

Relationship of Therapists' Attitudes, Children's Motor Ability, and Parenting Stress to Mothers' Perceptions of Therapists' Behaviors During Early Intervention

Background and Purpose. Federal law mandates family-centered care as the service delivery model in early intervention programs for children from birth to 36 months of age. This study investigated the relationship of therapists' attitudes, children's motor ability, and parenting stress to mothers' perceptions of physical therapists' family-centered behaviors during early intervention. **Subjects and Methods.** Twenty-five physical therapists and 75 mother-child dyads (3 from each therapist's caseload) participated. The mean chronological age for the children was 21.2 months (SD=7.3, range=6–35). Mothers participated in a structured interview using the Measures of Processes of Care (MPOC-56), and they completed the Parenting Stress Index–Short Form (PSI-SF) and a questionnaire. The Bayley-II Motor Scale was administered to the children. Therapists completed a modified version of the Measures of Processes of Care for Service Providers (MPOC-SP) and a questionnaire. **Results.** Scores for mothers on the MPOC-56 and for therapists on the MPOC-SP indicated strong positive perceptions and attitudes toward family-centered behaviors. Hierarchical multiple regression analyses indicated that parenting stress explained a considerable amount of the variance in mothers' perceptions of family-centered behaviors, whereas therapists' attitudes explained a considerable amount of the variance in mothers' perceptions of respectful and supportive care. Children's motor ability was inversely related to parenting stress. **Discussion and Conclusion.** Findings suggest that mothers perceive that physical therapists are using family-centered behaviors in early intervention. Findings from the questionnaires suggest that some early intervention policies may be barriers for therapists and prevent them from actualizing attitudes toward family-centered behaviors. [O'Neil ME, Palisano RJ, Westcott SL. Relationship of therapists' attitudes, children's motor ability, and parenting stress to mothers' perceptions of therapists' behaviors during early intervention. *Phys Ther.* 2001;81:1412–1424.]

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The expanded role of the physical therapist in early intervention appears to reflect a shift from child-centered intervention to family-centered intervention.^{1,2} Federal law (Individuals With Disabilities Education Act [IDEA], Public Law 105-17, Part C) mandates that family-centered care be the service delivery model implemented in early intervention programs for children from birth to 36 months of age.³ The primary focus of family-centered care is to support families in their caregiving roles by building on the family's strengths.⁴ *Family-centered care* has been defined as "a philosophy of care in which the pivotal role of the family is recognized and respected in the lives of children with special needs . . . [in which] families should be supported in their natural caregiving and decision-making roles . . . [in which] parents and professionals are seen as equals in a partnership committed to the development of optimal quality in the delivery of all

levels of health care."^{4(p1056)} Dunst et al defined family-centered care as "a combination of beliefs and practices that define particular ways of working with families that are consumer driven and competency enhancing."^{5(p115)}

Family-centered care emphasizes interpersonal aspects of care.⁶ Interpersonal aspects of care include the skills or behaviors that service providers use during interactions with families.⁶ In a health care environment based on a philosophy of family-centered care, providers would use family-centered behaviors during processes of care. Three domains that appear repeatedly in research that examines interpersonal aspects of care are: (1) information exchange, (2) respectful and supportive care, and (3) enabling and partnership.⁶ *Information exchange* refers to the characteristics of communication between providers and parents where providers solicit as well as offer information to parents. *Respectful and supportive care*

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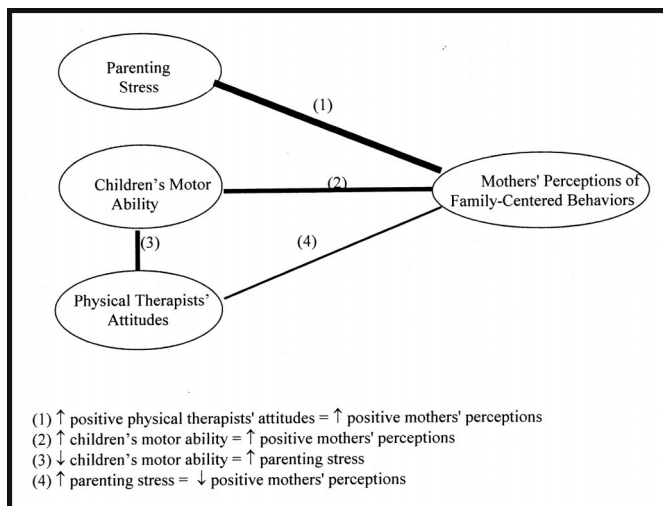


Figure. A model to examine determinants of mothers' perceptions of physical therapists' family-centered care in early intervention.

refers to interpersonal sensitivity on the part of the provider to ensure that parents feel respected and supported. *Enabling and partnership* refers to the provider practices that encourage collaboration with parents and support their roles as decision makers and advocates for their children.⁷ The Measures of Processes of Care (MPOC-56)⁸ is a questionnaire that is designed to identify behaviors that are consistent with the interpersonal aspects of care associated with family-centered care.

Although satisfaction with care is a narrower construct than perceptions of care, research indicates there is an association between patient satisfaction with care and perceptions of care.⁷⁻¹² Patient satisfaction with quality of care is an outcome identified in the *Guide to Physical Therapist Practice* (the Guide).¹³ The Guide outlines 5 areas in the evaluation of patient satisfaction with care, including "interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers."^{13(p1382)} Research on mothers' satisfaction with quality of care for their children with special health care needs includes evaluation of the 3 components of care: structure, process, and outcome.⁹⁻¹² Results of research on the relationship between processes of care and patient satisfaction indicate that interpersonal aspects of care are associated with patient satisfaction, with the strongest association existing between information exchange and patient satisfaction.⁶

To begin to systematically examine predictors of mothers' perceptions of physical therapists' family-centered behaviors in early intervention (eg, the therapist and mother are partners in the child's care, the mother is the decision maker in her child's care), we developed a multidimensional model. The model is based on aspects of systems and social-ecology models.^{14,15} As illustrated

in the Figure, the model indicates that we propose that parenting stress, children's level of motor ability, and physical therapists' attitudes are important predictors of mothers' perceptions of the extent to which physical therapists provide early intervention using family-centered behaviors. We believe that examination of mothers' perceptions of family-centered behaviors is important to understand the experiences of families in early intervention and to evaluate whether physical therapy services are provided within the context mandated by federal law.

