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ABSTRACT

Maternal and professional perspectives on the developmental, behavioral, and ecological status of children with disabilities and their families were compared, specifically examining the degree of congruence between maternal and professional estimates on various measures designed to assess child and family status. A review of 37 studies helped focus the inquiry. Subjects were recruited from nine early intervention programs in Louisiana, one in North Carolina, and one in Georgia. Seventy-three mothers and 41 interventionists provided status ratings for 73 children and their families. Mothers and professionals completed the same seven measures (with the exception of demographic forms) designed to assess global child characteristics, developmental status, and behavioral status. Results of canonical correlations and discriminant analysis support the proposition that mothers and interventionists can be in close agreement about child developmental and behavioral status provided that data are collected contemporaneously using the same instruments. This finding indicates that mothers can be viable and accurate sources of information about children during the early intervention assessment process. Factors that influence congruence between mothers and professionals are discussed. Twelve tables present study data, and a 95-item list of references is included. (SLD)

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Congruence in Maternal and Professional Early Intervention Assessments of Young Children with Disabilities

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Congruence in Maternal and Professional Early Intervention Assessments of Young Children with Disabilities

The passage of Public Law 99-457 (P. L. 99-457), the Education for All Handicapped Children Act Amendments (EHA) of 1986, spawned a new era in the field of early intervention (Shonkoff & Meisels, 1990). Under Part H of P.L. 99-457, the Early Intervention Program for Handicapped Infants and Toddlers, the federal government provided states and several territories with financial assistance to develop and implement statewide, comprehensive, coordinated, multidisciplinary, interagency programs of early intervention services for infants and toddlers with disabilities and for their families. In 1990 and in 1991, Congress re-authorized P.L. 99-457 as P.L. 101-476 and P.L. 102-119, respectively, and renamed EHA the Individuals with Disabilities Education Act (IDEA). The unique aspect of the re-authorized Part H is the explicit recognition of the family, rather than the child in isolation, as the focus of service delivery (Garwood & Sheehan, 1989). The implementing regulations for Part H require that families should be actively involved, at whatever level they choose, in the design and implementation of early intervention services.

Part H regulations require an initial assessment of the child's developmental and behavioral status and, with concurrence of the family, determination of the resources, priorities, and concerns of the family as related to enhancing the developmental outcome of the child. The regulations also require periodic reviews of progress, and include the recommendation that assessment

activities be ongoing, rather than static, to accommodate the rapidly changing needs of infants and toddlers (Bailey et al., 1986). Family involvement in the design and implementation of services includes their involvement in initial and ongoing assessment activities (Katz, 1989; Kochanek, 1991). But there remains a need for empirical research that supports the importance of collaborative family-professional assessment practices.

Bailey et al. (1986) defined assessment as the process of gathering information regarding child and family strengths and needs, for the purpose of engaging in ongoing collaborative goal-setting during Individualized Family Service Plan (IFSP) development, implementation, and evaluation. Families must be actively involved in ongoing assessment activities with early interventionists if collaborative goal-setting is to be successful (Bagnato, Neisworth, & Munson, 1989).

If collaborative assessment and goal planning are desired outcomes of the service delivery process under Part H, then it is important to obtain measures of the goodness-of-fit between parent and professional perspectives of child and family status. Thomas and Chess (1977) defined goodness-of-fit as an appropriate match between child characteristics and the demands of the caregiving environment. The present study adopted a broader definition of goodness-of-fit. Goodness-of-fit in this study referred to an appropriate match between child and family characteristics, and the characteristics of the early intervention service delivery system. Examining maternal and professional congruence on various measures of child and family functioning provided indices of the goodness-

of-fit between maternal and professional perspectives regarding child and family status.

Purpose of the Study

The purpose of this study was to compare maternal and professional perspectives of the developmental, behavioral, and ecological status of infants and toddlers with disabilities and their families. Specifically, the study examined the degree of congruence between maternal and professional estimates on various measures designed to assess child and family status. The study allowed for: (a) determination of the levels of professional and maternal congruence regarding status within a broader theoretical framework, that is, congruence beyond the child-focused level; (b) identification of factors that influence congruence between mothers and professionals; and (c) systematic examination of where maternal and professional agreements and disagreements regarding child and family status occurred.

Historically, research findings suggested that early intervention programs that had a strong family involvement component were more effective in enhancing child outcomes than programs in which families were not involved (Bronfenbrenner, 1975; Shonkoff & Hauser-Cram, 1987). Nevertheless, throughout the history of early intervention there has been a hesitancy to involve families in meaningful ways in the assessment process. This hesitancy appears to be due to two major factors: (a) the widespread belief that parents are unable to objectively judge their own child's behavior (Sheehan, 1988), and (b) empirical evidence that parents tend to "overestimate" their child's developmental status when compared to more objective evaluations by

professionals (cf. Beckman, 1984; Sexton, Miller, & Rotatori, 1985).

However, the new legislation requires family involvement at whatever level families choose in initial and ongoing assessment activities. The premise of this mandate is that families, because of their unique role as caregivers of young children, are in the best position to make decisions on behalf of themselves and their children (Johnson, McGonigel, & Kaufmann, 1989). Families know themselves and their young children better than anyone else. They have had the opportunity to observe their child's behavior over a long period of time in a variety of contexts. They can provide information to professionals and make informed decisions that may benefit the entire family system, including the child (Bernheimer, Gallimore, & Weisner, 1990; Henderson & Meisels, 1992).

It may seem illogical to practitioners that families participate in all aspects of early intervention service delivery, particularly assessment, if beliefs and some empirical evidence support the notion that parents may not be able to objectively judge their child's developmental status and routinely "overestimate" their child's ability. However, both the law and almost all family-centered models of service delivery advocate that parents be afforded at least equal status in the assessment process (Vincent et al., 1990).

Sexton, Thompson, Perez, and Rheams (1990) listed the following reasons for involving parents in assessment: (a) collection of data based on parental judgements can be cost-effective; (b) involvement of parents in the assessment process facilitates professional-parent collaboration; (c) parents who

participate in assessment and intervention planning are more likely to participate in implementing interventions; and (d) by including parental assessment data professionals maximize the ecological validity of overall assessment results, and conclusions regarding child status are more likely to generalize across environments. Parent involvement in assessment is legally required and seems theoretically rational, but this reasoning requires additional empirical support.

Sheehan (1988) noted that "despite the rhetoric surrounding this issue [whether or not parents should be involved in assessment], listeners rarely hear reference to empirical support for either side of the argument" (p. 75). Sheehan further noted that this absence of empirical reference is surprising since a number of studies examined the congruence of parental and professional opinion regarding child developmental status. The studies reviewed by Sheehan (1988) overwhelmingly supported the notion that parents "overestimate" their child's developmental status, when compared to estimates of professionals as regards the same children. However, features of this previous research warrant serious scrutiny.

Methodological Limitations of Previous Inquiry

We reviewed 37 previous empirical studies on congruence in parent and professional assessment involving children below 6 years of age. We found that in all but five of the studies parents "overestimated" their child's developmental status when compared to assessments conducted by professionals. However, we also identified some severe limitations in the methodologies of these

previous studies. We specifically designed our study to avoid these problems.

Different Instruments. In previous studies parents and professionals often completed different instruments to assess developmental status (e.g., Bailey & Bricker, 1986; Donnelly, 1983; Stancin, Reuter, Dunn, & Bickett, 1984). In such studies of congruence of assessment, the parental "overestimates" could have been due to the different instruments completed by parents versus professionals, rather than to actual differences in perspectives.

Inconsistent data collection. Investigators obtained data from parents and professionals in different ways. Frequently, professionals conducted direct testing of the infant or toddler with disabilities while parents provided status information by completing self-report measures or by participating in interviews (e.g., Anton & Dindia, 1984; Gradel, Thompson, & Sheehan, 1981). Parents sharing information through interviews or self-reports may be providing estimates of noncontemporaneous behaviors, whereas traditional standardized assessments evaluate more contemporaneous behaviors (Keith & Markie, 1969; Wolfensberger & Kurtz, 1971).

Examiner familiarity. The examiner who conducted the direct testing was often unfamiliar to the young child. This unfamiliarity could depress the child's performance in a direct testing situation. The direct testing situation, however, is frequently the "standard" by which the accuracy of parental estimates is judged. Gradel et al. (1981) suggested that a young child's direct test performance might be an underestimation because of the limited perspective regarding the child that an examiner brings to the test situation. Valencia and Cruz (1981) suggested

that parents may have a macroscopic view of child behavior across a wider range of contexts and materials compared to the microscopic view of the child obtained by the professional during a formal testing situation.

Confounded data. In several of the studies the professional who conducted the direct testing is also the professional who administered the interview or self-report measure to the parent immediately following the direct testing (e.g., Bailey & Bricker, 1986; Sexton, Kelley, & Scott, 1982). This contamination during data-gathering could obscure sources of non-agreement in ratings of child performance.

A systematic examination of mother and father status ratings occurred in several congruence investigations (e.g., Capobianco & Knox, 1964; Donnelly, 1983; Sexton, Hall, & Thomas, 1983). Maternal estimates of status differed from paternal estimates in these investigations. Thus, the magnitude of observed differences between parent and professional status estimates may be confounded if mothers and fathers are used as a single comparison group.

Examiner reliability. Only one of the reviewed studies reported the degree of reliability of scores from persons conducting tests or interviews (Beckman, 1984). The remaining 35 studies did not report data on the reliability of the examiner in applying the instrument. The scores derived by one examiner might not be those obtained by another. The source of variation across estimates could be partially due to unreliable test administration.

Univariate statistical procedures. A review of statistical methodology in the 37 studies revealed that multiple correlation analyses and *t*-tests are the most common statistical procedures

employed. The large number of independent correlations or t-tests calculated in a given study raised "experimentwise" error rate, thereby increasing the probability of a Type I error (Cohen, 1990; Fish, 1988; Thompson, 1988). Type I error rate is the probability of incorrectly rejecting a true null hypotheses and "experimentwise" error refers to the probability of making a Type I error in the study as a whole, across all the hypotheses tested. Thus, some reported differences may be methodological artifacts that might have been avoided through the use of multivariate methods.

Only two of the studies reviewed reported effect size estimates (i.e., Sexton et al., 1985, 1990). Interpretation of the noteworthiness of findings is difficult without effect size estimates. Large sample sizes could make differences between parent and professional estimates statistically significant when the magnitude of the difference may not be large enough to warrant serious consideration (Welge-Crow, LeCluyse & Thompson, 1990).

Summary. The methodological limitations cited above preclude early interventionists from definitively concluding that parents consistently overestimate their child's developmental status. It is equally plausible that professionals underestimate the status of the child. Or, parents and professionals may truly be congruent in their estimates regarding child status but this congruence has been obscured by methodology. Within the context of regulated family involvement in assessment and a desire to operationalize what family-centered early intervention means, a need existed to gather additional information regarding estimations of child status by

parents and professionals, avoiding the cited design flaws prevelant in most previous studies.

Factors Influencing Congruence of Status Estimates

One finding that emerged from the 37 studies we reviewed was that correlation coefficients for parent and professional estimates of child developmental status were frequently in the range of 0.70 to 0.90. One can infer that parents and professionals **rank** children very similarly with regard to developmental status even though they may derive different developmental scores for these same children (Sheehan, 1988). This raises the question of whether disagreements, and therefore lack of congruence, occur as an artifact of parents giving children credit for emerging skills which may not have generalized across all environmental contexts. Parents may be crediting "ceiling level" items more consistently than professionals. Therfore, data obtained in the present study were also analyzed to address this issue.

Several of the reviewed studies hypothesized that the variability in findings regarding congruence could result from various professional, parent, or child factors. Several investigations examined the influence of these various child, family, or professional factors on congruence (e.g. Ewert & Green, 1957; Hanson, Vail, & Irvin, 1979; Sexton et al., 1990).

Studies including teachers or diagnosticians who were more familiar with the child found more congruence between developmental estimates provided by professionals and parents (e.g., Blancher-Dixon & Simeonsson, 1981; Hanson et al., 1979). Results of these studies could indicate that increased familiarity with the child across differing contexts can result in congruence between parents

and professionals. Data obtained in the present investigation assisted in clarifying the contribution of familiarity to congruence for both child and family status estimates.

