Congruence and Predictive Power of Mothers’ and Teachers’ Ratings of Mastery Motivation in Children With Mental Retardation

Penny Hauser-Cram, Marty Wyngaarden Krauss, Marji Erickson Warfield, and Ann Steele

Abstract: The congruence between mothers’ and teachers’ ratings of mastery motivation among 3-year-old children with mental retardation was investigated. The extent to which maternal and teacher ratings of task persistence at entry to preschool are predictive of observed mastery behaviors at age 5 was tested. Results indicate that mothers rated their children's task persistence behaviors higher than did teachers. Further, once the child's cognitive level and teacher ratings were controlled for statistically, maternal ratings of the child's mastery behaviors were predictive of the child's task mastery performance 2 years subsequent. Implications for educational planning were discussed.

Most educational and therapeutic programs for children with developmental disabilities are based on individualized, multidisciplinary assessments of each child’s capabilities and needs. Most also include or require parental involvement in the formation and approval of such programs (Gallagher, 1990). Although many professionals have a long-standing commitment to some form of parent involvement (Krauss & Häuser-Cram, 1992), there is also considerable controversy about how to ensure that parental knowledge, perspectives, and goals are reflected in educational or therapeutic plans that are usually based on structured and professionally determined assessment strategies.

Because both parents and professionals contribute their expertise and perspectives to the planning process, it is important to examine the extent to which congruence exists between these two groups. Results of previous research suggest that although agreement between parents and teachers is often statistically significant, the extent of agreement is usually in the low to moderate range. In two substantial reviews of studies on different dimensions of children's functioning, problem behavior, and adaptive behavior, the investigators reached similar conclusions about agreement among raters. Achenbach, McConaughy, and Howell (1987) used meta-analytic techniques to aggregate the findings from 119 studies on children's behavior problems. They reported that although correlations tend to be high between raters who play similar roles with children (e.g., mothers and fathers), correlations are only modest between those whose roles with children differ. They concluded that parent–teacher ratings of children's behavior problems, on average, are low to moderate, $r = .28$. In a review of studies of children's adaptive behavior, Harrison (1987) also considered the effect of different types of informants. She reported that although parent–teacher agreement varied substantially across studies, ranging from a low correlation of .06 to a high of .91, in general, investigators concluded that parents and teachers tend to differ in their ratings of adaptive behavior.

In studies published after the Harrison
skevopoulos (1980) suggested that parents have high expectations of their child and, therefore, tend to assess their child as they hope the child will perform. Alternatively, Gradell, Thompson, and Sheehan (1981) speculated that parents focus on their child's emerging skills and view such skills as indicators of future performance.

Indeed, we have a long history of parent-professional divergence regarding children. Lightfoot (1977) claimed that such divergence proceeds from the varying cultures of parents and teachers. She stressed that parents adhere to an individualistic perspective that encourages them to view a child's development in relation to his or her prior development in the family. Teachers, on the other hand, compare an individual child to others in the class or to other children of the same age. In assessing the child, therefore, parents focus on individual differences whereas teachers concentrate on group comparisons.

Few investigators, however, have tested empirically the "overestimation" hypothesis by assessing whether teachers' or mothers' ratings are better predictors of later achievement. Stevenson, Parker, Wilkinson, Hegion, and Fish (1976) found that ratings of children's general cognitive abilities, classroom skills, and personal-social characteristics made by kindergarten teachers were more predictive of achievement in the first three grades of school than were similar ratings made by mothers. In a continuation of the same study, Stevenson and Newman (1986) found both mothers' and teachers' ratings of girls' cognitive abilities to relate differentially to their later attitude toward mathematics.

No comparable study has been conducted on children with disabilities. This is a critical gap in the literature because parental views are required in the development of Individualized Educational Plans (IEPs). If professionals consider parents' perspectives as "overestimates" of children's behavior, parental input may be readily dismissed in favor of the views of professionals.