We hypothesized that parenting stress is the strongest predictor of mothers' perceptions of the extent to which physical therapists provide early intervention using family-centered behaviors. Parents' satisfaction with their children's care is inversely proportional to parenting stress.^{8,16,17} This inverse relationship between stress and satisfaction may influence mothers' perceptions of family-centered behaviors during early intervention. Researchers who examined the influence of parenting stress on mother-child interactions reported that mothers of children with disabilities have: (1) higher mean scores on a depression-anxiety scale,¹⁸ (2) higher parenting stress, more depression, and feelings of inadequacy regarding parenting issues,¹⁹⁻²² and (3) a higher proportion of stress due to child-related factors rather than parent-related factors.^{23,24} Furthermore, investigations of family function indicate that parents of children with disabilities have increased numbers of hospitalizations for treatment of nervous conditions when compared with parents of children without developmental delays.²⁵

We believe that children's motor ability is the second strongest predictor of mothers' perceptions of the extent to which physical therapists use family-centered behaviors in early intervention. We hypothesized that children's motor ability has (1) a direct influence on mothers' perceptions of family-centered behaviors in early intervention physical therapy and (2) an indirect influence on mothers' perceptions of family-centered behaviors by affecting parenting stress, the construct we believe to be the strongest influence on mothers' perceptions. Children with low levels of motor ability have low levels of participation in mother-child interactions.^{9,26-28} Parents of children with physical disabilities are reported to have high levels of caretaking burdens.^{19,20,29} The potential limitations in mother-child interactions and the potential for increased parenting stress due to increased caregiver burdens may influence mothers' perceptions of family-centered behaviors of physical therapists. We believe that mothers of children who have low levels of participation may report fewer family-centered behaviors from physical therapists than mothers of children who are more active participants in mother-child interactions. If this is true, we contend that

it may be due to a mother's frustration with her child's limited participation rather than an actual reflection of therapists' family-centered behaviors.

We hypothesized that physical therapists' attitudes toward family-centered care are the weakest predictor of mothers' perceptions of the extent to which physical therapists' provide family-centered behaviors during early intervention. Research suggests that the success of early intervention relies on a positive, supportive relationship between members of the early intervention team and caregivers.^{13,30-33} Our research model incorporates the assumption that physical therapists' attitudes toward their family-centered behaviors will influence the quality of the provider-caregiver relationship. For example, we hypothesized that a therapist who has positive attitudes toward family-centered care is likely to interact with children and families in a way that would facilitate a positive, supportive provider-caregiver relationship when compared with a therapist who has less positive attitudes. Attitude was chosen as a construct for the research model instead of behavior for 2 reasons: (1) research indicates that the likelihood of inflated self-report responses is less with attitudinal rating scales,³⁴ and (2) our study design required a general response scale because of the ratio of 1 therapist to 3 children, and we believe that an attitudinal measure is based on a therapist's general beliefs about the importance of family-centered care, whereas a behavioral measure may be directed toward a specific child or circumstance. The Measure of Processes of Care for Service Providers (MPOC-SP)³⁵ is a self-report questionnaire that providers can use to measure self-perceptions of family-centered care. Items are the same or very similar to the items on the MPOC-56.

The purposes of our study were (1) to describe mothers' perceptions of physical therapists' family-centered behaviors during early intervention and physical therapists' attitudes toward family centered care and (2) to examine predictors of mothers' perceptions of physical therapists' family-centered behaviors. Three interpersonal aspects of family-centered care were examined: (1) enabling and partnership between the therapist and caregiver, (2) information exchange, and (3) respectful and supportive care. Our primary hypothesis was that the variance in mothers' perceptions of the extent to which physical therapists provided early intervention using family-centered behaviors would be explained primarily by parenting stress, then by children's motor ability, and finally by physical therapists' attitudes toward family-centered care. We hypothesized that mothers would report that therapists provided early intervention using family-centered behaviors to a greater extent when: (1) they reported low parenting stress, (2) their children had few limitations in motor ability, and

(3) physical therapists had positive attitudes toward family-centered care. We also hypothesized that mothers would report increased levels of parenting stress when their children had low motor ability.

Method

Participants

There were 2 groups of participants: 25 physical therapists working in early intervention programs for children from birth to 36 months of age and 75 mother-child dyads who were receiving their services (3 mother-child dyads per therapist). All participants provided informed consent. Preliminary power analysis indicated that a sample size of 34 therapists and mother-child dyads would be necessary to achieve a power of .80 for all participants. However, recruitment efforts failed to achieve a sample size of 34 therapists. Therefore, a cluster design was utilized to maximize mother-child dyads for the number of therapists recruited. *Post hoc* analyses indicated that the power for physical therapists' attitudes was .31 given the small sample size, whereas the power for children's motor ability and parenting stress was .80.

Physical therapists. To participate in the study, physical therapists had to work in the 5-county region of south-eastern Pennsylvania and have at least 3 children in their caseloads who: (1) were less than 3 years of age, (2) had an identified motor delay making them eligible for early intervention (IDEA, Part C), and (3) had been receiving physical therapy from the participating therapist for at least 3 months prior to the study. Our plan was to use a stratified sampling technique to recruit physical therapists from a list provided by Early Intervention Technical Assistance, a statewide training program funded by the Pennsylvania Departments of Health, Education, and Public Welfare. The sampling plan was not successful for 2 reasons: (1) the list did not include a representative sample of physical therapists from the 5-county region (especially Philadelphia county), and (2) most therapists did not have 3 children in their caseloads who were less than 3 years of age, or they had not been providing therapy to children less than 3 years of age for more than 3 months. To address these limitations, we contacted 19 early intervention agencies to obtain the names of physical therapists working for the agencies. In addition, the names of physical therapists were obtained from a regional directory of services for children with special needs. This directory includes multiple health and community resources for children with special health care needs and was available from a local children's hospital. Eighty-three physical therapists were contacted by telephone to determine their interest and eligibility to participate in the study. Descriptive information for the