Sexton et al. (1985) presented data indicating that agreement was influenced by maternal age and family income. These authors suggested that variability in research findings regarding congruence may be accounted for in part by demographic variables. Handen, Feldman, and Honigman (1987) and Schafer, Bell, and Spaulding (1987) presented data suggesting that agreement varied according to the developmental skill area assessed. Greatest agreement occurred in the areas of motor and social skills, and lowest agreement in cognitive and adaptive skills. These and other parent, professional, and child characteristics associated with variability in congruence were systematically explored to identify factors that contributed to this variability.

The Study's Three Research Questions

Three primary research questions were investigated in the present study. The first two research questions involve interrelated yet distinct questions: (a) do mothers and professionals rank-order children similarly across a spectrum of assessment measures?; and (b) are the sets of mean scores for the children and families across the instruments the same across the two groups of information providers? The study's third question asked what factors, if any, influence or predict congruence in ratings across the two data sources? Predictors of degree of congruence in judgment included three groups of variables: (a) child characteristics (e.g., severity of disability according to the mother and interventionist, time in intervention, number of

specialized assessments received), (b) maternal haracteristics (e.g., education level, income, time spent with child, perceptions of the benefit of early intervention for the family and the child) and (c) interventionist characteristics (e.g., years of early intervention experience, education level, amount of contact with the child and mother, perceptions of the benefit of early intervention for the family and child).

Context of the Study

Participating Programs

Subject recruitment occurred in 11 early intervention programs; nine programs throughout the state of Louisiana, one program in North Carolina, and one program in Georgia. Thus, a strength of the study was sampling from multiple programs located in multiple states. Most previous studies have not been designed in this manner.

These programs were chosen because they were representative of typical early intervention service delivery settings for infants and toddlers with handicaps and their families. The subjects recruited from these programs were heterogeneous as a group with respect to types of handicapping conditions exhibited by the children; socio-economic, racial, and ethnic status of families; geographic settings in which the programs are located; credentials of interventionists; and types of service delivery models offered to children and families.

Sample Selection

A power analysis was conducted to guide the number of subjects recruited for the present study (Cohen, 1988). Cohen recommends that researchers use power analysis to offer protection against

Type II error (i.e., not rejecting a false null hypothesis). Therefore, the number of subjects selected for inclusion in the study was a decision based on (a) the number of predictor and criterion variables used in study, (b) the expected magnitude of effect size based on previous inquiry, (c) the significance criterion (i.e., alpha level) of 0.05, and (d) a desired power of 0.80 (Cohen, 1988).

Size of the sample to accommodate "shrinkage" and maintain adequate power. Reported magnitude of effect sizes in previous inquiry in the area of congruence range from approximately .30 to .94 (e.g., Sexton et al., 1985; Sexton, Thompson, Perez, & Rheams, 1990). Multivariate analyses generated only one of the reported effect sizes (Sexton et al., 1990).

The proposed study took a multivariate view of the research questions related to congruence. The population effect size estimate was approximately 0.15. This population estimate appeared conservative, but considered the noteworthy "shrinkage" that one expects for effect size indices obtained for sample data. This shrinkage is due to the mathematical maximization principle operating in all parametric analyses, and especially in multivariate parametric methods (cf. Stevens, 1986). In the present study, considering the number of variables in the multivariate analyses, it was determined that between 52 and 140 subjects should be used, depending on the actual magnitude of effect sizes (Cohen, 1988).

Inclusion and exclusion criteria for subjects involved in the study. After determining the size of the sample necessary to offer protection against Type II error, specification of subject

inclusion and exclusion criteria occurred. Specification of these criteria was necessary to ensure that the present study addressed several of the confounds noted in the previous congruence investigations. Six selection criteria were employed.

First, in several of the reviewed studies, fathers and mothers provided differing estimates of child developmental status (e.g., Sexton, Miller, & Murdock, 1984; Sexton, Miller, & Rotatori, 1985). *Only mothers* were selected to participate in the present study in an effort to control against confounding variability within one set of raters.

Second, mothers included in the study all had a child with a *diagnosed disability*. A mother was eligible for inclusion in the study if her child met the eligibility criteria for infants and toddlers with handicaps established by Louisiana's Interagency Coordinating Council. These eligibility criteria include children who exhibit established handicapping conditions, such as Down syndrome and other genetic anomalies; children who are at biological risk for the development of handicapping conditions, such as children born prematurely or children born to drug-addicted mothers; and children who exhibit developmental delays of unknown etiology. The criteria exclude children in the environmental risk category, that is, children whose environmental circumstances place them at-risk for subsequent learning and social problems. Thus, congruence ratings were not confounded by maternal perceptions of the presence or absence of a disability. All mothers enrolled in the study knew that their child had a diagnosed disability.

Third, based on previous empirical findings, it was assumed that *familiarity* could affect the degree of congruence between

mothers and professionals (Beckman, 1984; Gradel, Thompson, & Sheehan, 1981). Therefore, to be eligible to participate, mothers' children had to be enrolled in the early intervention program for at least 45 days prior to the mothers' involvement in the study. This requirement ensured a minimum level of familiarity between the mother, the professional, and the child. The 45-day requirement also corresponds to the assessment timeline established in the implementing regulations for P.L. 99-457, Part H.

Fourth, the children of these mothers *were between the ages of 12 and 48 months*. Because the instruments used in the study to analyze congruence are psychometrically stronger for these age ranges, the study excluded mothers of infants younger than 12 months. Additionally, behaviors of children younger than 12 months are less differentiated with respect to discrete developmental categories, that is, cognition, communication, motor, self-help, and social (cf. Lockman, 1983; Rosenblith & Sims-Knight, 1985). Reports by parents and professionals of child status for children less than 12 months may not be as reliable as reports for older infants because these individuals are being asked to categorize behaviors that they previously viewed in a more holistic manner.

Fifth, mothers recruited in the present study had *at least an eighth grade education*, suggesting that they had a reading level appropriate for completing all self-report measures. Mothers who reported that they had not completed the eighth grade were not eligible to participate in the study because the study design required that mothers and interventionists read and complete instruments in the same manner. Reading the items to the mother would have constituted a potential source of variance that might

have confounded the results of the self-report measures. This procedure also allowed generalization to the reviewed previous studies which typically employed a similar procedure.

Sixth, interventionists selected for inclusion in the study were those individuals identified as *the primary interventionist* for a given child and family. The primary interventionist was the professional in the early intervention program who had the most frequent contact with the family as determined by the director of the early intervention program.

Subjects

Phone calls were made to directors of 11 early intervention programs in the three states. Eight of these 11 directors agreed to assist in recruiting subject pairs, that is, one or two mothers and the professional who served as their primary interventionist. Following the verbal explanation of study requirements, the directors received a written explanation of the study and the requirements for participation. Packets of information containing a one-page summary of the study and informed consent letters were mailed to directors who agreed to assist in recruiting mothers and staff for the study. These individuals were the site facilitators for the investigation.

Throughout the data collection phase of the study, the site facilitators assisted in two ways: (a) they implemented procedures to ensure that mothers and professionals completed their ratings independently of one another; and (b) they prompted mothers and professionals to return their data forms in a timely fashion. Regular contact with the site facilitators was maintained throughout the data collection phase.

The recruitment of interventionists occurred first at each participating site. Once an interventionist agreed to participate in the study, the site facilitators or interventionists contacted from 2 to 10 mothers on each interventionist's caseload. Interventionists explained the purpose of the study and gave mothers a copy of the informed consent letter. Mothers who chose to participate in the investigation signed a consent form. The investigators received informed consent from 44 interventionists and 79 mothers. Data collection began with mother-interventionist pairs when the informed consent form was received from each interventionist and from one or two mothers from the interventionist's caseload.

The ratio of no more than two mothers to each interventionist was an important design feature of the study, and was based on two considerations. First, requiring the professionals each to rate no more than two children minimized the opportunity for the professionals to establish a history with the instruments and be influenced in their scoring of one child by how they rated another child. Most prior studies of congruence have allowed professionals to rate numerous children, thus producing the previously described design complications. Second, targeting a ratio of no more than 2:1 was done to ensure the participation of enough professionals for the sample size in this group to be large enough for statistical analyses.

Of the original subject group who agreed to participate in the study, the final subject group consisted of 41 interventionists and 73 mothers. One of the 79 mothers withdrew from the study due to her child's hospitalization, one withdrew because she lost her job

and no longer wanted to participate, two mothers did not submit completed forms, and data for two mothers were not included because their interventionist did not return self-report measures. Data for three interventionists were not used because one interventionist did not return her rating forms, one interventionist was paired with a mother who withdrew, and one interventionist was paired with a mother who did not complete her rating forms.

Number of Raters in Each Group

Seventy-three mothers and 41 interventionists participated in the present study. These individuals provided status ratings for 73 children and families. Mothers provided status ratings for their own child and family. Interventionists provided status ratings for one or two children and the children's families.

For all measurement integrity, substantive hypotheses, and ancillary analyses, interventionists were considered independent cases. Although 41 actual interventionists provided status ratings, the ratings were **unique** to 73 children and families. The use of a single interventionist as an independent rater for more than one child and family is common in congruence research. Most previous investigations, however, used a much larger mother to interventionist ratio, typically in the range of 10:1 to 25:1 (cf., Sexton et al., 1990). In an effort to control bias resulting from interventionists completing many more ratings than mothers, we adopted a mother-interventionist ratio that did not exceed 2:1.

Instrumentation

Mothers and interventionists completed the same measures with the exception of the demographic forms. Using the same measures,

except for the demographic measure, was important because previous investigators frequently used different instruments with parents and professionals when gathering data regarding perceptions of child status. An assumption of the present study was that more accurate data regarding congruence were likely if both groups completed the same instruments.

The use of multiple measures to analyze congruence was important because perspectives regarding child and family status result from the complex interactions between the child, parent, professional, and the caregiving environment, and different measures may emphasize different perspectives. Due to the broad scope of the interactions within an ecological framework in early intervention, not all interactions were operationalized in the present investigation. The selection criteria for the multiple instruments used in the study were: (a) each instrument would evaluate a different domain of child and family status, (b) each instrument was theoretically relevant to the study of congruence, (c) data were available that supported the psychometric integrity of scores produced by the instrument, (d) mothers and professionals could complete the instruments without specialized training, and (e) mothers and professionals could complete the instruments in the same way, that is, interview or self-report.

Seven instruments and a demographic form were completed by both the parents and the interventionists. A strength of the study was the use of a spectrum of types of measures. Previous studies have not utilized such a battery or this number of measures, perhaps because it takes considerable energy and time to collect so

much data. A description for each of the seven instruments follows.

Child Status Measures

The child status measures included instruments designed to assess (a) global child characteristics, (b) developmental status, and (c) behavioral status. A rating scale that profiles the functional abilities of children in nine broad areas operationalized global status. A temperament scale operationalized behavioral status. Both standardized and criterion-referenced instruments gathered perspectives regarding developmental status because empirical findings (cf. Sexton, Kelley, & Scott, 1982) suggested that congruence may be influenced by the type of developmental measure used.

Global child status measure: (1) The ABILITIES Index. **The ABILITIES Index** (Bailey & Simeonsson, 1991) is an instrument designed to detect and summarize subjective impressions about a child's functional abilities or disabilities in nine major areas. These areas are (a) audition, (b) behavior, (c) intelligence, (d) limb use, (e) intentional communication, (f) tonicity, (g) integrity of physical health, (h) vision, and (i) structural status. The ABILITIES Index was used in the present study to compare mother and professional perspectives regarding global child characteristics not typically included on traditional measures of developmental milestones. It was hypothesized that mothers and professionals who were not congruent regarding their impressions of global child characteristics, as measured by the ABILITIES Index, might demonstrate less congruence on more detailed measures designed to evaluate child status.

The ABILITIES Index consists of 19 items organized within nine broad areas. Individuals completing the Index rate each of the 19 items on an ordinal scale that ranges from 1 "normal ability" to 6 "extreme or profound lack of ability". Each point on the scale has an operational referent. Possible scores for each item include (a) 1 "normal ability", (b) 2 "suspected difficulty or disability", (c) 3 "mild disability or difficulty", (d) 4 "moderate disability or difficulty", (e) 5 "severe disability or difficulty", and (f) 6 "profound disability or difficulty". The authors of the ABILITIES Index developed written guidelines for completing the Index. These guidelines are prominently displayed on the Index. Scores for each item can be summed into a total ABILITIES score, or individual scores for each of the 19 items can be derived.