Moreover, in most studies of parent-teacher congruence of young children with disabilities, investigators have focused on children's performance on general cognitive measures (Dinnebier & Rule, 1994) or adaptive behavior (Harrison, 1987). Few investigators have considered specific aspects of development, such as attention and motivation, as essential substrates
of the learning process. This is a critical omission given the salience of such self-regulatory aspects of development to the child's success in classroom settings and to the teacher's perception of the child's needs for environmental and individualized support.

The motivation to persist with challenging tasks, referred to as mastery motivation, is considered integral to the concept of child competence (Zigler & Trickett, 1978). Developmental theorists claim that motivation is an intrinsic characteristic of the human species and a fundamental aspect of children's self-generated learning (Piaget, 1952; White, 1959). In studies of mastery motivation investigators have operationalized this construct as independent and persistent task-directed behavior in problem-posing situations that are moderately challenging (Morgan, Harmon, & Maslin-Cole, 1990). The extent to which children with mental retardation and other developmental disabilities display levels of mastery motivation that differ from those of typically developing children has been investigated in a small corpus of studies (Hupp, 1995).

Importantly, results of these studies indicate that motivational levels seldom differ during the infant and toddler years between typically developing children and those with mental retardation yet become increasingly apparent during the preschool and school-age years. MacTurk, Vietze, McCarthy, McQuiston, and Yarrow (1985) found differences in patterns of exploratory behavior between infants with Down syndrome and typically developing infants but reported no differences in task persistence. Extending MacTurk and his colleagues' work to the toddler years, Hauser-Cram (1996) found task persistence to be similar for toddlers with and without developmental disabilities, matched for mental age (MA).

Studies of preschool children, however, reveal emerging differences in task persistence behaviors between those with and without mental retardation or other developmental disabilities. Jennings, Connors, and Stegman (1988) reported that preschool children with physical disabilities had lower levels of persistence than did children without disabilities. Harter and Zigler (1974) reported that school-age children with mental retardation demonstrated lower levels of motivation on a range of measures in comparison to MA-matched children without disabilities. Specifically, lower levels of moti-

vation were observed among the children with mental retardation with respect to variation seeking, curiosity, mastery for the sake of competence, and preference for challenging tasks. Furthermore, with samples of children who have disabilities, results of recent research have shown a relation between children's cognitive performance and mastery motivation (Hauser-Cram, 1993, 1996).

In summary, as children with mental retardation reach school age and are expected to become increasingly engaged in self-directed and challenging activities, their levels of mastery motivation have been found to differ significantly from those of children without disabilities. Strategies to intervene constructively to enhance the mastery motivation skills of children with mental retardation is an area of considerable importance to teachers (and parents) and an area of increased focus for investigators (Hauser-Cram & Shonkoff, 1995). Demonstrating the relation between early levels of mastery motivation behaviors (such as at age 3, when many children enter preschool programs) and subsequent performance (such as at age 5, when children enter kindergarten) will underscore the importance of appropriate intervention efforts. Given the mandated participation of parents in the process of the development of educational plans for children with mental retardation, as well as other children receiving special education services, it is important to understand the extent to which parental views of their children's abilities differ or are consistent with those of professional educators. Clearly, discrepant views between parents and teachers may result in unfortunate contentiousness during educational planning periods and, ultimately, may lead to poorer educational and social outcomes for the children affected.

In the present study we compared maternal and teacher ratings of the abilities of a sample of children with mental retardation with respect to a specific and important aspect of child development—mastery motivation. We also examined the extent to which maternal or teacher ratings of task persistence as measured at entry into preschool (when the children were 3 years of age) were predictive of the child's observed mastery behaviors subsequently (at age 5). One of our purposes was to determine the extent to which keen observers of children—both parents and teachers—differ in their as-
sessments of what they observe. A second and related purpose was to analyze the comparative utility of maternal and teacher ratings to educational planning for children with mental retardation.

Specifically, the present study was designed to test two hypotheses. First, based on the consistent finding in the literature of higher ratings by mothers in comparison to teachers, we hypothesized that maternal and teacher ratings of mastery motivation among 3-year-old children with mental retardation would differ, with maternal ratings being higher than teacher ratings. Second, drawing on results of prior studies suggesting that maternal ratings of children are "overestimates" of their actual performance, we tested the extent to which children's mastery motivation at age 5 would be predicted by maternal ratings over and above teacher ratings of mastery motivation at age 3 years. If our data are consistent with the "overestimation" hypothesis, we would expect maternal ratings not to add significant variation beyond the ratings of teachers.