Table 1.
Demographic Characteristics of Physical Therapists

Variable	Frequency n (%)	\bar{X}	SD	Range (Minimum–Maximum)
Physical therapists				
Age (y)		38.9	8.1	32 (27–59)
Sex (female)	25 (100)			
Race/ethnicity				
African American	2 (8)			
Asian American	1 (4)			
Hispanic/Latino	0			
White	20 (80)			
Native American	0			
Other (Asian)	2 (8)			
Type of physical therapy degree ^a				
Certificate	2 (8)			
Bachelors	20 (80)			
Entry-level master's	4 (16)			
Advanced master's	3 (12)			
PhD	0			
DPT	0			
Professional certifications/specialties/continuing education				
Pediatric NDT	9 (36)			
Infant NDT	3 (12)			
Sensory integration	0			
Pediatric clinical specialist	0			
Other	3 (12)			
No. of continuing education courses		1.9	1.8	7 (0–7)
Years of experience as a practicing physical therapist		14.9	7.4	23 (3–26)
Years of experience as a practicing pediatric physical therapist		12.8	7.0	24 (1–25)
Years of experience as a practicing early intervention physical therapist		9.8	7.3	24 (1–25)
Percentage of time currently spent practicing in early intervention		75.3	27.6	75 (25–100)
Employment				
Self-employed	8 (32)			
Private pediatric group	0			
Early intervention agency	14 (56)			
Home health care agency	1 (4)			
Other	3 (12)			

^aSome physical therapists had more than one degree.

25 physical therapists who agreed to participate in the study is presented in Table 1.

Mother-child dyads. The 25 therapists were asked to prepare lists of the children in their caseloads who met the inclusion criteria and to assign a number to each child. Random sampling of 5 children from each therapist's list was performed using a random numbers table. The therapists distributed letters that explained the study to the mothers of the children and provided the researchers with the names and telephone numbers of the first 3 mothers who agreed to participate. Seven of the therapists (28%) had only 3 to 5 children in their caseload who met the inclusion criteria. In these instances, all mothers were asked to participate, and the first 3 mothers who agreed were those who participated in the study. Descriptive information for the mothers is presented in Table 2.

The mean chronological age of the children was 21.2 months (SD=7.3, range=6–35). Fifty-two percent of the children were female, and 48% were male. Sixty-eight percent of the children were white, 21% were black, 5% were Hispanic, and race was not reported for 6% of the children.

The primary medical diagnosis for the children varied. The most frequently reported primary diagnoses were: Down syndrome (16%), preterm birth (13%), genetic syndrome (other than Down syndrome) (12%), cerebral palsy (11%), developmental delay (9%), hypotonia (8%), hydrocephalus (5%), myelomeningocele (4%), brachial plexus injury (4%), cerebral malformation (4%), tuberous sclerosis (3%), and seizures (3%). The remaining 6 children (8%) had one of the following diagnoses: renal failure, pulmonary atresia, failure to thrive, hypothyroidism, cytomegalovirus, or meningitis.

Table 2.
Demographic Characteristics of Mothers

Variable	Frequency n (%)
Mothers' age (y)	
15-19	4 (5.6)
20-24	5 (6.9)
25-29	17 (23.6)
30-34	17 (23.6)
35-39	17 (23.6)
40-44	7 (9.7)
45-49	1 (1.4)
50-54	2 (2.8)
>54	2 (2.8)
Relationship to child	
Mother	70 (93.3)
Foster mother	1 (1.3)
Grandmother	3 (4.0)
Other	1 (1.3)
Mother's education	
Some high school	7 (9.3)
Completed high school	9 (12)
Some technical training	5 (6.6)
Completed technical training	5 (6.6)
Some college	15 (20.0)
Completed college	29 (38.6)
Graduate school	5 (6.7)
Family type	
Single parent	11 (14.7)
Two parents	58 (77.3)
Extended family	15 (20.0)
Other	2 (2.7)
Family income level	
<\$15,000	12 (16.2)
\$15,000-29,999	8 (10.8)
\$30,000-44,999	16 (21.6)
\$45,000-59,999	14 (18.9)
\$60,000-\$74,999	10 (13.5)
≥\$75,000	14 (18.9)
County of residence	
Philadelphia	24 (32.0)
Chester	18 (24.0)
Delaware	15 (20.0)
Bucks	12 (16.0)
Montgomery	6 (8.0)
Residential area	
Urban	25 (33.8)
Suburban	41 (55.4)
Rural	8 (10.8)

A psychomotor developmental index (PDI) from the Bayley-II Motor Scale³⁶ could not be calculated for approximately 50% of the children (n=38) because raw scores on test items for these children were more than 3 standard deviations below the mean scores for children with typical motor development. The remaining 37 children in the sample had a mean PDI of 72.2 (almost 2 standard deviations below the mean PDI for children without motor delays). The mean motor development age equivalent for all children was 10.8 months.

A majority of the children (70%) had been receiving physical therapy as part of early intervention for 6 to 24 months at the time of the study. Most of the children (80%) received physical therapy in the home.

Measurement Tools

Measures of Processes of Care-56. Mothers' perceptions of the extent to which therapists used family-centered behaviors were measured with the MPOC-56.⁸ The MPOC-56 is a tool designed to measure family-centered behaviors of health care providers that is appropriate for children of all ages; it is not specific to children in early intervention. In our study, the language for the root of each question was changed to read "your child's early intervention physical therapist" rather than the more general phrase "people who work with your child."

The MPOC-56 is a questionnaire containing 56 items across 5 scales. Items are scored on an 8-point scale (7=to a great extent, 4=sometimes, 1=never, 0=not applicable). A scale score is the average of the items' ratings for the scale, and scale scores range from 1 to 7. If items are rated 0, they are eliminated from the scale, and each scale has an upper limit of 0 scores that are acceptable before the scale must be eliminated. MPOC-56 scale scores that we analyzed were those that reflect the 3 domains of the interpersonal aspects of care associated with provider behaviors and patient satisfaction: "Providing Specific Information," "Respectful and Supportive Care," and "Enabling and Partnership."^{6,7} We did not use the other 2 scales of the MPOC-56 ("Coordinated and Comprehensive Care" and "Providing General Information") because we believe items from these scales have broader application beyond the role of the physical therapist in early intervention and include parent ratings of characteristics of the early intervention center or program. Table 3 contains a sample of items from the MPOC-56 scales analyzed in this study.

Reliability and validity of scores obtained with the MPOC-56 were examined as part of test construction during field testing and reliability studies.⁸ The MPOC-56 scales have good internal consistency, indicating that items in each scale measure a unique underlying theme (Cronbach alphas across scales varied from .63 to .94 in the reliability study [n=29] and from .81 to .96 in the pilot study [n=653]), and good test-retest reliability (intraclass correlation coefficients [ICCs] for the 5 scales ranged from .78 to .88 [n=29]). Focus groups were conducted with parents to determine content validity using consensus methodology. Concurrent validity was determined by 2 correlation analyses: (1) the association between MPOC-56 scores and scores from the Client

Table 3.

