, three questions are asked.] (a) Please write below the brief entry you would make in your records about your observations. (b) Please write below what you would tell your patient's parents about what you observed in her school. (c) Please list the studies, consultations, and/or reports you would obtain (or would have obtained) in your evaluation of your patient.

In order to evaluate the program's impact on the residents' skills and attitudes, the responses to questions (a) and (b) were subjected to a content analysis. Each phrase, clause, or sentence containing a statement regarding an observation of the child's behavior was separately listed and formed the unit for analysis.

The skills component was assessed in terms of the pediatric residents' ability to make specific behavioral observations, thereby recognizing the diverse characteristics of the children. For this dimension each observational statement about the child's behavior was assigned one of three values: 0, 1, or 2. A score of 2 reflected a highly specific observation and contained a statement about the nature of environmental events and relationships. A score of 1 was obtained for those statements that categorized the child's behavior into a larger class, for example, "a short attention span." Finally, a score of 0 was obtained if the statement contained labels such as retarded, aphasic, or autistic. Each resident received a total score based on the sum of all observations.

An analysis of the resident's tendency to characterize the children along a positivity-negativity dimension was considered to be a useful measure reflecting a general attitude toward handicapped children. Accordingly, statements in questions (a) and (b) were analyzed and identified as either positive—observa-

tions focusing on what the child can accomplish; negative—observations focusing on the child's deficits, undesirable traits, or failure to display positive traits; or neutral observations. Each observational statement received a score of +1 (positive), -1 (negative), or 0 (neutral). These scores were summed for each resident, with separate positivity scores being obtained for questions (a) and (b).

Finally, clinical judgment was assessed by analyzing the nature of advice, consultation, and reports requested. Since no differences were found for the clinical judgment category in relation to the program, further details are not presented at this time.

#### RELIABILITY

Reliability in terms of percentage agreement was obtained by having an independent observer classify a sample of 25 percent of the statements for questions (a) and (b). For the specificity dimension [question (a)], reliability was 87 percent. For the two positivity classifications, agreement was 83 and 77 percent.

#### Results

Separate analyses were conducted for each of the major dimensions discussed. Comparisons between the experimental and control groups are presented first. With one exception (knowledge question II) the *t* test statistic for independent samples was utilized for all comparisons, with the level of significance set at .05 (one-tailed tests with 16 degrees of freedom).

As noted in Table 1, both knowledge questions revealed a significant superiority in favor of the experimental group. None of the control group members correctly answered knowledge question II, whereas two-thirds of the experimental group did provide the correct answer. For the attitude questions, analysis of the

**TABLE 1**  
**Comparisons Between Experimental and Control Group Scores for Three Major Dimensions Derived from Test To Evaluate Pediatric Training Program**

Dimensions*	Experimental Group	Control Group
Knowledge		
I	4.44†	3.00
II‡	67.00†	0.00
Skills—Specificity	6.78	6.11
Attitude—Positivity		
Question (a)	6.44†	3.56
Question (b)	6.11	3.55

\* Data consist of means for each group unless otherwise indicated. See text for explanation.

†  $p < .05$ .

‡ Analysis based on the Fisher Exact Probability Test; data consist of percentage correct for total group.

positivity dimension for question (a) indicated that the experimental group significantly characterized the handicapped child in the videotape in a more positive manner, although a similar analysis for question (b) fell just short of the required significance level. However, analyses for the skills (specificity) dimension and the categories reflecting clinical judgment failed to reveal any differences between the two groups.

Pretest-posttest comparisons carried out for the control group for each measure revealed that the only significant changes that occurred were for knowledge questions I and II (*t* test for paired samples and sign test, respectively,  $p < .05$ ). The only other pretest-posttest measure to even approach significance was on the positivity dimension in question 1. Given the short time interval between pretesting and posttesting, it is quite possible that the pretest responses influenced the posttest responses, further supporting the value of a posttest only design.

### Discussion

The results of this study clearly indicated that the curriculum had a positive impact on the pediatric residents across a number of dimensions. Gains were most prominent for the knowledge and attitude components. The increased positiveness with which residents characterized handicapped children was particularly gratifying, since, in the authors' view, the existence of such an attitude is a prerequisite to adequate care of handicapped children and support of their families.

It was disappointing but, in retrospect, not surprising that the residents' skill in describing children's behavior in specific terms related to environmental conditions was not different for the experimental and control groups. Although the

teachers are oriented toward modifying specific behaviors and describing both behaviors and environmental contingencies in specific detail, this was not stressed in the residents' curriculum and clearly was not a spin-off benefit. The fact that the measures of clinical judgment were not affected by the program requires further study, but inspection of the data indicated that a ceiling effect may have contributed to minimizing potential differences; that is, scores for the control group were at a very high level, leaving little room for change.

Finally, in addition to the substantive analysis of the curriculum presented here, this study provided an experimental design and a methodology that has particular relevance to scheduling factors associated with residency training. Specifically, the posttest only design, with a series of two-month experimental-control periods spaced over the entire year, permitted the residents to maintain their normal schedule of rotations yet participate in the experiment. Accordingly, this design allows an effective experimental analysis to be carried out without interfering with the educational program.

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