Method

Sample

The children in the present study were selected from a larger sample of children participating in a longitudinal study of children with disabilities and their families (Shonkoff, Hauser-Cram, Krauss, & Upshur, 1992). The subjects included 81 children with mental retardation as defined by the American Association on Mental Retardation (Luckasson et al., 1992) and who had complete data on variables used in the following analyses. Specifically, the children had scores on the McCarthy Scales of Children's Abilities (McCarthy, 1972) or the Bayley Scales of Infant Development (Bayley, 1969) of less than 71 and showed at least one standard deviation (SD) delay in two areas of adaptive functioning at age 3, as measured by the Vineland Scales, Interview Form (Sparrow, Balla, & Cicchetti, 1984).

Slightly over half of the children (53.1%) were female, 90% were Caucasian, and 63% had Down syndrome. At age 3 years, their average standardized cognitive performance score (based on either the Mental Development Index of the Bayley Scales or the General Cognitive Index of the McCarthy Scales) was 50.7 (SD = 14.1), and their average MA was 18.5 months (SD = 5.2). The mean age of mothers was 32.4 years (SD = 5.1). In general, mothers had education beyond high school (mean = 14.1 years, SD = 2.3), and over half (56.8%) were employed; 85.2% were married. Most of the teachers had degrees in special education (75.3%) and 46.3% of them had master's degrees. They averaged 5.9 years of teaching (SD = .5).

The classrooms of the sample children had an average ratio of one adult (teacher, assistant, aide, or student teacher) for every 3 children. Over one half (51.9%) were in classrooms in which all children had IEPs. The mean proportion of children with IEPs in all classrooms attended by sample children was 79.6%.

Over one half of the children (57.5%) attended preschool 5 days a week, and almost one third (30.0%) attended 4 days per week. On average, children attended school 3.1 (SD = 1.2) hours per day. Although the size of the classrooms ranged from 4 to 23 students, the average class size was 8.6 children.

Measures and Procedure

Study measures were collected at two time points. The first measurement point occurred within 3 months of the sample child's 3rd birthday. As part of a home visit with the mothers and in-home child assessment, project staff members administered either the McCarthy Scales or the Bayley Scales to the sample child. Scale selection was based on the child's cognitive level. Project staff who conducted the home visit and child assessment were blind to study hypotheses, were individuals with extensive experience in the assessment of children with special needs, and were trained (initially with video tapes, then with live scoring) to be at least 90% reliable on the measures of mastery motivation.

During the home visit, mothers completed the Dimensions of Mastery Questionnaire (Morgan et al., 1992), which consists of 36 items that are age-appropriate for toddlers and preschool-aged children. The items comprise 5 subscales: Object Persistence, Social and Symbolic Persistence, Gross Motor Persistence, Mastery Pleasure, and General Competence. For the purposes of this investigation, the Object Persistence subscale was selected because it measures the child's tendency to persevere with mastery tasks, a core concept in mastery motivation. Morgan and his colleagues reported the Cronbach's alpha on this subscale, which consists of 12 items on a 4-point Likert scale (see
Table 1), to be .86 for mothers and .92 for teachers. We found similar properties of this subscale for our sample, with an alpha of .87 for mothers and .89 for teachers. Within 6 weeks of the sample child's entry into preschool (mean age at entry was 39.9 months, SD = 2.1), the child's teacher completed the same version of the Dimensions of Mastery Questionnaire as completed earlier by the child's mother.