Items to Illustrate the 3 Scales of the Measures of Processes of Care (MPOC-56)

<p>To what extent does your child's early intervention physical therapist:</p> <p>Enabling and Partnership</p> <ul style="list-style-type: none"> • . . . fully explain treatment choices to you? • . . . trust you as the "expert" on your child? • . . . recognize that your family has the final say when making decisions about your child's treatment? • . . . make you feel like a partner in your child's care? <p>Providing Specific Information</p> <ul style="list-style-type: none"> • . . . explain what they are doing when they are watching your child in therapy? • . . . tell you about the results from assessments? • . . . provide you with written information about what your child is doing in therapy? • . . . provide you with written information about your child's progress? <p>Respectful and Supportive Care</p> <ul style="list-style-type: none"> • . . . remember personal details about your child or family when speaking with you? • . . . provide a caring atmosphere rather than just give you information? • . . . help you to feel competent as a parent? • . . . provide enough time to talk so that you do not feel rushed?
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Satisfaction Questionnaire, an 8-item satisfaction scale with a summated score³⁷ (Pearson $r = .43-.64$ across the 3 MPOC-56 scales of interest [$n = 151$]), and (2) the association between MPOC-56 scores and a single-item stress measure (Spearman $r = -.28$ to $-.50$ across the 3 MPOC-56 scales of interest [$n = 151$]).²⁵

Measures of Processes of Care for Service Providers. Physical therapists' attitudes were measured using a modified version of the MPOC-SP.³⁵ The MPOC-SP scale scores that we analyzed corresponded to the scales analyzed for the MPOC-56: "Providing Information" (this scale was equivalent to the "Providing Specific Information" scale on the MPOC-56), "Respectful and Supportive Care," and "Enabling and Partnership." The psychometric properties of the MPOC-SP have been described.³⁵ The authors³⁵ reported good internal consistency (Cronbach alphas across scales varied from .79 to .82) and good test-retest reliability (ICCs across scales varied from .80 to .89). The reliability and validity of scores obtained with the modified MPOC-SP cannot be assumed based on the original tool.

The language of the MPOC-SP was modified for the purposes of our study. The wording of the items of the MPOC-SP was changed to "early intervention physical therapist" rather than the more general term "service provider." Furthermore, the language was changed to obtain information on general attitudes toward family-centered care by asking physical therapists to rate "how important" family-centered behaviors were to them. Like the MPOC-SP, the modified version used in this study contained a 7-point Likert scale to obtain physical ther-

apists' perceptions or attitudes of item importance (7=extremely important, 6=very important, 5=fairly important, 4=moderately important, 3=somewhat important, 2=a little important, 1=not very important).

We further modified the MPOC-SP with the addition of 13 items adapted from existing questionnaires used in early intervention and pediatric physical therapy research.³⁸⁻⁴¹ The 13 items were interspersed among the items of the MPOC-SP in an attempt to decrease potential bias in responding (ie, acquiescence bias or "yea-saying" and "halo effect") by forcing therapists to shift their thinking when responding to items that ask about attitudes toward different components of care.^{34,42} Our assumption was that therapists would be less inclined to allow the response on one item to influence the response on the subsequent item if the themes for the items were different and required the therapists to think differently when responding to items with different themes.

Parenting Stress Index-Short Form. Parenting stress was measured using the Parenting Stress Index-Short Form (PSI-SF).⁴³ The developer of the original version (the Parenting Stress Index) created the PSI-SF using factor analysis. The PSI-SF contains 36 items divided across 3 subscales (ie, "Parental Distress," "Parent-Child Dysfunctional Interaction," and "Difficult Child") that are reported to have good reliability and validity.⁴³ Items are rated on a 5-point scale from "strongly agree" to "strongly disagree," with higher scores indicating higher levels of reported stress. The PSI-SF provides a total stress score as well as 3 subscale scores. The total stress score was used in this study. Evidence of test-retest reliability (Pearson correlations of .84 for the total stress scores and .68 to .85 for subscale scores) is provided in the test manual. However, because Pearson correlations measure association and not agreement, this is a limitation to reliability testing. Total scores and subscale scores on the PSI-SF are moderately to highly correlated with scores on the Parent Stress Index-Long Form.⁴³

Bayley-II Motor Scale. The children's motor ability was measured by use of the Bayley-II Motor Scale.³⁶ This scale consists of item sets that are supposed to represent typical motor development in early childhood (birth to 42 months of age). A child's performance on each item is scored using a dichotomous scale (credit or no credit). Total raw scores are based on the number of credits obtained. The Bayley-II Motor Scale raw score was converted to a developmental age equivalent (DAE) and finally to a developmental quotient (DQ) because the PDI could not be calculated for half of the children in this study. The DQ is an indicator of motor delay.⁴⁴ The DQ was calculated as follows:

$$DQ = [Bayley\ DAE / Child's\ Age] \times 100$$

The age of infants born preterm was adjusted to account for gestational age at birth. Although we were interested in children's motor ability, we believed that it was necessary to use the DQ to control for age.

Interrater reliability during the Bayley-II Motor Scale testing was established between the first 2 authors on 7 children prior to the start of the study. The ICC (2,1) for the total raw score was .97. Item agreement between the testers was also calculated. We agreed on 169 of 190 items across the 7 children ($\kappa=.76$).

Questionnaires. Descriptive data were collected for physical therapists and mother-child dyads using 2 questionnaires that were developed for the purposes of this study and were pilot tested prior to data collection. The questionnaire completed by the physical therapists contained 3 sections: (1) education background and preparation to work in early intervention, (2) general background and practice as a physical therapist in early intervention, and (3) the influence of changes in health care early intervention on your physical therapy practice. The questionnaire completed by the mothers contained 4 sections: (1) mother's information, (2) child's information, (3) overall rating of the child's physical therapist, and (4) physical therapy availability and accessibility in early intervention. Demographic data obtained from these questionnaires were used for the purposes of this study.

Procedure

The first author collected all data. Once a mother agreed to participate in the study, a home visit was scheduled. The duration of a home visit was approximately 1½ hours, during which time the mothers completed the informed consent form, the MPOC-56, the questionnaire for mothers, and the PSI-SF. The researcher administered the Bayley-II Motor Scale to the child.