Favorable reliability results for scores from the measure have been previously reported by Bailey, Simeonsson, Buysse, and Smith (1992). Favorable information regarding the validity of scores has been reported by Buysse, Smith, Bailey, and Simeonsson (1992).

Developmental measures: (2) Developmental Profile II (DP II) and (3) the Evaluation and Programming System, Parent Form Level One (EPS-PI). These two instruments gathered estimate data from mothers and interventionists regarding the child's status across traditional developmental domains. Both of these instruments are for use with parents. The use of these instruments with professionals is equally appropriate (Alpern, Boll, & Shearer, 1988; Bricker, Bailey, Gumerlock, Buhl, & Slentz, 1986).

The **Developmental Profile** II (Alpern et al., 1988) has been used extensively with parents of young children with handicaps in empirical studies investigating parent and professional congruence

of child developmental status (e.g, Gradel et al., 1981; Schafer et al., 1987; Sexton et al., 1990). Parents complete the DP II via a structured interview. The instrument is appropriate for children from birth through a functional age of 9 1/2 years. The DP II contains 186 items covering 5 developmental skill areas. Administration time is approximately 20 minutes. The authors of the DP II state that the scale is appropriate for assessing the developmental status of children with handicaps.

Internal consistency reliability coefficients (Allpern et al., 1988), calculated for data obtained on a sample of 1,050 preschool children, ranged from 0.78 to 0.87 within the subscales. Authors of a number of empirical studies reported concurrent validity coefficients for the DP II for samples of children with disabilities. Gradel et al. (1981) investigated the concurrent validity of the DP II with the Bayley Scales of Infant Development (Bayley, 1969) and the McCarthy Scales of Children's Abilities (McCarthy, 1972). Correlation coefficients ranged from 0.42 to 0.87 for subscales of the DP II and the Bayley Scales for an infant and toddler group (n=30), and from 0.95 to 0.98 for subscales of the DP II and the McCarthy for a preschool group (n=30). Sexton et al. (1990) compared the performance of 53 infants, toddlers and preschoolers with disabilities on the DP II with performance on the Battelle Developmental Inventory (Newborg, Stock, Wnek, Guidubaldi, & Svinicki, 1984). Correlation coefficients ranged from 0.89 to 0.94 for similar subscales on the instruments.

The **Evaluation and Programming System, Parent Form Level I** (Bricker et al., 1986) is a criterion-referenced, observation knowledge-based instrument designed to assess the skills and

abilities of young children. Parents and primary caregivers complete the EPS-PI based on their observations of a child's skills and abilities. According to Bricker et al. (1986) the EPS-PI can be used to examine the agreement between parental impressions of their children's skills and abilities and assessment results obtained by professionals. The EPS-PI is designed for use with parents or other primary caregivers of at-risk children or children with disabilities who function developmentally between 1 month and 3 years of age.

Six developmental domains containing 87 items comprise the EPS-PI. Scoring is multidimensional. Categories used are "yes", "sometimes", and "not yet". The EPS-PI does not produce age equivalents or developmental quotients. Raw scores can be totalled in each of the six domains and the percentage of items passed in each domain calculated. Administration time is approximately 10 to 15 minutes.

A particular strength of the EPS-PI is ease of completion. Questions are written in clear, straightforward language and contain a minimum of jargon. Several of the items on the EPS-PI include drawings which depict the skill to be rated.

Some psychometric data are available for the EPS-PI (Bricker et al., 1986; Drinkwater & Notari, 1991). Bricker et al. (1986) noted that the EPS-PI corresponds directly to another assessment instrument, the EPS-I designed for use by professionals. Bailey and Bricker (1986) conducted a study in which the EPS-I was administered to 24 children from 20 to 40 months of age. Parents of these 24 children completed the EPS-PI. Concurrent validity correlation coefficients between the six subscales and total scores

on the EPS-I and EPS-PI ranged from 0.49 to 0.92. These correlation coefficients were statistically significant at $p < .05$ for all domains except fine motor. Drinkwater and Notari (1991) reported similar results with 15 children with Down syndrome and one child with another genetic condition from Washington state who were administered the EPS-I by interventionists.

There were three major reasons for including the EPS-PI in the present study. First, use of the DP II and the EPS-PI enabled comparisons regarding congruence to be made on the basis of **interview** versus **self-report**. Second, the EPS-PI focuses on skills young children exhibit that are easily observed across differing environmental contexts; therefore, the use of the EPS-PI is consistent with use of an expanded, multidimensional assessment framework. Support for the use of a criterion-referenced measure is found in the congruence literature. Based on their empirical findings, Sexton et al. (1982) concluded that parents often do not appear to concur with professionals on gross indices of their children's abilities, but less notable differences exist when the focus is on individual items regarding behaviors that the child can or cannot do. The final reason for including the EPS-PI was to obtain additional data regarding the measure's psychometric integrity.

Behavioral status measure: (4) Toddler Temperament Scale (TTS). The **Toddler Temperament Scale** (Fullard, McDevitt, & Carey, 1978) gathers temperament data from parents or primary caregivers of 1- to 3-year-old children. The TTS reportedly assesses the nine categories of temperament described by Thomas and Chess (1977). These categories are activity, rhythmicity, approach/withdrawal,

adaptability, intensity, mood, persistence, distractibility, and threshold. Parents or primary caregivers respond to 97 items on a 6-point scale with intervals ranging from "almost never" to "almost always". Instructions included with the TTS for the rater state that ratings should be based on the child's recent and current behavior, that is, behavior during the last 4 to 6 weeks. Contemporaneous estimates of the child's behavioral characteristics should be derived if these instructions are followed by the rater. Administration time for the TTS is approximately 20 minutes (Fullard et al., 1978).

The temperament literature provides empirical support for the use of the TTS for 1- to 3-year-old children who exhibit developmental delays (Huntington & Simeonsson, 1987). Supportive concurrent validity results for scores from the measure have been reported by Peters-Martin and Wachs (1981).

Family Status Measures

The family status measures included several judgement-based rating scales designed to assess maternal and professional perspectives of family status. Specifically, mothers and professionals provided status data on family resources, needs, and supports. Interventionists frequently speculate about the resources, supports, and needs of the families with whom they interact. The accuracy of these speculations is not always known. The goodness-of-fit between parent and professional perspectives can affect the design and delivery of services (Bailey et al., 1986). Data regarding how congruent interventionists' perspectives of family status are compared to parents' self-reports assisted in evaluating the goodness-of-fit between these individuals. An

expectation of the present study was that mothers and professionals would be less congruous on family status measures than child status measures.

Family resources, supports, and needs: (5) Family Resource Scale (FRS). The **Family Resource Scale** (Dunst & Leet, 1988) measures parental perspectives regarding the adequacy of resources in households containing young children with disabilities. The scale has 31 items measured on a five-point rating scale ranging from "not at all adequate" (1), to "almost always adequate" (5). Items are derived from a conceptual framework which predicts that inadequacy of resources necessary to meet individually identified needs will negatively affect personal well-being and parental commitment to carrying out professionally prescribed regimes unrelated to identified needs (Dunst & Leet, 1987). The scale takes approximately 10 minutes to complete.

The normative sample used to determine reliability and validity indices for the FRS were 45 mothers of preschool children with disabilities. Split-half reliability using the Spearman-Brown correction formula was 0.95. Each mother completed the FRS on two separate occasions approximately 2 to 3 months apart. The stability coefficient for these two scores was 0.52 ($p < .001$).

Dunst and Leet (1988) evaluated the criterion-related validity of the FRS through correlational analyses predicting personal well-being and maternal commitment to carrying out prescribed interventions from FRS scores. The correlation between the FRS total score and well-being was 0.57 ($p < .001$). Maternal commitment and total FRS scores were positively correlated ($r = 0.63$, $p < .001$). Dunst and Leet (1988) noted, "the results are

consistent with evidence from the help-seeking literature that indicates that the extent to which professional rescriptions are seen as relevant for action depends on the match between personal and professional priorities and needs" (p. 140).

Family resources, supports, and needs: (6) Family Focused Intervention Scale (FFIS). The FFIS evaluated the perspectives of families and professionals regarding the family-focused services provided to the child and family. P.L. 99-457 advocates the implementation of family-focused early intervention services that are consistent with human ecology theory (Mahoney, O'Sullivan, & Dennebaum, 1990).

The FFIS (Mahoney & O'Sullivan, 1991) is a 78-item, self-report questionnaire. Two versions of the FFIS are available; one for service providers and one for parents. Items on the two scale versions are exactly the same. There are minor variations in instructions to make them appropriate for the rating group. Two sets of the same 39 items comprise two subscales of the FFIS questionnaires. The first portion asks respondents to indicate "how often" an early intervention programmatic activity occurs. The second portion asks "how important" it is to the rater that the activity occur. A six-point rating scale is used on both portions of the FFIS. Ratings range from "never" (1) to "always" (6). Preliminary studies on the FFIS conducted by Mahoney et al. (1990) indicated five conceptual categories that are sensitive to variation in family-focused early intervention services. These were (a) systems engagement, (b) child information, (c) family instructional activities, (d) personal-family assistance, and (e)

working alone. Cronbach's alpha for scores on the five subscales in the normative sample ranged from 0.78 to 0.89.

Mahoney et al. (1990) conducted a construct validity study with a 1990 version of the FFIS. Principal components analysis using varimax rotation isolated five orthogonal factors. The five-factor solution had a Kaiser-Myer-Olkin statistic of 0.94 and accounted for 53% of the item covariance. Mahoney et al. (1990) reported that the structure of the solution was compatible with the conceptual framework for the items.

Family resources, supports, and needs: (7) Family Needs Survey (FNS). As Bailey and Blasco (1990) noted, "The requirement for a statement of family needs and strengths on the IFSP has stimulated the development of a number of written surveys" (p. 196). The Family Needs Survey (Bailey & Simeonsson, 1990) was used in the present study since preliminary research with families and professionals indicates that they (a) find the Family Needs Survey (FNS) useful for gathering information about family needs, (b) are comfortable with sharing and exchanging information via completion of the survey, and (c) believe that the survey is useful for planning family-centered services (Bailey & Blasco, 1990; Sexton et al., 1991).

The FNS (Bailey & Simeonsson, 1990) consists of 35 items organized into 7 domains. The domains include (a) information, (b) family and social support, (c) financial, (d) explaining to others, (e) child care, (f) professional support, and (g) community services. Individuals complete individual "need" items within these domains of the FNS by choosing one of three responses alternatives. These alternatives are: (a) "No, I would not like to

discuss this topic with a staff person in my early intervention program"; (b) "I'm not sure, if I would like to discuss this topic with a staff person in my early intervention program"; or (c) "Yes, I would like to discuss this topic with a staff person in my early intervention program". Two open-ended question appear at the end of the survey and ask the respondent if they have any other needs not listed on the survey, or, if they have a preference to meet with a particular person regarding their needs.

Bailey and Simeonsson (1988) reported favorable test-retest reliability coefficients for scores on the measure. With respect to validity, Burrell (1990) used data obtained from 53 mothers of young children with disabilities, and isolated a six-factor solution for the 1988 version of the FNS using principal components analysis with results rotated to the varimax criterion. The six-factor solution accounted for 59.9% of the total variance. Burrell concluded that future studies using the FNS need to determine if the six-factor solution remains consistent across different samples containing more subjects or more diverse subject types.

Bailey et al. (1992) conducted a confirmatory factor analysis using the CALIS procedure in SAS (SAS Institute, 1990) to determine if the factor structure for the 1988 version of the FNS observed in the mothers' data set was consistent with the fathers' data. The confirmatory analysis revealed that the factor structure for the fathers differed to a statistically significant degree from that for mothers, $\chi^2 = 735.0$, $p < .001$. These data support the premise that fathers' self-reported needs may differ from mothers'. These data also provided empirical justification for the decision to

limit subjects in the present study to one category of parent to control for rater confounds.