The second measurement point occurred within one month of the child's 5th birthday (mean age = 60.91 months, SD = 1.7). As part of a home visit with the mother, project staff administered an observational measure of mastery motivation to the child. Children were presented with two problem-posing tasks, which were designed by Morgan, Busch-Rossnagel, Maslin-Cole, and Harmon (1991). The first task involved cause-effect (e.g., slide a lever for a figure to emerge). The second task involved puzzles. The cause-effect toys were commercially produced and formed a hierarchy of task difficulty. In ascending order of difficulty, the toys were: (a) a simple typewriter, (b) a surprise box, (c) a cash register, and (d) a tape recorder. The puzzles were also commercially produced and formed five levels of difficulty: (a) a balloon puzzle with 6 identical pieces, (b) a traffic light puzzle with 6 simple-shaped pieces, (c) a traffic signs puzzle with 5 complex geometric pieces, (d) a transportation puzzle with 8 complex pieces, and (e) a three pigs puzzle with 11 interlocking pieces.

The hierarchy for both sets of toys has been tested in prior studies (Barrett, Morgan, & Maslin-Cole, 1993; Redding, Morgan, & Harmon, 1988) using Green's (1956) Index of Consistency. Observers rated the child's modal level of behavior (e.g., task persistence, simple manipulation, off-task behavior) every 15 seconds for a total of 4 minutes on each task separately. Our focus was on the extent to which children displayed persistent task-directed behavior, which we defined as the child attempting to solve the problem posed by the toy. (Full information on the mastery motivation testing is available from the first author.) Interobserver reliability estimates for a subsample of 29 subjects, based on Cohen's kappa, were .87 and .89 for persistent task-directed behavior on the cause-effect and the puzzle tasks, respectively.

Results

We tested the first hypothesis by conducting paired t tests between maternal and teacher ratings on the Object Persistence subscale of the Dimensions of Mastery Questionnaire. We employed Bonferroni adjustments in order to be conservative given multiple comparisons (Rosenthal & Rubin, 1984). Consistent with our hypothesis and with results of previously discussed studies, we found that mothers rated their children as more persistent than did teachers on the summary score for the subscale (means = 31.2 [SD = 7.0] for mothers and 23.1 [SD = 6.7] for teachers), t = 8.31, p < .001. As shown in Table 1, mothers rated children more favorably than did teachers on all items of the subscale, and significant differences were evident on all but one item. Also, we found that mothers' and teachers' ratings on this subscale were not correlated significantly, r = .19.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mothers</th>
<th>Teachers</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeats a new skill</td>
<td>2.8</td>
<td>1.9</td>
<td>7.37**</td>
</tr>
<tr>
<td>SD</td>
<td>0.9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Gives up easily</td>
<td>2.5</td>
<td>2.8</td>
<td>1.60</td>
</tr>
<tr>
<td>Mean SD</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Likes to figure things out without help</td>
<td>1.9</td>
<td>1.9</td>
<td>3.93**</td>
</tr>
<tr>
<td>SD</td>
<td>0.9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Does not keep at it very long</td>
<td>3.0</td>
<td>1.6</td>
<td>3.01**</td>
</tr>
<tr>
<td>Mean SD</td>
<td>0.9</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Tries to complete things</td>
<td>1.6</td>
<td>1.6</td>
<td>4.52**</td>
</tr>
<tr>
<td>SD</td>
<td>0.7</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Explores all parts of a complex object</td>
<td>2.3</td>
<td>1.6</td>
<td>4.97**</td>
</tr>
<tr>
<td>Mean SD</td>
<td>0.9</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Prefers to do things on own</td>
<td>1.8</td>
<td>1.8</td>
<td>5.62**</td>
</tr>
<tr>
<td>SD</td>
<td>0.9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Works a long time to put things together</td>
<td>2.4</td>
<td>1.7</td>
<td>5.62**</td>
</tr>
<tr>
<td>Mean SD</td>
<td>1.0</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Attempts to master cause and effect toys</td>
<td>2.4</td>
<td>2.0</td>
<td>6.28**</td>
</tr>
<tr>
<td>SD</td>
<td>0.9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Will work long to get something open</td>
<td>2.9</td>
<td>2.0</td>
<td>6.36**</td>
</tr>
<tr>
<td>Mean SD</td>
<td>0.9</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Tries to finish puzzle-like toys</td>
<td>2.2</td>
<td>1.8</td>
<td>2.97*</td>
</tr>
<tr>
<td>SD</td>
<td>0.9</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Tries hard to make things work</td>
<td>3.2</td>
<td>2.1</td>
<td>8.77**</td>
</tr>
<tr>
<td>Mean SD</td>
<td>0.7</td>
<td>0.9</td>
<td></td>
</tr>
</tbody>
</table>