The procedure for the home visit was explained to the mothers as part of the informed consent. The MPOC-56 was administered first so that items from the questionnaire, the PSI-SF, or the Bayley-II Motor Scale would not raise issues that could potentially bias mothers' perceptions of family-centered behaviors. The MPOC-56 was administered using an interview format. This was done so that each mother received the information in the same manner and items that might be unclear could be explained in the same way to each mother. Mothers were asked to answer questions on the MPOC-56 in reference to their experiences over the past 3 months or longer so that they were rating their experiences based on established relationships with their children's current physical therapists. Defining a time frame for response ratings

is an accepted mechanism used in survey research to reduce recall bias.³⁴

After the MPOC-56 was administered, mothers completed the questionnaire and then the PSI-SF while the researcher administered the Bayley-II Motor Scale to the children. Mothers also were asked to observe the researcher and child during testing and rate: (1) their children's behaviors during testing and (2) how typical their children's performances were during testing. The 2 ratings were included in an effort to ensure that the Bayley-II scores were representative of the children's motor abilities.

Physical therapists received survey packets in the mail after the home visits were completed for the 3 mother-child dyads from their caseloads. Each packet included an informed consent form, the MPOC-SP, and the questionnaire for physical therapists. The 2 instruments were in separate envelopes, and the therapists were instructed to open and complete the MPOC-SP first and then the questionnaire. Again, we believed that this order would be best to reduce any potential bias in responding. Therapists were asked to return the completed instruments in a self-addressed envelope within 2 weeks. Follow-up telephone calls were made to remind therapists who were unable to return the packets within 2 weeks. The time for return of the survey packets varied from 5 to 41 days.

Data Analysis

A randomized block design analyzed by hierarchical multiple regression was used to test the primary hypothesis. Each therapist was a "block," and the mother-child dyads were the repeated measurements or "clusters" within each block. This design accounted for the repeated measures (clusters of mother-child dyads) within blocks (therapists) by dividing the unexplained variance into variance between therapists and variance among mother-child dyads within therapists. For purposes of data analysis, an independent variable was created that represented the unexplained variance between therapists (between-therapist error term). The between-therapist error term was calculated by summing the MPOC-56 scores of the 3 mothers whose children received services from the same therapist. This summary score was the same for the 3 mothers within each "cluster."

Three hierarchical multiple regression analyses (MRAs) were generated, one for each of the corresponding MPOC-56 and MPOC-SP scales of interest ("Enabling and Partnership," "Respectful and Supportive Care," and "Providing Specific Information/Providing Information"). For each analysis, the independent variables were entered into the regression equations in the following

Table 4.
Descriptive Data for Independent and Dependent Measures

Independent Measure	\bar{X}	SD	Minimum-Maximum
Measures of Processes of Care—Service Provider			
Enabling and Partnership	6.16	0.52	5.16–6.92
Providing Information	6.04	0.73	4.29–7.00
Respectful and Supportive Care	6.43	0.49	5.38–7.00
Bayley-II Motor Scale developmental quotient	56.7	24.4	4.17–111.1
Parenting Stress Index—Short Form	75.3	21.9	42–145
Dependent Measure	\bar{X}	SD	Minimum-Maximum
Measures of Processes of Care			
Enabling and Partnership	6.34	0.73	3.19–7.00
Specific Information	6.31	0.87	2.60–7.00
Respectful and Supportive Care	6.66	0.47	5.00–7.00

order: MPOC-SP, between-therapist error term, Bayley-II DQ, and PSI-SF. Although we hypothesized that parenting stress would be the strongest predictor of mothers' perceptions, PSI-SF scores were the last variable entered into the equation. Entering parenting stress into the equation first may have masked the degree to which children's motor ability or physical therapists' attitudes accounted for the variance in mothers' perceptions of physical therapists' family-centered care behaviors. The alpha level for significance testing was set at .10 to decrease the potential of Type II error. There is a high probability of a Type II error in exploratory studies, such as this study, that examine scores on rating scales for attitudes and perceptions. Furthermore, statistical power was low for the effect of physical therapists' attitudes due to the small sample size for therapists. To test the other hypothesis and to help explain the findings of the regression analyses, relationships among the independent variables and between the independent variables and the dependent variable were analyzed using the Pearson product moment correlation coefficient.

Results

Descriptive statistics for the dependent variable and the independent variables are presented in Table 4. The mean scores on the MPOC-56 scales ranged from 6.31 to 6.66 (7=to a great extent). The mean scores on the MPOC-SP scales ranged from 6.04 to 6.43 (7=extremely important). The children's mean Bayley-II Motor Scale DQ was 56.7, with a range of 4.2 to 111.1. A majority of mothers (75%) reported normal to high-normal parenting stress levels (PSI-SF) (mean score=75.3, mean percentile score=65th percentile), whereas the remaining 25% reported abnormally high stress levels (mean score=92, mean percentile score=95th–99th percentiles).⁴³

There was an inverse relationship between mothers' perceptions of family-centered behaviors (MPOC-56)

and parenting stress (PSI-SF) on the "Enabling and Partnership" scale ($r=-.29$, $P<.05$), the "Providing Specific Information" scale ($r=-.25$, $P<.05$), and the "Respectful and Supportive Care" scale ($r=-.28$, $P<.05$). Parenting stress (PSI-SF) was inversely associated with children's motor ability (DQ) ($r=-.31$, $P<.01$), indicating that mothers who reported higher levels of parenting stress had children with lower motor ability. Mothers' perceptions of physical therapists' family-centered behaviors during early intervention (MPOC-56) were correlated with physical therapists' attitudes toward family-centered care only for the "Respectful and Supportive Care" scale ($r=.23$, $P<.05$). Mothers' perceptions of family-centered behaviors (MPOC-56) were not correlated with children's motor ability (DQ) on any scale.

Hierarchical MRAs were calculated to examine the research model (Tab. 5). For each hierarchical MRA, the between-therapist error term explained the greatest amount of variance in mothers' perceptions of family-centered behaviors (MPOC-56). Differences among physical therapists not measured in this study explained between 37% and 44% of the variance in mothers' perceptions of physical therapists' family-centered behaviors.