Demographic Forms

Mothers and interventionists completed different demographic forms. The demographic form for mothers was an adapted version of the form used by Mahoney et al. (1990). The demographic form in the present study collected information from mothers about mother, father, child, and household variables. Several of the items included on this demographic form have been used in studies which examined factors predicting congruence regarding child developmental status (cf. Sexton, Miller, & Rotatori, 1985; Sexton et al., 1990; Wolfensberger & Kurtz, 1971).

The demographic form for the interventionists contained several items similar to those on the maternal form. For example, the interventionists provided information regarding age, sex, and marital, ethnic, and socioeconomic status. Additional information obtained from interventionists included (a) level of professional training, (b) years of early intervention experience, (b) professional discipline, (c) assessment training, (d) size of caseload, (e) number of contact hours per week with the mother, (f) number of contact hours per week with the child, (g) whether the interventionist has children, (h) previous experience with the measures used in the study, and (i) interventionist's perceptions of the benefit the child and family received from early intervention. Each of these factors were potential sources of variance relative to congruence.

An expectation of the present study was that different demographic factors would mediate congruence. Clusters of

demographic variables were expected to influence congruence on different status measures in different ways (cf. Sexton et al., 1984, 1985, 1990). The demographic data obtained from both mothers and professionals assisted in clarifying the simultaneous and unique influences of various demographic factors on congruence scores across the instruments.

Procedures

Data Collection Methods

One of the investigators trained each of two early childhood education students to assist in administration of the DP II. Exact item agreement between this investigator and the students met or exceeded 85% across three consecutive practice administrations of the DP II. After reaching established reliability criteria, the investigator or student contacted each interventionist and mother by phone to schedule an appointment to complete the DP II.

Developmental Profile II interviews for each member of the mother-interventionist pair were scheduled so that the interviews took place within 7 calendar days of one another. This was done so that child developmental maturation would be less likely to create differences between perceptions of mothers and interventionists. On the previously agreed upon scheduled date, a trained examiner phoned and interviewed each subject according to the instructions published with the DP II.

Inter-rater reliability checks were conducted during approximately 15% of the DP II administrations. A second examiner listened to the interviewees' responses to the DP II on a second phone and both examiners completed a DP II profile. Inter-rater

reliability percentages were computed by examining Pearson product moment correlations between DP II subscale and total scores.

Following the telephone interview and on the same day, a packet of additional measures and other information was mailed to each mother and professional pair. The packet contained: (a) the six non-interview measures and the demographic measure (the DP II required a structured interview); (b) instructions for completing the forms; (c) an "incentive" package containing a single-serving of instant coffee, tea, non-diary creamer and sugar, located approximately half-way through the forms; and (d) a self-addressed, stamped envelope. The instructions in the packet requested that mothers and interventionists complete each of the forms in the packet in the following order: (a) ABILITIES Index, (b) Toddler Temperament Scale, (c) EPS-PI, (d) Family Resource Scale, (e) Family Needs Survey, (f) Family Focused Intervention Scale, and (g) demographic form. This order was arbitrarily selected, but maintained to control for any possible order effects. Subjects were asked to complete the demographic form last because it required no subjective ratings, only the entry of relatively objective information. It was felt that fatigue effects would be less likely to affect demographic form entries.

The instructions contained in the packets were slightly different for mothers and professionals. Instructions to the mothers included the following statements: (a) Please complete the enclosed forms by following the specific instructions given on each form; (b) The information you provide on the forms should only relate to your child or your family; and (c) There are no right or wrong answers to any of the questions or statements on the forms.

Instructions to the professionals included the following statements that differed from those listed above: (a) The information you provide on the forms should be based on your perspectives of this child's abilities and your perspectives regarding the resources, supports, and needs of this child's family; and (b) The demographic form asks for specific information about you, not the family. A note thanking each subject (i.e., mothers and interventionists) for their participation and a check for $10.00 was sent by return mail upon receipt of the completed forms.

Evaluation of the Psychometric Integrity of the Instruments

We conducted analyses to evaluate the psychometric integrity of the study instruments prior to conducting substantive analyses. These procedures allowed explicit comparisons of the measurement characteristics of instruments in the present study to those in previous studies evaluating the integrity of the measurement tools. Characteristics of instrument integrity relate to data obtained on study samples and not to a test itself. As Sax (1980) noted

> It is more accurate to talk about the reliability of measurements (data, scores, and observations) than the reliability of tests (questions, items, and other tasks). Tests cannot be stable or unstable, but observations can. Any reference to the "reliability of a test" should always be interpreted to mean the "reliability of measurements or observations [i.e., a particular set of data] derived from a test." (p. 261).

These measurement integrity analyses were particularly important in the present study because mothers and professionals

each completed some instruments not typically employed with these subject groups. These analyses also provided data regarding the upper bound magnitude of effects that could be expected in the study. Locke, Spirduso, and Silverman (1987) note "the correlation between scores from two tests cannot exceed the square root of the product for reliability in each test" (p. 28). Thus, reliability coefficients obtained by conducting instrument integrity analyses provided a basis for determining a priori whether substantive analyses were plausible, and a basis for retrospectively interpreting computed effect sizes against the ceiling created by reliability coefficients.

Construct validity analyses using data obtained from the study sample also were conducted because reliability coefficients do not necessarily inform judgment about validity. As Gay (1981) noted "...a reliable test can consistently measure the wrong thing and be invalid" (p. 117). Construct validity analyses for the family status measures were particularly important in the present study. Although a review of the literature yielded construct validity results for all three family status measures, these data were collected from samples of parents of young children with disabilities. In the present study, construct validity analyses for the family status measures were conducted using data obtained from both mothers and interventionists.

Results

Mothers. The 73 mothers provided demographic information about (a) themselves, (b) their child enrolled in early intervention, (c) other children living in the household, and (c) their male partner, if applicable. When asked their relationship

to the child enrolled in the early intervention program, 66 mothers (90.4%) identified themselves as a biological mother, two (2.7%) stated that they were foster mothers, two (2.7%) were adoptive mothers, two (2.7%) identified themselves as legal guardians, and one (1.4%) indicated that she was a grandmother with legal custody.

Mothers ranged in age from 19 to 51 years, with a mean age of 31.6 years (SD=5.9). Of the 73 mothers, 46 (63%) reported their race as white, 26 (35.6%) as African American, and one mother (1.4%) listed her race as Native American. Levels of education for mothers ranged from completing the eighth grade to completion of coursework for a doctoral degree. The most common level of education was 12 years (26.0%).

Mothers reported that the monthly net income in their household ranged from $267.00 to $12,000.00. The reported mode, median, and mean monthly incomes were $2000.00, $2200.00, and $2727.19 (SD = $2000.46), respectively. Twenty-one mothers (28.76%) stated that they received public assistance as a monthly income source.

Fifty-five (75.3%) of the mothers reported that they were married. Eleven mothers (15.1%) stated that they had never been married, five (6.8%) of the mothers were divorced, and one (1.4%) mother was separated from her spouse.

Mothers reported the number of other children living in the household, and the age, in years, of these children. Forty-eight mothers (65.8%) stated that there were other children living in the home. Twenty-five mothers (34.2%) indicated that the child enrolled in early intervention was the only child living in the household. Of the 48 mothers who reported the presence of other

children, 39 (81.3%) had children older than the infant or toddler enrolled in the early intervention program. Five mothers (10.4%) had younger children, and four mothers (8.3%) had children older and younger than the child with disabilities.

Characteristics of Children in Early Intervention. The children of the mothers who participated in the present study were between 12- and 48-months of age. The mean age of the children was 27.49 months (SD=8.75). Thirty-five (47.9%) of the children were males, and 38 (52.1%) were females. Sixty-three percent (n=46) of the children were white, 35.6% (n=26) African American, and 1.4% (n=1) Native American.

Mothers provided diagnoses for their child with disabilities, if known. Table 1 presents a listing of these diagnoses and the numbers of children fitting within the reported diagnostic categories. In addition to these data, Table 1 also lists the Louisiana ChildNet classification category that the children met, or would meet, based on their diagnoses. Thirty-two (43.8%) of the children in the present study had diagnoses that placed them in the "established disability" category according to Louisiana eligibility criteria. Twenty children (27.4%) would qualify for early intervention services under the category "biologic-risk", and 21 children (28.8%) would qualify as having a "developmental delay, etiology unknown".

INSERT TABLE 1 ABOUT HERE

Mothers indicated that the amount of time they, and their children, had participated in an early intervention program ranged from 2 (n=1) to 40 (n=1) months. The mean number of months

enrolled was 16.99 (SD=9.51). On average, the children began early intervention programs at 12 months of age.

Interventionists

Forty-one interventionists participated in the present study, and provided status ratings for the 73 children and families. Thirty-two interventionists rated two children and families (i.e., 32 x 2 = 64 cases). Nine interventionists rated one child and family (i.e., 9 cases).

All 41 interventionists were female. Thirty-one of these women (75.6%) reported their race as white, 10 (24.4%) were African American. Twenty-nine (70.7%) indicated they were married, one interventionist (2.4%) was separated, five (12.2%) were divorced, and six (14.6%) were never married. Interventionists ranged in age from 25 to 62 years. The mean age was 38.44 (SD = 10.84).

Nineteen of the 41 interventionists (46.3%) reported that they had children currently living in their home. For these 19 cases, nine (47.4%) had children under 5 years of age, eight (42.1%) had children over 5 years of age, and two (10.5%) had both older and younger children.

Interventionists characterized their education and training backgrounds in five ways (a) years of education, (b) highest degree obtained, (c) professional discipline, (d) years of early intervention experience, and (e) hours of assessment training. Years of education ranged from 13 to 20. The mean number of years of education was 16.7 (SD = 1.82). Six of the interventionists (14.6%) had no degree, one (2.4%) had an associate degree, 18 (43.9%) had bachelor degrees, 13 (31.7%) master's degrees, two (4.9%) had master's degrees plus 30 credit hours, and one

interventionist (2.4%) had a vocational-training certificate. Interventionists identified their professional roles as: (a) early childhood special educators, n=16 (39.0%); (b) speech and language pathologists, n=6 (14.6%); (c) paraprofessionals, n=6 (14.6%); (d) occupational therapists, n=2 (4.9%); (e) educators, n=6 (14.6%); (f) child development specialists, n=2 (4.9%); (g) social workers, n=2 (4.9%); and (h) adapted physical educator, n=1 (2.4%).

Early intervention experience for the 41 interventionists ranged from 1 to 19 years. The mean years of experience was 7.2 (SD = 5.8). Hours of assessment training ranged from 6 to 792. The mean number of assessment training hours was 207.9 (SD = 173.1).

Interventionists listed the current number of children on their caseloads, including the children in the present study. The average caseload was 16 (SD = 15) children. Caseload size ranged from 3 to 82.

Interventionists reported their prior experience with study instruments. Thirteen (31.7%) of the 41 had prior experience with the DP II, 13 (31.7%) with the EPS-PI, 3 (7.3%) with the TTS, 5 (12.2%) with the ABILITIES Index, 13 (31.7%) with the FRS, 25 (61%) with the FNS, and 6 (14.6%) previously completed the FFIS.

The 41 interventionists indicated the number of contact hours per week between themselves and the 73 mothers, and, between themselves and the children. Contact between mothers and interventionists ranged from zero to 14 hours per week. The average number of contact hours per week between mothers and interventionists was 1.63 (SD=2.16). Children and interventionists spent an average of 13.38 hours (SD=15.42)

together per week. The minimum amount of time interventionists spent per week with children was 30 minutes, the maximum time spent together was 40 hours in a five-day per week child care program.

Measurement Integrity Studies

Although most researchers recognize that indices of reliability and validity relate to data obtained from normative or study samples, not to the test itself, it is not uncommon to find references in the early intervention literature which belie this recognition. Researchers might state "the Smith Early Childhood Inventory is reliable and valid." Strictly speaking, this statement is imprecise. There is no harm in this practice as long as **our behavior** does not imply that we believe that tests themselves can be reliable and valid. As Thompson (1992) noted, "This is not just an issue of sloppy speaking--the problem is that sometimes we come to think what we say or what we hear, so that sloppy speaking does sometimes lead to a more pernicious outcome, sloppy thinking and sloppy practice" (p. 436). Rather than relying on an a priori premise that the instruments used in the present study were reliable and valid, the integrity of these measures was examined using data obtained from the study sample.