Note. Items were rated on a scale of 1 = not at all typical to 4 = very typical. *p < .01. **p < .001.
For the second hypothesis, we calculated the percentage of intervals in which the child displayed task mastery persistence separately for each task (means = 52.3 [SD = 29.6] for cause–effect task and 42.2 [SD = 31.3] for puzzle task), indicating that about half of the observed time, on average, was spent engaged in task persistent activity. Analyses of variance revealed no significant differences by gender or maternal education for persistence on either task.

To test the second hypothesis, we used Pearson correlation analysis and hierarchical multiple regression analysis. The dependent measure was the percentage of intervals in which task mastery persistence was the modal behavior, as assessed when the child was age 5. Notably, maternal ratings were significantly and moderately correlated with the child’s age 5 task mastery persistence behavior on both tasks: rs = .43 and .37, ps < .01, for the cause–effect and puzzle tasks, respectively. Teacher ratings were significantly correlated only with mastery behavior for the cause–effect tasks, r = .25, p < .05.

Next, we employed hierarchical multiple regression analyses to test the percentage of variance accounted for by maternal and teacher ratings in children’s task mastery persistence behavior on each task. The independent variables, according to their order of entry into the equation, were the child’s cognitive level (as assessed at age 3), followed by the teacher’s rating on the Object Mastery subscale of the Dimensions of Mastery Questionnaire (again, as assessed at age 3). Maternal ratings of the Object Mastery subscale of the Dimensions of Mastery Questionnaire at age 3 were entered as the last step. The analyses were conducted separately for the two mastery tasks. The child’s level of cognitive performance was entered first in the analyses because researchers have reported a relation between cognitive performance and mastery motivation in prior studies (Hauser-Cram, 1993, 1996).

The results of the regression analyses are presented in Table 2. Children’s cognitive performance at age 3 was a consistent predictor of age 5 persistence on cause–effect tasks and puzzle tasks. The teachers’ ratings did not contribute significantly to the explained variation in the dependent measure for either of the two task analyses. When maternal ratings were entered last, however, they provided significant amounts of additional explained variance for each task (11% for cause–effect tasks, 7% for puzzle tasks). Thus, with respect to our second hypothesis, we found that once the child’s cognitive level and teacher ratings are accounted for, maternal ratings of the child’s mastery behaviors were predictive of the child’s task mastery performance 2 years subsequent.

**Discussion**

In the preponderance of studies in which parent and teacher ratings are compared, researchers have focused on children’s skill acquisition. In this investigation, parents and teachers were asked to rate children’s motivation to master different types of tasks. Motivation relates to self-regulatory mechanisms rather than the acquisition of a specific skill (Hauser-Cram & Shonkoff, 1995). The results from this investigation indicate that parents of children with mental retardation, in comparison to teachers, tend to view their children as more motivated to persist in mastery activities. Thus, although in this study we focused on children’s motivation rather than on skill acquisition, our results are consistent with those of prior investigators who compared maternal ratings and teacher ratings.

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**Table 2**

Hierarchical Multiple Regression Analyses Predicting Mastery Motivation at Age 5 Years (n = 81)

<table>
<thead>
<tr>
<th>Age 3 predictor</th>
<th>Cause–effect task</th>
<th>Puzzle task</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>R² Increment</td>
</tr>
<tr>
<td>Cognitive performance</td>
<td>.31</td>
<td>.09</td>
</tr>
<tr>
<td>Teacher rating (DMQ)*</td>
<td>.20</td>
<td>.04</td>
</tr>
<tr>
<td>Mother rating (DMQ)</td>
<td>.35</td>
<td>.11</td>
</tr>
</tbody>
</table>

*Multiple r = .49. **Multiple r = .44. *Dimensions of Mastery Questionnaire.

*p < .01.
The predictive power of maternal and teacher ratings was also compared, and the hypothesis of maternal “overestimation” of a child’s abilities was examined. Contrary to results of prior studies suggesting that maternal ratings tend to be inflated, we found that mothers could significantly predict children’s subsequent persistent behavior. In contrast, teachers’ ratings, although correlated with later performance, were no longer predictive once children’s level of cognitive performance was considered.