For the "Enabling and Partnership" scale, 5% ($P<.05$) of the variance in mothers' perceptions of physical therapists' family-centered behaviors (MPOC-56) was explained by parenting stress scores (PSI-SF). As mothers' stress levels increased, their perceptions of physical therapists' behaviors related to enabling and partnership decreased. Children's motor ability (DQ) and physical therapists' attitudes (MPOC-SP) did not explain a significant amount of variance in mothers' perceptions for enabling and partnership.

Table 5.
Hierarchical Multiple Regression Analyses^a

“Enabling and Partnership” Scale		
Dependent Variable: MPOC-56 (“Enabling and Partnership” scale scores)		
Independent Variables	R²	R² Change
MPOC-SP (“Enabling and Partnership” scale scores)	.007	
Between-therapist error	.45	.44*
DQ	.46	.01
PSI-SF	.51	.05*
“Providing Specific Information” Scale		
Dependent Variable: MPOC-56 (“Providing Specific Information” scale scores)		
Independent Variables	R²	R² Change
MPOC-SP (“Providing Specific Information” scale scores)	.004	
Between-therapist error	.39	.39*
DQ	.39	.002
PSI-SF	.45	.06*
“Respectful and Supportive Care” Scale		
Dependent Variable: MPOC-56 (“Respectful and Supportive Care” scale scores)		
Independent Variables	R²	R² Change
MPOC-SP (“Respectful and Supportive Care” scale scores)	.05**	
Between-therapist error	.43	.37**
DQ	.43	—
PSI-SF	.46	.037**

^a MPOC-56=Measures of Processes of Care-56 (measure of mothers’ perceptions of family-centered behaviors in early intervention physical therapy), MPOC-SP=modified version of the Measures of Processes of Care for Service Providers (measure of physical therapists’ attitudes toward family-centered behaviors in early intervention physical therapy), DQ=Bayley-II Motor Scale developmental quotient (measure of children’s motor ability), PSI-SF=Parenting Stress Index–Short Form (measure of mothers’ parenting stress levels). * $P < .05$. ** $P < .10$.

For the “Providing Specific Information” scale, 6% ($P < .05$) of the variance in mothers’ perceptions of physical therapists’ family-centered behaviors (MPOC-56) was explained by parenting stress (PSI-SF) (Tab. 5). As mothers’ parenting stress levels increased, their perception of physical therapists’ behaviors for providing specific information decreased. Children’s motor ability (DQ) and physical therapists’ attitudes (MPOC-SP) did not explain a significant amount of variance in mothers’ perceptions for providing specific information.

For the “Respectful and Supportive Care” scale, 5% ($P < .10$) of the variance in mothers’ perceptions of physical therapists’ family-centered behaviors (MPOC-56) was explained by physical therapists’ attitudes toward family centered care (MPOC-SP), whereas 4% ($P < .10$) of the variance was explained by parenting stress (PSI-SF) (Tab. 5). Children’s motor ability (DQ) did not

explain a significant amount of variance in mothers’ perceptions for respectful and supportive care.

Discussion and Conclusions

Mothers and physical therapists responded to open-ended questions in their respective questionnaires. Several themes emerged as a result of a review of these comments. A majority of mothers were pleased with their children’s physical therapists and found the therapists to be helpful, knowledgeable, positive, and good communicators. Less than half of the mothers (39%) responded to a question that asked what they liked least about their children’s physical therapists. Most responses to this question were directed toward administrative components of care (eg, mothers wanted more physical therapy for their children and more consistent appointment times). Physical therapists commented on changes in early intervention policies in the 2 years prior to the study and how the changes affected service delivery. Themes emerged indicating that most therapists thought state initiatives to implement family-centered care were positive because families were more involved in the processes of care. However, therapists indicated that services were not always individualized to family and child needs. Therapists indicated administrative issues that were potential barriers to care such as difficulty participating in team meetings because they were not “reimbursable,” providing direct service due to increased paperwork demands, and maintaining “productivity” levels when providing home-based services.

Mothers in our study indicated that physical therapists used family-centered behaviors a majority of the time when providing early intervention services to their children. Participating physical therapists had positive attitudes toward family-centered care. A majority of mothers reported normal to high-normal parenting stress levels. Mothers reported increased parenting stress when their children had lower motor ability.

The results of the multiple regression analyses provided partial support for our research model. Our primary hypothesis was that parenting stress, children’s motor ability, and physical therapists’ attitudes would predict mothers’ perceptions of physical therapists’ family-centered behaviors. Parenting stress explained a significant, but small, amount of variance in mothers’ perceptions of physical therapists’ family-centered behaviors for enabling and partnership, providing specific information, and respectful and supportive care. As mothers’ parenting stress increased, their perceptions of physical therapists’ family-centered behaviors decreased. Physical therapists’ attitudes explained a significant, but small, amount of variance in mothers’ perceptions of physical therapists’ respectful and supportive care. This finding suggests to us that therapists who believed mothers to be

equal partners and the primary decision makers for their children had a positive influence on mothers' perceptions of family-centered behaviors that emphasize respectful and supportive care. Children's motor ability was not a significant predictor variable.

Scores on the MPOC-56 scales were higher in our study than the scores reported by King et al,⁸ the developers of the MPOC-56. In our study, mothers' mean scores on the 3 MPOC-56 scales ranged from 6.31 to 6.66 (SD=.47-.87). King et al reported mean MPOC-56 scores for a sample of 653 parents (78% were mothers) that ranged from 5.17 to 5.79 (SD=1.11-1.40). A possible reason for the discrepancy in MPOC-56 scores was the difference in ages of the children in the 2 samples. The children in the study by King et al were between 7 months and 20 years of age, with only 6.4% less than 2 years of age. Children in our study had a mean age of 21.2 months, with 61% less than 2 years of age. In addition, in the study by King et al, only a small percentage of service providers were physical therapists.

A majority of mothers reported normal to high-normal parenting stress levels (PSI-SF). The mean score for the mothers in this study, we believe, is reasonable because lower parenting stress has been reported for parents of younger children with developmental disabilities.¹⁹ Mean profiles on the Parenting Stress Index-Long Form for parents of children with Down syndrome, intraventricular hemorrhage, and cerebral palsy varied between the 70th percentile and the 80th and 85th percentiles.⁴³ The mean profile for parents of children (mean age=2.6 years) with developmental delays was at the 80th to 85th percentiles, whereas the mean profile for parents of younger children (mean age=11 months) with developmental delays was at the 50th percentile.⁴³

Although the children exhibited wide variation in motor development, their motor ability was not a predictor of mothers' perceptions of physical therapists' family-centered behaviors. This finding may reflect mothers' expectations of care and family support networks. Mothers of infants and young children may expect to spend more time in caregiving tasks. Consequently, their children's motor limitations may not have had a large influence on their perceptions of physical therapists' family-centered behaviors.