The second reason for conducting psychometric analyses related to the assertion offered by Nunnally (1978) that all research investigations can be considered construct validity studies, whether they involve true experiments with some manipulation, or correlational designs. The reliability coefficients for data establish an upper bound on the effect sizes that can be detected in a study (Locke, Spirduso, & Silverman, 1987; O'Grady, 1982). Thus, reliability coefficients for the data obtained on study

instruments used in this investigation provided a basis for determining, a priori, whether substantive analyses were even plausible. These coefficients also allowed retrospective interpretation of effect sizes (e.g., $\underline{r}^2$) against the ceiling created by reliability coefficients obtained for study instruments.

Finally, in the present study, interventionists completed two family status measures (i.e., the FRS and FNS) typically not used with professionals. Measurement integrity analyses using the data obtained from this non-normative sample were compared with data obtained from mothers.

Reliability Analyses

In the present study, two types of reliability estimates were obtained for all seven measures, internal consistency and inter-rater. Table 2 presents the alpha coefficients calculated for the various measures and their subscales, the number of subjects completing each measure ($\underline{n}$) and the number of items ($\underline{v}$) comprising each scale. Table 2 also presents the comparable values reported in previous studies of the measures. Overall, alpha coefficients in the present study were similar to those reported by the authors of the various measures, and alpha coefficients for all instruments tended to be high except for certain TTS subscales.

INSERT TABLE 2 ABOUT HERE

Internal consistency reliability coefficients reported for all study measures include three alpha values. These are based on data obtained from (a) mothers, $\underline{n}$=73; (b) interventionists, $\underline{n}$=73; and (c) mothers and interventionists combined, $\underline{n}$=146.

Developmental Profile II - DP II (variables=186). Alpha coefficients for the total DP II for all three estimate groups exceeded .9000. The alpha coefficient for mothers was .9680, .9738 for interventionists, and .9710 for both mothers and interventionists. Physical subscale alphas for the present study sample groups ranged from .8871 to .8949. Other subscale ranges included: (a) self-help, .8773 to .9104; (b) social, .8685 to .8866; (c) academic, .8674 to .8764; and (e) communication, .9038 to .9146. These DP II alpha coefficients indicate an acceptable level of internal consistency reliability for the present study sample.

Inter-rater reliability coefficients were also obtained during DP II administrations. A second examiner concurrently scored a DP II protocol while the first examiner interviewed and completed a protocol for mothers or interventionists. Across the 146 DP II interviews, 15.75% involved a second rater. Inter-observer reliability correlation coefficients for scale scores all were above .95. Exact correlation coefficients by subscale scores were: (a) physical, .9944; (b) self-help, .9984; (c) social, .9992; (d) academic, .9977; and (e) communication, .9967.

ABILITIES Index (v=19). Alpha coefficients for the ABILITIES Index ranged from .8960 to .9016.

Toddler Temperament Scale - TTS (v=97). The internal consistency reliability coefficient for mothers' (n=73) total TTS scores was .7583. For 66 interventionists the total scale alpha was .8687. Across both groups (n=139), alpha was .8214. The 27 subscale alphas (i.e., 3 groupings x 9 subscales) ranged from .2218 for mothers on the Threshold subscale, to .8298 for

interventionists on the Distractibility subscale. Overall, alphas for the TTS were in the moderate range.

Evaluation and Programming System, Parent Form - EPS-PI (v=88). Alpha coefficients for total EPS scores were .9802 for mothers, .9821 for interventionists, and .9813 for the two groups combined. Alphas for the fine motor subscale ranged from .8767 to .8943. Other subscale alpha ranges were: (a) gross motor, .9450 to .9495; (b) self-help, .9081 to .9113; (c) cognition, .9033 to .9277; (d) communication, .9665 to .9670; and (e) social, .8419 to .8482.

Family Resource Scale - FRS (v=31). The alpha coefficient for the FRS was .9101 for mothers, .9439 for interventionists, and .9304 for the combined groups. Split-half reliability (i.e., even versus odd numbered items) using a corrected-for-length Spearman-Brown formula was .9282 for mothers, and .9301 for interventionists.

Family Needs Survey - FNS (v=35). Alphas for the total FNS were .9422 for mothers, .9511 for interventionists, and .9495 for the two groups combined. Alphas for the seven FNS subscales ranged from .6476 for mothers' Professional Services subscale, to .9054 for interventionists' Family and Social Support subscale.

Family Focused Intervention Scale - FFIS (v=78). Alpha coefficients for the total FFIS scale for all three estimate groups exceeded .9400. The alpha coefficient for mothers was .9481, .9652 for interventionists, and .9655 for both mothers and interventionists. "Often" subscale alphas for the present study sample groups ranged from .9173 to .9573. Sub-subscales ranges within the "Often" subscale were: (a) Systems engagement, .7340 to

.8739; (b) Child information, .7541 to .8266; (c) Family instructional activities, .7367 to .8605; (e) Personal family assistance, .7819 to .8404, and (f) Resource assistance, .7527 to .8884. These FFIS alpha coefficients indicate an acceptable level of internal consistency reliability for the present study sample.

"Important" subscale alphas for the present study sample groups were .9312 for mothers, .9491 for interventionists, and .9556 for both groups combined. Sub-subscales alphas within the "Important" subscale were: (a) Systems engagement, .7799 for mothers, .8476 for interventionists, and .8412 for both groups combined; (b) Child information, .7567 for mothers, .8317 for interventionists, and .8022 combined groups; (c) Family instructional activities, .7745 for mothers, .7767 for interventionists, and .7936 for both groups combined; (e) Personal family assistance, .8850 for mothers, .8728 for interventionists, and .9248 for both groups combined; and (f) Resource assistance, .7982 for mothers, .8521 for interventionists, and .8721 for groups combined.

Validity Analyses

Construct Validity--Principal Components Analyses. Principal components analysis is one method for evaluating instrument validity. However, researchers commonly make certain mistakes when using the method. For example, to facilitate interpretation of loadings across the components, rotation is performed. As Thompson (1989) noted, rotation simply redistributes variance across the factors in an effort to obtain a more interpretable solution. This means that communality coefficients remain the same, but the distribution of "trace" (i.e., variance) may be changed by the

rotation procedure. Thus, the eigenvalues before rotation do not inform judgement about the variance reproducible from the factors after rotation, although many researchers do indeed make the mistake of interpreting eigenvalues as if they informed judgments regarding the rotated factors (Thompson, 1989).

Furthermore, we decided to use more than one method of determining how many factors to extract. Zwick and Velicer (1986) describe several methods for determining the number of components to extract during a principal components analysis. In the present study, a decision was made to employ the "eigenvalue greater than one" rule, the three substantial loadings (i.e., > |.40|) criterion, and the scree plot method to all inform decisions regarding the number of principal components to retain.

To maintain orthogonality, and to facilitate comparison of our results with those in previous studies, solutions were rotated to the varimax criterion (Kaiser, 1960). Comparisons were then made between the factor structures obtained in this study and those factor structures obtained through previous measurement integrity studies (e.g., Bailey et al., 1992; Dunst & Leet, 1987; Mahoney, O'Sullivan, & Dennebaum, 1990).

For many of our analyses the subject-to-item ratio was around 2:1. Thus, we interpreted our analyses with caution, and also consulted ancillary statistics, such as the Kaiser-Meyer-Olkin statistic, to alert us to potential problems. Still, our sample size is actually larger than that used in many studies with special education populations, even though we were collecting a very substantial amount of data from our subjects. Thus, our results

also make a contribution to the literature as regards the measurement integrity of scores from these measures.

Family Resource Scale (v=31). Two separate principal components analyses were performed using FRS data obtained from mothers (n=73) and interventionists (n=73). The subject-to-item ratio for these analyses was slightly greater than 2:1, so these results must be interpreted with some caution.

Because the eigenvalue of the fifth factor was greater than one, and three substantial items correlating greater than |.40| on this factor occurred, the fifth factor was retained. The varimax rotated, five factor solution explained 61.4% of the original variance. Table 3 presents the FRS items that correlated greater than |.40| with each of the five factors.

INSERT TABLE 3 ABOUT HERE

Factor I included items related to having financial and care resources available for personal needs. Factor II items related to the need for, or utilization of, time as a resource. Factor III contained items related to the basic resources of income, and material supports such as dependable transportation and health care. Factor IV items related to fundamental resources including heat, indoor plumbing, and toys for children. Factor V included items related to resources for maintaining the household including the home itself, money to pay bills, and food for two meals a day.

However, for the interventionists, the five-factor solution had one factor with only two items, and one item was associated with this factor at a value less than |.40|. A four-factor solution, therefore, appeared to best represent the components

underlying the interventionist data. For the interventionists, the four-factor solution accounted for 70.5% of the original variance. Items associated with respective factors for the interventionists were slightly different than those for mothers. Table 4 presents the FRS items that correlated greater than |.40| with each of the four factors.

INSERT TABLE 4 ABOUT HERE

Factor I for interventionists contained items related to financial resources and availability of health care. Factor II related to basic necessities including such things as a home, food, and child care. Factor III included items related to having time as a resource to meet personal and family needs. Factor IV included items related to food and transportation resources. Factor IV also contained the item "time to be with spouse". However, this item shared 24.1% of its variance with Factor III, and 27.7% of its variance with Factor IV.

Overall, the factor structures obtained in the investigation appeared meaningful, although different factor structures emerged across mothers and professionals. Neither factor structure was compatible with the structure derived by the authors (Dunst & Leet, 1987). It should be noted, however, that Dunst and Leet derived their structure based on data obtained from 45 mothers, a subject-to-variable ratio less than that used in the present study.

Family Needs Survey (v=35). Two separate principal components analyses were performed using FNS data obtained from mothers (n=73) and professionals (n=73). The subject-to-item ratio for these analyses was approximately 2:1.

The "scree" plot suggested the existence of six or seven factors. Although the eigenvalue of the seventh factor was greater than one, three items associated greater than |.40| with this factor did not occur. Six factors, therefore, were retained in the present study. The varimax rotated, six-factor solution explained 64.6% of the original variance. Table 5 presents the FNS items that correlated greater than |.40| with each of the six factors.

INSERT TABLE 5 ABOUT HERE

Factor I included items related to needs for family and social support. Factor II items related to needs for information about how to intervene with the child and explain the child's condition to friends and other children. Factor III contained items related to child care and professional support. Factor IV items related to needs for assistance with finances. Factor V included items related to the need for explaining and discussing the child's condition with professionals and family members. Factor VI related to needs for child-centered services and equipment.

Once again, the "scree" plot suggested the existence of six factors. For the interventionists, the six-factor solution accounted for 66.9% of the original variance. Factor loadings for interventionists were slightly different than those for mothers. Table 6 presents the FNS items that correlated greater than |.40| with each of the six factors.

INSERT TABLE 6 ABOUT HERE

Factor I for interventionists contained eight items related to family and social support. Factor II related to child care,

community services, and professional support needs and contained all nine items that constitute these three FNS categories according to the developers of the instrument. Factor III related to financial needs. Factor IV items related to the need for information about the child. Factor V included items that involved explaining to others about the child's condition. Factor VI related to the need for information about services the child would receive now or in the future.

Overall, both factor structures obtained in the investigation appeared meaningful. These structures were compatible with the structure derived by the authors (Bailey et al., 1992).

Family Focused Intervention Scale - Often subscale ($\underline{v}$=39). Tables 7 and 8 contain the results of two principal components analyses for the FFIS "Often" subscale. One analyses involved data obtained from mothers ($\underline{n}$=73), the other involved data gathered from interventionists ($\underline{n}$=73). The "Often" subscale contains 39 items, therefore, the subject-to-variable ratio did not quite approach 2:1.

INSERT TABLES 7 AND 8 ABOUT HERE

Results of the principal components analyses for mothers were interpreted with caution for two reasons. First, the subject-to-variable ratio was small. Second, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was minimal, .66909. The KMO statistic compares magnitudes of observed correlation coefficients to magnitudes of partial and observed correlation coefficients. The maximum KMO value is 1.00. Small KMO values (i.e., below .70) indicate that factor analytic techniques may not yield meaningful

information because pairs of variables that are being analyzed are not highly correlated with other variables (Norusis, 1988).