Many explanations could be offered for the enhanced ability of mothers to predict children’s persistence. Mothers observe their children in many situations and over time; they, therefore, have a broader range of samples of behavior from which to draw their ratings. Teachers, on the other hand, know children well within the classroom setting only. Although in such settings children are likely to be encouraged to master tasks, they may not be engaged in the full range of persistent activities experienced in the home setting. Moreover, teachers may focus on areas in which the child needs assistance and, thus, overlook his or her strengths in task persistence. Results of prior work suggest that preschool teachers of children with disabilities are quite involved in assisting the child in regulating learning on a task (Bronson, Hauser-Cram, & Warfield, 1995; Hauser-Cram, Bronson, & Upshur, 1993), and such high levels of involvement may detract from the teacher’s ability to view the child as persistent and self-directed.

The findings of the present study need to be considered with appropriate caution. Children’s task persistence was observed in the home setting, and it is possible that such persistence would vary in the context of the classroom. Children may be more distracted in classrooms by peers, and they also may be provided with greater levels of adult assistance. The modest correlation between parent and teacher ratings may not be surprising because the settings in which each informant observes the child are dissimilar. Children’s behavior is known to vary across different settings (Achenbach, 1995; Bronfenbrenner & Crouter, 1983), and settings are also known to be associated with divergent expectations (Achenbach, 1995; Wachs, 1992). The extent to which mastery motivation varies between the home and school setting deserves further study. Nevertheless, in this analysis the observations of task persistence were made by independent observers blind to knowledge of prior parent or teacher ratings and may be a good indication of a child’s motivation to persist at tasks under optimal conditions.

Another caution regarding our findings is that we obtained ratings of mastery motivation from mothers only. Although previous researchers have found high correlations between maternal and paternal ratings of their children, they are not interchangeable observers. Future research should be directed towards examining differences and similarities between maternal and paternal ratings of their child’s development in order to understand better the variety of parental perspectives which school-based planners may encounter in designing IEPs.

At age 3 years when children with developmental disabilities tend to enter the public school system, it would be advantageous to determine which children may be at risk for low levels of motivation. Intervention could then be planned to assist those children during the preschool years. Motivation serves as a fundamental substrate of learning, and intervention efforts aimed at encouraging children in their motivated behavior may offer long-term benefits for children’s learning across a range of domains (Hauser-Cram & Shonkoff, 1995). For example, rather than focusing educational efforts on “hand-over-hand” problem-solving, teachers and parents could be encouraged to think about ways of supporting children’s autonomous learning to maintain a balance of success and challenge (Wood, Bruner, & Ross, 1976). Heckhausen (1987) has termed this the “one-step-ahead approach,” a view that is consistent with Vygotsky’s (1978) notion of instructing children within the “zone of proximal development.” As educators and parents target such efforts, the results of this study point to the value of maternal ratings and views of their children, especially in domains of learning that require task persistence. The assumption that teachers are the more accurate raters of children’s task-related behaviors and that mothers have inflated views of a child’s abilities deserves to be tested in future work. Beyond general acknowledgment of the importance of parental input into children’s school experiences, we believe that the results of this investigation indicate that parents’ views deserve a valued place in understanding a child’s school behavior.
References


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Authors: PENNY HAUSER-CRAM, EdD, Associate Professor of Developmental and Educational Psychology, Campion Hall, School of Education, Boston College, Chestnut Hill, MA 02167-3813. MARTY WYNGAARDEN KRAUSS, PhD, Associate Professor, and ANN STEELE, EdM, Research Coordinator, Early Intervention Collaborative Study, Heller School, PO Box 9110/MS 035, Brandeis University, Waltham, MA 02254-9110. MARJIE ERICKSON WARFIELD, PhD, Assistant Professor of Pediatrics, Department of Pediatrics, University of Massachusetts Medical Center, 55 Lake Ave. N., Worcester, MA 01655. Requests for reprints should be sent to the first author.