The physical therapists' mean attitude scores on the 3 MPOC-SP scales ranged from 6.04 to 6.43 (SD=0.49-0.73). These scores were higher than those reported by Woodside and Rosenbaum³⁵ for the pilot study during development of the MPOC-SP. Those authors reported mean scores ranging from 5.39 to 6.16 (SD=0.62-0.99).³⁵ Several differences exist between the 2 samples and limit our ability to make direct compar-

isons. In the study by Woodside and Rosenbaum,³⁵ only 8.8% (n=10) of the respondents were physical therapists, and the children, on average, were older than the children in our study. Furthermore, modifications were made to the MPOC-SP for the purposes of our study.

The positive attitudes toward family-centered care reported by the physical therapists appeared to be consistent with their professional experiences. Therapists in this study had worked a mean of 10 years in early intervention and, therefore, were experienced in working with families and children. The experience levels of the physical therapists may have facilitated positive attitudes and competency in family-centered care. In addition, 80% of the children in our study received physical therapy in the home. Providing services in a child's natural environment (ie, the home) is a federally defined condition of family-centered services in early intervention (IDEA, Part C) and may have been a factor contributing to the therapists' positive attitudes toward family-centered care.

We recommend changes in design and predictor and outcome variables to further investigate the research model. The distributions of scores on mothers' perceptions of family-centered behaviors (MPOC-56) and therapists' attitudes toward family-centered care (MPOC-SP) were narrow (ie, had minimal variance) and were negatively skewed (ie, most scores were high). Minimal variance in the distribution of these data reduced the explanatory power of the model. The predictor variables should be revised to incorporate multidimensional characteristics of children, families, and therapists. Child characteristics such as temperament, personality, resiliency, motivation, and cognitive ability should be examined for inclusion in the model, as these behaviors may be predictors of mothers' satisfaction with care.⁴⁵ Outcomes should include direct observation of physical therapists' family-centered behaviors during intervention as well as measures of physical therapists' satisfaction with early intervention roles and parents' satisfaction with physical therapy services. A more heterogeneous sample of parents and a larger and more representative sample of physical therapists would increase the variance of the outcome variables. Longitudinal research is needed to examine changes in mothers' perceptions of physical therapists' family-centered behaviors over time and to identify relationships between mothers' perceptions and children's motor outcomes.

Although parenting stress was a predictor of mothers' perceptions, measurement of family characteristics, such as informal family support systems, might increase the explanatory power of the model. Informal support systems include extended family and neighborhood networks that are reported to have a protective influence on

parenting stress.^{19,27,46} Informal family support systems may mediate the influence of children's motor limitations on parenting stress and, in turn, on mothers' perceptions of physical therapists' family-centered behaviors.

The potential barriers to family-centered care identified by the participants in this study suggest that program or agency policies are predictors of physical therapists' attitudes (and behaviors) and mothers' perceptions of family-centered care. The themes identified by mothers and therapists in response to open-ended questions suggest that formal support systems such as early intervention or social service programs are too rigid to meet the individual needs of some families. Viscardis⁴⁷ suggested that some agencies and institutions may not have clear guidelines or strong commitments toward implementing family-centered care. These comments suggest a need to incorporate a measure of program policy or agency practice into program evaluation and clinical research.

The *Guide to Physical Therapist Practice*¹³ identifies professional roles of the physical therapist, including education and consultation at the policy-making level for local, state, and federal agencies. Physical therapists working in early intervention are in a unique position to educate policy makers to ensure that services are structured to meet the needs of children and their families. We believe that it is important for physical therapists to provide input to health and education policy makers and administrators on how changes in service delivery policy affect the ability to provide family-centered care in early intervention.⁴⁸ For example, physical therapists can collaborate with local health departments to identify needs for children with disabilities and to facilitate access to appropriate services. We contend that the inclusion of physical therapists on local interagency coordinating councils, the local governing councils for early intervention programs, is needed to provide input on the role of physical therapy and to promote a coordinated team approach to service delivery.

References

- 1 Kolobe THA. Family-focused early intervention. In: Campbell SK, ed. *Pediatric Neurologic Physical Therapy*. 2nd ed. New York, NY: Churchill Livingstone Inc; 1991:397-432.
- 2 Stuberg W, McEwen I. Faculty and clinical education models of entry-level preparation in pediatric physical therapy. *Pediatric Physical Therapy*. 1993;5:123-127.
- 3 Pub L No. 105-17, Individuals With Disabilities Education Act Amendments of 1997.
- 4 Brewer EJ Jr, McPherson M, Magrab PR, Hutchins VL. Family-centered, community-based, coordinated care for children with special health care needs. *Pediatrics*. 1989;83:1055-1060.