The scree plot for the data obtained from mothers suggested the existence of five or six factors. The eigenvalue of the sixth factor was greater than one, but three items did not correlate greater than |.40| with this factor. Five factors, therefore, were retained in the present study. The varimax rotated, five-factor solution explained 54.9% of the original variance.

Table 7 presents the FFIS items that correlated greater than |.40| with each of the five factors. Factor I contained 11 items. One item on Factor I (Question 8) also loaded highly on Factors IV and V. The remaining items on Factor I related to mothers' reports of how often staff from the early intervention program asked them about their child or family, provided them useful information, and encouraged them to advocate on behalf of themselves and their child. Factor II related to how often the mother was involved in early intervention program activities, and how often she obtained assistance from early intervention professionals in accessing support from friends or professionals. Factor III included items related to how often professionals in the program provided personal family assistance, for example, offering family counseling and assisting the family with personal problems. Factor IV contained items associated with how often professionals in the program provided explanatory information such as why certain tests were used, and the philosophy of the program. Factor V items related to how often the program staff assisted the mother in obtaining professional resources outside of the early intervention program.

The "scree" plot for interventionists' data suggested the existence of five or six factors. The eigenvalue of the sixth factor again was greater than one, but three interpretable loadings (>.|40|) on this factor did not occur. A five factor solution appeared to best represent the FFIS data obtained from interventionists. For the interventionists, this five factor solution accounted for 68.0% of the original variance. Factor loadings for interventionists were somewhat different than those for mothers. Table 8 presents the FFIS items that correlated greater than |.40| with each of the five factors. Fourteen of the 39 FFIS items, however, correlated greater than |.40| with more than one factor. These "double-loadings" suggested the presence of other higher-order factors in the interventionist data set. These should be explored in future research with larger subject-to-variable ratios.

Factor I for interventionists contained 14 items related to how often the interventionist perceived that the early intervention program provided the mother with opportunities related to enhancing or facilitating her child's development, and to accessing support and information from professionals and other parents. Factor II related to how often the early intervention program assisted the mother in obtaining professional resources and support outside of the early intervention program. Factor III items related to how often the interventionist perceived that the early intervention program provided the mother and family with personal family assistance, such as assisting the mother in getting help from friends or neighbors, or providing family counseling. Factor IV related to how often the professional in the early intervention

program asked the mother or other family members what they wanted for themselves and their child, or showed interest in hearing about the child and family. Factor V contained three items related to how often the mother was involved in testing and transition activities.

Concurrent Validity

Two instruments were used in the present study to operationalize the construct of child developmental status, the DP II and the EPS. Several previous investigations examined the concurrent validity of the DP II with other commonly used early childhood measures. For example, Sexton et al. (1990) compared scores derived from the DP II with those obtained on the Battelle Developmental Inventory. Bailey and Bricker (1986) compared the concurrent validity of the interventionist version of the EPS with the DP II.

In the present study, the concurrent validity of the EPS and DP II was of interest for at least two reasons. First, the DP II is administered in a structured-interview format while individuals independently complete items on the EPS. Examination of the validity coefficients for mothers and professionals across the two instruments demonstrated the degree of comparability between two measures purporting to operationalize the same domains of child developmental status. A high degree of comparability not only validated the instruments, but confirmed the feasibility of using independent self-report measures to gather estimate data from mothers and professionals. Second, few data existed on the concurrent validity of the EPS. Concurrent validity estimates were important in the present study because of the design requirement

for gathering valid data while varying the method of data collection and the data source.

Tables 9 and 10 contain the Pearson product moment correlation coefficients between mothers' DP II and EPS total scale and subscale ratings, and interventionists' coefficients for these same scales. Overall, the concurrent validity coefficients were moderate to high for mothers and interventionists, and all were statistically significant at $p < .01$.

INSERT TABLES 9 AND 10 ABOUT HERE

Substantive Hypothesis Tests

The present study addressed three major research questions. First, using the same instruments, are mother and professional ratings of child and family status ordered similarly within and across instruments? Second, using the same instruments, do the mean ratings of mothers and professionals differ within and across instruments? Third, what parent, child, and interventionist factors influence congruence?

1. Evaluation of the Relationships Between Mother and Interventionist Ratings

To address the first research question related to the ordering of mother and professional ratings between and across study measures, a canonical correlation analysis was employed using the total scores from the seven intervally scaled predictor measures and seven intervally scaled criterion measures. The multivariate nature of the congruence question called for the use of multivariate statistical techniques to simultaneously explore the relationships between mothers' total score ratings on the seven study measures (i.e., arbitrarily designated the predictor

measures) with interventionists total score ratings on these same measures (i.e., the criterion measures). Table 11 presents a summary of the results, including the various coefficients used in the interpretation of canonical correlation analysis results (Thompson, 1984, 1991).

INSERT TABLE 11 ABOUT HERE

The canonical analysis produced seven independent prediction equations or "functions". First, the squared canonical correlation coefficients were consulted. These coefficients described the proportion of variance shared by the uncorrelated, linear composites of predictor and criterion variables. The first two squared canonical correlation coefficients, analogous to univariate effect size estimates, were .8949 and .68102, respectively. The lambda prior to extraction of the first canonical function was statistically significant (F=6.69830, df=49/268.42, $p < .001$). Consulting the squared canonical correlation coefficient indicated that the predictor and criterion composites for the first function linearly shared almost 90% of their variance. The lambda prior to extraction of the second canonical function also was statistically significant (F=3.32078, df=36/235.50, $p < .001$), and the second set of composites shared almost 70% of their variance. The lambda prior to extraction of the third function was statistically significant (F=1.57223, df=25/202.10, $p = .047$), although the third set of composites shared only about 36% of their variance.

Applying the Wherry (1931) correction formula to the obtained canonical function to account for "shrinkage" (Thompson, 1990), the first squared canonical correlation was .75877. This indicated

that, even with the conservative correction applied, the predictor and criterion composites for Function I still shared almost 76% of their variance. The shrunken squared canonical correlation coefficient for the second function was .26822. The Wherry correction formula applied to the squared canonical correlation coefficient for the third function yielded a shrunken R-squared value of -.47536.

Both the first and second canonical functions involved a noteworthy amount of shared variance across the composite sets after accounting for "shrinkage". Because the second canonical function was statistically independent (i.e., orthogonal) to the first function, the second function was consulted to determine what other, less prominent covariations among the two sets of variables existed after the major variations associated with Function I were removed.

The standardized function coefficients (i.e., those weights, standardized like regression beta weights, that are used to generate composite scores in each variable set) were consulted to assess the relative importance of a variable's contribution to the canonical function. However, due to the high degree of collinearity (intercorrelations) among variables, structure coefficients also were consulted to examine the proportion of variance that **each** variable contributed to the canonical model. Thompson and Borrello (1985) illustrated how variables that are highly intercorrelated can be misinterpreted with respect to the contribution they make to a particular model if only standardized weights are consulted.

Examination of the standardized function coefficients for Function I, reported in Table 11, suggested that the following variables were important to the Function I equation: interventionists' DP II total scores, mothers' DP II total scores, interventionists' EPS total scores, and mothers' EPS total scores. Child developmental status appeared to be represented on both variable sets that composed the first canonical function, indicating that mothers and professionals ordered their perspectives about child status in a very similar manner (i.e., the composite sets share an extraordinary amount of variance). The structure coefficients for Function I supported this interpretation with one exception. The standardized function coefficients for the ABILITIES Index were -.09551 for interventionists, and -.10814 for mothers, but the squared structure coefficients for the ABILITIES Index on Function I were .24470 and .33621, respectively.

Examination of the standardized function coefficients for Function II, found in Table 11, suggested that five of the seven standardized function coefficients on Function II were somewhat similar and could have been described as noteworthy. However, examining the squared structure coefficients listed in Table 11, the following variables appeared more important for the Function II equation: interventionists' FRS total scores (r^2_s=.4361), interventionists' TTS total scores (r^2_s=.3165), interventionists' ABILITIES Index scores (r^2_s=.1569), mothers' FRS scores (r^2_s=.1905), mothers' FNS scores (r^2_s=.1721), mothers' TTS scores (r^2_s=.1357), and mothers' ABILITIES Index scores (r^2_s=.1764). Function II appeared to represent the degree of association between interventionist

ratings of child behavioral characteristics and family resources and mother ratings of child behavioral status, family resources, and family needs.

2. Evaluation of the Differences Between Mother and Interventionist Ratings

To address the second research question related to the differences between mother and professional ratings between and across study measures, descriptive discriminant analysis (DDA) was employed (Huberty & Wisenbaker, 1992). The DDA used the total scores from the seven intervally scaled measures as independent or discriminating variables, and rater status (i.e., mother or interventionist) as the criterion or grouping variable. Of course, in studies with a single grouping variable, DDA and MANOVA yield identical tests of statistical significance, but DDA provides more useful information with respect to interpretation.

The multivariate nature of the congruence question again called for the use of multivariate statistical techniques to simultaneously explore the differences between mothers' total score ratings on the seven study measures and interventionists' total score ratings on these same measures. The canonical analysis indicated that mothers and professionals in the present study **ordered** children and families very similarly with respect to child developmental, functional, and behavioral status, and family resources. However, these results alone provide insufficient insight into differences between mother and professional ratings. Mothers and interventionists could order children and families similarly with respect to status variables, but differences between the actual status ratings may be dramatic, that is, the means may have differed across groups.

The discriminant analysis provided information regarding how much the scores for all seven study measures **differed** across the two groups, and which uncorrelated, linear combination of the seven study measures **maximally discriminated** between the two groups. Discriminant analysis, because it is a special case of canonical correlation analysis, produced a canonical discriminant function, and an associated canonical correlation coefficient. In the present study, there were two categories in the grouping variable "rater", so one canonical discriminant function was derived. Klecka (1980) noted that the number of discriminant functions derived (q) is equal to the number of groups minus one, or to the number of discriminating variables (p), whichever is smaller.

Like the more generalized parametric technique of canonical correlation analysis, previously discussed, the discriminant analysis also produced standardized weights called "standardized discriminant function coefficients". Structure coefficients also were derived and described the correlation between the seven study measures and the canonical discriminant function. Table 12 presents these coefficients.

INSERT TABLE 12 ABOUT HERE

The squared canonical correlation coefficient for the discriminant function was .36727. This coefficient when multiplied by 100 indicated the proportion of variation in the discriminant function explained by group membership (i.e., mothers and professionals). The discriminant function also was statistically significant (χ^2=60.664, df=7, p < .0001).

Examining the standardized canonical discriminant function coefficients and the structure coefficients assisted in the determination of which variables were maximally discriminating the two rater groups on the canonical discriminant function. Table 12 illustrates that the FFIS had, by far, the largest squared structure coefficient of all seven measures, .64107. The FRS and FNS also had squared structure coefficients of .16917 and .10296, respectively.

The analysis also provided univariate F-tests that examined the differences in mean scores between the two rater groups for each study measure. None of the univariate tests for the child status measures were statistically significant, and the univariate lambdas ranged from .98806 to .99963. FRS and FNS F-ratios were statistically significant, but the lambdas for these two analyses were .91058 and .94360, respectively. One minus lambda can be viewed as a measure of effect size analogous to the more familiar eta-squared ratio obtained in analysis of variance (ANOVA). The univariate analyses displayed in the discriminant analysis results indicated that the largest mean difference in scores occurred on the FFIS. The univariate F-ratio for this measure was statistically significant, and lambda was .72880.

3. Correlates of Congruence

Regression analyses were conducted to determine whether certain mother, interventionist, or child factors predicted congruence in the perceptions of the mothers and the interventionists. As an initial step in these analyses, difference scores (i.e., scores of mothers minus scores of interventionists) were calculated using the total scale scores for six of the seven

study measures. This procedure resulted in difference scores for each of the following study instruments: (a) DP II, (b) TTS, (c) EPS, (d) FRS, (e) FNS, and (f) FFIS.

Variables entered into the six separate regression equations as potential correlates of congruence were seven interventionist variables, five maternal variables, and two child variables. The interventionist variables included (a) hours of assessment training, (b) number of contact hours per week with the child, (c) number of contact hours per week with the mother, (d) perception of the benefit to the child from early intervention, (e) perception of the benefit to the family from early intervention, (f) years of early intervention experience, and (g) years of education. Maternal variables were (a) monthly net income of household, (b) years of education, (c) months enrolled in early intervention, (d) perception of the benefit to the child from early intervention, and (e) perception of the benefit to the family from early intervention. Child variables included (a) mother's perception of the severity of her child's disability as measured by mother's ABILITIES Index total score, and (b) interventionist's perception of the severity of the child's disability as measured by interventionist's ABILITIES Index total score.

All predictor variables were entered at step one using the forced entry option in the SPSS Version 4.0 regression procedure. Use of this procedure avoided the inherent threats of stepwise procedures (Snyder, 1991). Too many researchers, even today, still use stepwise methods.

Beta weights, bivariate correlation coefficients between each predictor variable and the criterion variable (i.e., difference

score), and structure coefficients (Thompson & Borrello, 1985) were used to facilitate interpretation of regression results. Only one of the six regression equations was statistically significant.

The regression equation for the FFIS difference scores yielded a multiple R value of .62750, statistically significant at p=.0042. The squared multiple correlation coefficient (i.e., R^2 or correlation ratio) was .39376. This is an uncorrected magnitude of effect size estimate based on the ratio of the sum of squares regression value to the sum of squares total value. Using the Wherry (1931) effect size correction formula to adjust for statistical bias, as recommended by Stevens (1986), the adjusted R^2 value for the FFIS difference scores regression equation was .24742. These regression results would still have remained statistically significant with a sample size of 57 (Thompson, 1988). Predictor variables that appeared to be moderate to strong correlates of congruence in the FFIS prediction equation were: (a) the benefit the mother believed the child derived from early intervention, r^2_s=.54207); (b) the benefit the mother believed the family derived from early intervention, r^2_s=.29358); (c) number of months the mother and child were enrolled in the early intervention program, r^2_s=.18241), (d) the interventionists' total ABILITIES Index score for the child, r^2_s=.10990, and (e) maternal monthly income, r^2_s=.06260.

Ancillary Analyses

Previous congruence research suggested that maternal "overestimates" regarding child developmental status may be due, in part, to mothers crediting children for more "ceiling-level" items

than professionals (cf. Gradel, Thompson, & Sheehan, 1981; Sheehan, 1988). Mothers in the present study, on average, did rate their children "higher" on the developmental status measures than interventionists. However, additional descriptive analyses were conducted to determine whether these higher scores actually meant that mothers were "overestimating" developmental status at instrument ceiling levels. These analyses assisted in clarifying how much mothers' and interventionists' mean scores differed, within the context of the standard error of measurement, and whether agreements or disagreements on the child developmental status instruments across the two rater groups occurred on "ceiling-level" items.

The standard error of measurement was calculated using the formula, SE_m=SD times the square root of 1 - r; where SD equals the standard deviation of DP II and EPS total scale scores for mothers and interventionists; and r equals the internal consistency reliability estimates for the DP II and EPS for each rater group. The mean DP II total scale score for mothers was 104.93151 (SD=46.13185). The internal consistency reliability estimate for mothers was .97380. These values yielded a SE_m of 7.46709. For interventionists, the mean DP II total score was 97.87671 (SD=48.84697). Using the internal consistency reliability coefficient of .96800 for interventionists, the SE_m for interventionists on the DP II was 8.73800. For the EPS, the mean total score for mothers was 84.75027 (SD=41.93741) and the SE_m for mothers was 5.90111. The SE_m for interventionists was 5.52000 based on a mean EPS total score of 73.63671 (SD=41.28351).

Difference scores (i.e., mothers' score minus interventionists' score) were computed for each item on the DP II and the EPS. This procedure yielded 73 difference scores for each of the 186 items on the DP II, and 73 difference scores for the 88 items on the EPS. If a mother and an interventionist agreed on an item, their difference score was zero. Descriptive analyses, including frequency counts and percentages, were employed to determine the (a) average percentage of item agreement across all DP II and EPS items, (b) percentages of agreement and disagreement within DP II and EPS subscales, and (c) individual items on the DP II and EPS that had the largest number of disagreements.

The average percentage of agreement across all items exceeded 91% for the DP II and 92% for the EPS. Of the 13,568 possible agreements or disagreements on the DP II (i.e., 73 pairs times 186 items), there were 1,174 disagreements. On the EPS there were 6,424 possible agreements or disagreements, (i.e., 73 pairs x 88 items) and 492 actual disagreements. Agreement within subscales on the DP II ranged from to 87% in the social domain to over 93% in the communication domain. Subscale agreement ranges on the EPS were from 89% in the self-help domain to 93% in the communication domain.

Discussion

Data that inform about the degree of parent and professional congruence regarding child and family status are important for supporting the development and installation of assessment models in early intervention that seek the active, meaningful involvement of parents. If parent perspectives regarding status are viewed as reliable and valid by professionals, these perspectives are more

likely to be sought (Drinkwater & Notari, 1991). The expectation that parental status perspectives are reliable and valid results from the fact that parents have repeated experiences with their children, over relatively long periods of time, and across many settings. Status ratings provided by parents are likely to be based on much larger samples of behavior than those ratings made by professionals. Parental perspectives of status provide important, ecologically-valid data that cannot be gained solely by professionals in limited "standardized" assessment settings (Diamond & LeFurgy, 1992).

Despite several decades of value-based support in the early intervention literature for involving parents in the ongoing process of early intervention assessment, professional perceptions and empirical studies continue to reinforce the notion of "parental overestimation" of child status (Bailey & Wolery, 1988; Drinkwater & Notari, 1991, Dubose, Langley, & Stagg, 1977; Sheehan, 1988). This results in a discrepancy between what is supported in the literature and what is perceived or reported in empirical investigations. One outcome of this discrepancy is that parents may be asked to share their perspectives regarding their child and family, but this information may not be used fully during intervention development and implementation because it is viewed as unreliable by professionals (cf. Beckman, 1984). This practice of seeking parental perspectives and then limiting the importance of these perspectives is inconsistent with the family-guided principles of P. L. 99-457, Part H, and subsequent re-authorizations. This practice also could hurt clidren by

diminishing an important source of information about performance capabilities across a variety of environmental contexts.

Measurement Characteristics

One major group of analyses in the present study focused on evaluation of the psychometric integrity of study instruments. These analyses used data obtained from individuals who participated in the present investigation. Knowledge of the psychometric properties of the instruments used to operationalize study constructs for the present sample was essential to ensuring that correct conclusions were extrapolated from the data. Instruments used to operationalize hypothetical constructs must demonstrate reliability and validity for study samples if confidence is to be placed in substantive results.

In the present study, reliability and validity analyses of the data in hand were important for two reasons. First, as noted previously, the magnitude of effect size estimate for maternal and professional congruence partially would be determined by the reliability of study instruments. Second, two measures in the study (i.e., the FRS and FNS) did not include interventionists in the normative sample. Reliability and validity analyses were important to determine how these instruments performed with a non-normative sample.

With respect to reliability results, *internal consistency coefficients* were high for most subscale and total scores for the seven measures, with the following exceptions: (a) the TTS Rhythm, Activity, Intensity, Mood, Persistence, Threshold, and Adaptability subscales for mothers, .6118, .6008, .4000, .6171, .5995, .2218, and .4904, respectively; (b) the TTS Intensity, Persistence, and

Threshold subscales for interventionists, .6647, .6850, and .5067, respectively; (c) the FNS Professional Support and Community Services subscales for mothers, .6476 and .6808, respectively; and (d) the FNS Professional Support subscale for interventionists, .6805. Clearly, the TTS resulted in the most difficulties as regards reliability. This measure may warrant further scrutiny.

Inter-observer reliability analysis results for the DP II disclosed that the trained DP II examiners were highly reliable in applying the child developmental status interview measure. This finding confirms that scores derived by one interviewer in this study were likely to be highly similar to the scores derived by another interviewer. Variability across mother and interventionist estimates of child developmental status was unlikely to be due to unreliable test administration by the DP II interviewer.

With respect to validity, two major types of validity analyses were conducted, construct and concurrent. *Principal components analyses* with results rotated to the varimax criterion were used to examine construct validity for all family status measures across both rating groups. The principal components underlying the responses of mothers and interventionists on the FRS, FNS, and FFIS suggest that data from all three instruments were valid for both rater groups. Retained principal components for all three family measures were interpretable across both groups. Evaluation of the stability of these interpretations should be conducted with larger subject-to-variable ratios. However, the ability to interpret the principal component results in the present study supports the position that these three instruments adequately operationalized

the constructs of interest. And sample sizes here were actually larger than those in several previous studies.

The *concurrent validity coefficients* between the EPS-PI and the DP II yielded moderate to high correlation coefficients across both rater groups for total scale and subscale scores. For mothers, the highest validity coefficients were between the EPS-PI and DP II total scale scores (.8657), and Communication subscale scores (.8453). The concurrent validity coefficients for interventionists ranged from .6629 to .8984. Again, the highest coefficients were between EPS-PI and DP II total scale scores (.8984), and Communication subscale scores (.8812). These findings suggested that the DP II and EPS-PI measured perspectives of child status similarly across major developmental domains.

Taken together, the reliability and validity results reported for the seven study measures generally supported the psychometric integrity of the responses on these measures. Data obtained from both rater groups were reasonably reliable and valid. The demonstration of the psychometric integrity of study measures also signified that results obtained from substantive hypothesis tests and subsequent conclusions could be afforded greater credence.

Substantive Analyses

Research Question I. The first research question addressed in this study was "Using the same instruments, are mother and professional ratings of child and family status ordered similarly within and across instruments?". A canonical correlation analysis was used to answer this question. This analysis involved an examination of the degree of association between the seven intervally scaled predictor variables (i.e., mothers' total score

ratings on the seven study measures) and seven intervally scaled criterion variables (i.e., interventionists' total score ratings on the seven study measures).

The lambdas prior to extraction of the first and second canonical functions were statistically significant, and each of these uncorrelated functions explained a noteworthy amount of shared variance across the composite sets even after correcting for statistical bias (i.e., approximately 76% for the first function and 27% for the second function). Although the lambda prior to extraction of the third canonical function was statistically significant, this third function was not interpreted to be noteworthy after the correction for statistical bias yielded a squared canonical correlation coefficient of -.47536, a mathematically impossible result. Thus, the statistical significance of the third canonical function and the magnitude of the accompanying uncorrected squared canonical correlation coefficient were determined to be artifacts of the mathematical least squares maximization principle that operates in all parametric analyses.

Table 11 presents the standardized function coefficients and the structure coefficients for the first and second canonical functions. The three most relevant criterion variables for Function I, in order of importance as indicated by the squared structure coefficients, were: (a) interventionist DP II total score, 92.162%; (b) interventionist EPS total score, 94.124%; and (c) interventionist ABILITIES Index total score, 24.470%. Three predictor variables also were relevant for the Function I model. These variables and their associated squared canonical correlation

coefficients were: (a) mother DP II total score, 89.895%; (b) mother EPS total score, 88.731%; and (c) mother ABILITIES Index total score, 33.621%. These results indicated that *child developmental status* appeared to be represented on both variable sets that composed the first canonical function. The high degree of association between the first two composite sets can be explained by similar maternal and interventionists perspectives of child developmental status.

Within the canonical model for Function II, the strongest relationships involved three criterion variables and four predictor variables. The three most relevant criterion variables for the Function II model, as determined by the squared structure coefficients, were: (a) interventionist FRS total score, 43.612%; (b) interventionist TTS total score, 31.652%; and (c) interventionist ABILITIES Index score, 15.692%. The predictor variables most relevant for the Function II model were: (a) mother FRS total score, 19.051%; (b) mother ABILITIES Index score, 17.644%; (c) mother FNS total score, 17.212%; and (d) mother TTS total score, 13.568%. The second canonical function represented the relationship between *family supports and perceptions of child behavior* as evidenced by the degree of positive association between ratings of child behavioral characteristics, family resources, and family needs.