- 5 Dunst CJ, Johanson C, Trivette CM, Hamby D. Family-oriented early intervention policies and practices: family-centered or not? *Except Child*. 1991;58:115-126.
- 6 King GA, King SM, Rosenbaum PL. Interpersonal aspects of caregiving and client outcomes: a review of the literature. *Ambulatory Child Health*. 1996;2:151-160.
- 7 King GA, Law M, King SM, Rosenbaum PL. Parents' and service providers' perceptions of family-centeredness of children's rehabilitation services. *Physical and Occupational Therapy in Pediatrics*. 1998;18:21-40.
- 8 King SM, Rosenbaum PL, King GA. *The Measures of Processes of Care: A Means to Assess Family-Centered Behaviors of Health Care Providers*. Hamilton, Ontario, Canada: Neurodevelopmental Clinical Research Unit, McMaster University; 1995.
- 9 Chiarello LA, Palisano RJ. Investigation of the effects of a model of physical therapy on mother-child interactions and the motor behaviors of children with motor delay. *Phys Ther*. 1998;78:180-194.
- 10 Rosenbaum PL, King SM, Cadman DT. Measuring processes of caregiving to physically disabled children and their families, I: identifying relevant components of care. *Dev Med Child Neurol*. 1992;34:103-114.
- 11 King SM, Rosenbaum PL, King GA. Parents' perceptions of caregiving: development and validation of a measure of processes. *Dev Med Child Neurol*. 1996;38:757-772.
- 12 Jessop DJ, Stein REK. Who benefits from a pediatric home care program? *Pediatrics*. 1991;88:497-505.
- 13 Guide to Physical Therapist Practice. *Phys Ther*. 1997;77:1163-1650.
- 14 Kazak AE. Families of chronically ill children: a systems and social-ecological model of adaptation and challenge. *J Consult Clin Psychol*. 1989;57:25-30.
- 15 Bronfenbrenner U. *The Ecology of Human Development*. Cambridge, Mass: Harvard University Press; 1979.
- 16 Brinker RP, Seifer R, Sameroff AJ. Relations among maternal stress, cognitive development, and early intervention in middle- and low-SES infants with developmental disabilities. *Am J Ment Retard*. 1994;98:463-480.
- 17 Abidin RR. The determinants of parenting behavior. *J Clin Child Psychol*. 1992;21:407-412.
- 18 Breslau N, Staruch KS, Mortimer EA Jr. Psychological distress in mothers of disabled children. *Am J Dis Child*. 1982;136:682-686.
- 19 Gallagher JJ, Beckman P, Cross AH. Families of handicapped children: sources of stress and its amelioration. *Except Child*. 1983;50:10-19.
- 20 Kazak AE, Marvin RS. Differences, difficulties and adaptation: stress and social networks in families with a handicapped child. *Family Relations*. 1984;33:67-77.
- 21 Holroyd J, McArthur D. Mental retardation and stress on the parents: a contrast between Down's syndrome and childhood autism. *Am J Ment Def*. 1976;80:431-436.
- 22 Beckman PJ. Comparison of mothers' and fathers' perceptions of the effect of young children with and without disabilities. *Am J Ment Retard*. 1991;95:585-595.
- 23 Boyce GC, Behl D, Mortensen L, Akers J. Child characteristics, family demographics and family process: their effects on the stress experienced by families of children with disabilities. *Counseling Psychology Quarterly*. 1991;4:273-288.

- 24 Duis SS, Summers M, Summers CR. Parents versus child stress in diverse family types: an ecological approach. *Topics in Early Childhood Special Education*. 1997;17:53–73.
- 25 Cadman D, Rosenbaum P, Boyle M, Offord DR. Children with chronic illness: family and parent demographic characteristics and psychosocial adjustment. *Pediatrics*. 1991;87:884–889.
- 26 Kogan KL, Tyler N. Mother-child interaction in young physically handicapped children. *Am J Ment Defic*. 1973;77:492–497.
- 27 Dunst CJ, Trivette CM, Cross AH. Mediating influences of social support: personal, family, and child outcomes. *Am J Ment Defic*. 1986;90:403–417.
- 28 Palisano RJ, Chiarello LA, Haley SM. Factors related to mother-infant interaction in infants with motor delays. *Pediatric Physical Therapy*. 1993;5:55–60.
- 29 Beckman PJ. Influence of selected child characteristics on stress in families of handicapped infants. *Am J Ment Defic*. 1983;88:150–156.
- 30 Kalmanson B, Seligman S. Family-provider relationships: the basis of all interventions. *Infants and Young Children*. 1992;4:46–52.
- 31 Shonkoff JP, Hauser-Cram P. Early intervention for disabled infants and their families: a quantitative analysis. *Pediatrics*. 1987;80:650–658.
- 32 Able-Boone H. Ethics and early intervention: toward more relationship focused interventions. *Infants and Young Children*. 1996;9:13–21.
- 33 Washington K, Schwartz IS. Maternal perceptions of the effects of physical and occupational therapy services on caregiving competency. *Physical and Occupational Therapy in Pediatrics*. 1996;16:33–54.
- 34 Aday L. *Designing and Conducting Health Surveys*. 2nd ed. San Francisco, Calif: Jossey-Bass Publishers Inc; 1996.
- 35 Woodside J, Rosenbaum P. *The Measures of Processes of Care for Service Providers (MPOC-SP): A Means for Health Care Professionals to Assess Their Own Family-Centered Behaviors*. Hamilton, Ontario, Canada: Neurodevelopmental Clinical Research Unit, McMaster University, 1996.
- 36 Bayley N. *Bayley Scales of Infant Development: Manual*. 2nd ed. San Antonio, Tex: The Psychological Corporation; 1993.
- 37 Larsen DL, Atkinson CC, Hargreaves WA, Nguyen TD. Assessment of client/patient satisfaction: development of a general scale. *Evaluation and Program Planning*. 1979;2:197–207.
- 38 Westcott SL, Murray KH, Pence K. Survey of the preferences of pediatric physical therapists for assessment and treatment of balance dysfunction in children. *Pediatric Physical Therapy*. 1998;10:48–61.
- 39 DeGangi GA, Royeen CB. Current practice among NeuroDevelopmental Treatment Association members. *Am J Occup Ther*. 1994;48:803–809.
- 40 Sweeney JK, Heriza CB, Markowitz R. The changing profile of pediatric physical therapy: a 10-year analysis of clinical practice. *Pediatric Physical Therapy*. 1994;6:113–118.
- 41 Effgen SK, Klepper SE. Survey of physical therapy practice in educational settings. *Pediatric Physical Therapy*. 1994;1:15–21.
- 42 Streiner DL, Norman GR. *Health Measurement Scales: A Practical Guide to Their Development and Use*. New York, NY: Oxford University Press; 1989.
- 43 Abidin RR. *Parenting Stress Index: Professional Manual*. 3rd ed. Odessa, Fla: Psychological Assessment Resources Inc; 1995.
- 44 Lee S, Kahn JV. Measures of child progress and program effectiveness in early intervention. *Infant-Toddler Intervention*. 1997;7:215–233.
- 45 King G, King S, Rosenbaum P, Goffin R. Family-centered caregiving and well-being of parents of children with disabilities: linking process with outcome. *J Pediatr Psychol*. 1999;24:41–53.
- 46 Dyson L, Fewell RR. Stress and adaptation in parents of young handicapped and nonhandicapped children: a comparative study. *Journal of the Division of Early Childhood*. 1989;10(1):25–35.
- 47 Viscardis L. The family-centered approach to providing services: a parent perspective. *Physical and Occupational Therapy in Pediatrics*. 1998;18:41–54.
- 48 O'Neil M, Farel A, Palisano RJ. Parents' perspectives of managed care: implications for pediatric physical therapy. *Pediatric Physical Therapy*. 1999;11:24–32.