The canonical model for Function II provides further evidence for assertions in the child development literature that family supports, particularly the presence of material resources and social supports, frequently relate to subjective maternal reports (i.e., her perceptions) of child temperament (cf. Bates & Bales,

1984; Mebert, 1991; Spiker, Kraemer, Constantine, & Bryant, 1992; Wolkind & DeSalis, 1982;). In the present study, this interactive relationship between family supports and perceptions of child temperament emerged across **and** within both rater groups. That is, interventionists' subjective ratings of child temperament also were associated with their perceptions of family resources.

The presence of two independent canonical functions in the analysis indicated that when child and family status were multiopertionalized within an ecological systems theory framework, a single, generalized ("g") function did not emerge. The canonical models for Function I and II each included different status variables with the exception of the ABILITIES Index. These models suggested unique interrelationships of status variables, as operationalized in the present study, across the two rater groups.

Research Question II. The second research question addressed in the study was, "Using the same instruments, do the mean ratings of mothers and professionals differ within and across instruments?". A discriminant analysis was used to answer this question. Using the total scores for all study measures for all raters as discriminating variables and the role of the rater (i.e., mother or interventionist) as the grouping variable, the analysis identified the variables that maximally discriminated the two groups.

Table 12 reports that the squared canonical correlation coefficient for the discriminant function was .36727. This meant that the uncorrected estimate of the proportion of variation in the discriminant function explained by rater group was 36.727%. A formula offered by Maxwell (1992) was used to adjust the canonical

correlation coefficient (i.e., multivariate eta-squared) for statistical bias. This formula, expressed as:

$$\underline{R}_{c}^{2}{}_{adj}=[1 - (1 - \text{eta squared}_{multivariate})(N - 1/ N - b - 1)],$$

resulted in a squared canonical correlation coefficient of .34220. This bias-corrected squared canonical correlation coefficient value implied that (a) the "unbiased" proportion of variation in the discriminant function explained by rater group was 34.22%, and (b) that the overall mean score composites of the rater groups differed to a noteworthy degree.

Consulting the standardized canonical discriminant function coefficients and the structure coefficients led to the conclusion that the FFIS had the largest squared structure coefficient of all seven measures, .64107. This indicated that the FFIS was the variable that **maximally discriminated** the two rater groups on the canonical discriminant function.

Finally, univariate F-tests yielded three statistically significant F-ratios for the FNS, FRS, and FFIS. Lambdas for all seven measures ranged from .72880 on the FFIS, to .99963 on the ABILITIES Index. One minus lambda is analogous to eta-squared, an uncorrected magnitude of effect size estimate common in ANOVA. The lambda values reinforced the conclusion that mean differences between mother and professional ratings for all status measures, with the exception of the FFIS, were not noteworthy, even though the F-tests for the three family status measures reached traditional levels of statistical significance ($p < .05$). These findings provide some support for previously noted speculation about statistical artifacts that may be present in previous

congruence research. Previous research may have yielded difference scores between parent and professional ratings that reached traditional levels of statistical significance, but these differences may not have been noteworthy because capitalization on "experimentwise" error rates were not considered (Fish, 1988).

Taken together, the results of the canonical correlation and discriminant analyses provide support for the proposition that mothers and interventionists can be in close agreement about child developmental and behavioral status, provided that data are collected contemporaneously using the same instruments. This indicates that mothers can be viable and accurate sources of child-centered information during the early intervention assessment process. Less agreement was found across mothers and professionals regarding perspectives on family resources and needs, and priorities for intervention. This supports the premise that collaboration and discussion should occur between family members and interventionists regarding family status variables during the assessment process. Families have unique perspectives regarding their resources, needs, and priorities that may not be obtained independently by professionals. Data used to address the first two research questions support the family-directed early intervention principle that parents should be active partners with professionals as they engage in early intervention assessment processes.

Research Question III. The third research question addressed in the study was, "What parent, child, or interventionist factors influence congruence?". Multiple regression analyses were used to answer this question. First, difference scores for six of the seven study measures were computed by subtracting mothers' total

scale scores from interventionists' total scale scores. To evaluate potential correlates of congruence, seven interventionist demographic variables, five maternal demographic variables, and two child characteristic variables were regressed onto these difference scores.

The absolute magnitude of the differences between maternal and professional status ratings for total scale scores were generally small with the exception of the FFIS. Mean total score differences (i.e., mother total scores minus interventionists total scores) for the seven status estimates were (a) 7.055 points for the DP II, (b) -0.7360 points for the ABILITIES Index, (c) -6.141 points for the TTS, (d) 11.111 points for the EPS, (e) -9.889 points for the FRS, (f) 8.795 points for the FNS, and (g) -58.571 points for the FFIS.

Negative difference score values reflected higher mean total status scores on the measure for interventionists. Positive values reflected higher mean total scores for mothers. The exceptions to these interpretations were the ABILITIES Index, where lower total mean scores indicated the child had less severe disabilities, and the FNS, where fewer expressed needs resulted in a higher total score.

Difference score values for the ABILITIES Index indicated that, on average, interventionists rated children as slightly more disabled than mothers. Difference score values on other instruments indicated that, in general, mothers rated children's developmental status slightly higher on the DP II and EPS than professionals; professionals rated children higher on the TTS than mothers; interventionists rated family resources as more adequate than mothers; and mothers rated their family as having fewer family

needs than did their paired interventionists. Finally, the large negative discrepancy in the FFIS scores meant that interventionists perceived their program as providing family-focused intervention services more often than did the mothers. Interventionists also perceived these family-focused services as more important than did the mothers.

Only the regression equation for the FFIS difference scores was statistically significant (p=.0042). The squared multiple correlation coefficient (R^2) was .39376. The adjusted R^2, calculated by applying the Wherry correction, was .24742. The structure coefficients from the analysis indicated that when all 14 variables are considered, the most noteworthy individual correlates explaining the variance in FFIS difference scores were: (a) the benefit the mother believed the child derived from early intervention, r^2_s=.54207; (b) the benefit the mother believed the family derived from early intervention, r^2_s=.29358; (c) the number of months the mother and child were enrolled in early intervention, r^2_s=.18241, (d) the interventionists' total ABILITIES Index score for the child, r^2_s=.10990, and (e) maternal monthly income, structure r^2_s=.06260. The other correlates had negligible relationships with predicted variance in FFIS difference scores (i.e., squared structure coefficients less than .04).

Maternal perceptions of the benefits of early intervention for her child and family explained almost 83% of the variance in FFIS difference scores. These results predicted a direct relationship between maternal perceptions of the benefits of early intervention and the magnitude of the FFIS difference scores. A mothers who

perceived that the early intervention had greatly benefitted her child and family had FFIS scores closer to her paired interventionist (i.e., smaller difference scores).

The lack of statistically significant or noteworthy findings for the remaining five regression equations indicated that, for the present study sample, the variables identified in the literature as potential correlates of congruence regarding child developmental status were not useful in predicting difference scores across these five study measures. These findings contradicted the conclusions offered in some previous research that there were statistically significant relationships between maternal education (Sexton, Miller, & Murdock, 1984; Sexton, Miller, & Rotatori, 1985), monthly income (Sexton et al., 1984, 1985), severity of the child's disability (Heriot & Schmickel, 1967; Keith & Markie, 1968; Sexton, Thompson, Perez, & Rheams, 1990; Tew, Laurence, & Samuel, 1974; Wolfensberger & Kurtz, 1971), or number of months enrolled in early intervention (Sexton et al., 1984), and congruence of mother and professional child developmental status estimates.

The failure here to identify correlates of difference scores for five of the six study measures was attributed to the small differences in status ratings across groups, that is, there was general congruence between the ratings of mothers and interventionists. We found congruence by avoiding the design flaws not considered in previous empirical research. Thus, the difference scores on several of the status measures in the present study may only reflect random sources of error variance rather than true differences, and such a restricted range of difference scores

quite predictably attenuates regression effects. Differences based on random factors would not be expected to be predictable.

Ancillary Analyses

Ancillary analyses assisted in clarifying how much mothers' and interventionists' mean scores differed and whether agreements or disagreements on the child developmental status instruments (i.e., the DP II and EPS) across the two rater groups occurred on "ceiling-level" items. Major findings of these analyses revealed that (a) the mean total score difference on the DP II for the two rater groups was within the standard error of measure (SE_m), and (b) differences on the developmental status measures did not occur on "ceiling-level" items. Mother and interventionist mean ratings of child developmental status on the DP II were virtually identical when SE_m was considered.

"Ceiling-level" effects did not appear to explain discrepant data obtained for mothers and interventionists on DP II and EPS ratings. The systematic examination of agreements and disagreements on items revealed several noteworthy findings. First, the overall percentage of item-level agreements across mothers and professionals was very high. For the DP II, mothers and interventionists agreed on 91.35% of items. Out of 13,578 possible opportunities (i.e., 186 items x 73 pairs of ratings) for agreement or disagreement, 12,404 agreements and 1,174 disagreements occurred. On the EPS, mothers and interventionists agreed on 92.34% of items. The number of possible opportunities for agreement or disagreement was 6,424 (i.e., 88 item x 73 pairs

of ratings). EPS agreements totalled 5,932, and disagreements totalled 492.

Gradel, Thompson, and Sheehan (1981) conducted an item-by-item comparison of maternal and professional responses on the DP II. Their findings are very similar to those in the present study. These authors reported that mothers and teachers agreed on an average of 91% of all Developmental Profile (Alpern & Boll, 1972) items. Gradel et al. (1981, p. 34) noted, "these results can be interpreted to mean that mothers are fairly accurate when estimating their children's current development". Sexton et al. (1985) also conducted an item-by-item comparison of maternal and diagnostician findings on the Developmental Profile. Overall agreement in the Sexton et al. study was 88%. These authors concluded, "it appears that parents can be reliable observers and reporters of the behavior and development status of young handicapped children" (p. 386).

Drinkwater and Notari (1991) studied a sample of 16 young children with disabilities and found 91.88% item-by-item agreement between parents and interventionists on the EPS. These findings are very similar to those reported in the present study with a sample size which was almost five times as large. These consistencies in item-by-item agreement percentages for both the DP II and EPS suggest a robustness in the comparability of parent and professional reports across studies.

Another noteworthy finding that resulted from the item-by-item examination of agreements and disagreements was that, when disagreements did occur, they were not generally associated with the scaler, developmental nature of the instruments. Disagreements

were as likely to occur on items at lower developmental age levels as they were on items that might be considered "ceiling-level". These data tend to support the findings of Beckman (1984) who concluded, "There was no evidence to indicate that either mothers or professionals tended to overestimate the child on a consistent basis" (p. 179).

Summary

Congruence of parental and professional perspectives regarding the developmental and behavioral status of young children with disabilities has been studied since the late 1950's. Research in this area continues to the present time. The present study provided support for the premise that when mothers are given the same instruments to complete, and complete them in the same manner, their status ratings are very similar to the professionals who work most closely with them or with their child. Findings in the present study also expanded the focus of congruence research beyond the level of the child, and systematically explored the relation between mother and professional perspectives of family status. Resultant data suggested that: (a) mothers do not simply "overestimate" child developmental status; (b) mothers and interventionists shared similar perspectives not only about child developmental status, but also about child behavioral characteristics and family supports; and (c) mothers and interventionists differed on their perspectives regarding "how often" and "how important" certain service activities were provided.

This study also provided support for the contention that congruence regarding child and family status is not associated with

specific demographic variables, but may result from a complex host of factors that have not fully been identified. Finally, one of the most important contributions of the present study was the demonstration that *methodological controls permitted documentation of high levels of congruence regarding child and family status that existed between mothers and interventionists*.

The results obtained in this study may assist in supporting the necessity to develop and implement family-guided assessment practices that meaningfully seek and use status data obtained from parents because these data are viewed as reliable and valid. As Stotland (1984) powerfully stated:

> Ask any five parents of visually impaired children how they first learned their child had vision problems and you will get five different horror stories... We parents try to be grateful that professionals pay any attention to the imperfect children we have produced, but we cannot avoid feelings of betrayal and anger when we are the recipients of misinformation or of the kind of callous treatment that ignores parental expertise. (p. 69)

Stimulated by this parental exclamation and the accumulating data that support the value of seeking and using parental expertise regarding child and family status, professionals in early intervention hopefully will adopt assessment practices that operationalize the assertion that "parents know themselves and their children better than anyone else".

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Table 1

Diagnoses of Mothers' Children by Eligibility Category

Category	Diagnoses	Number of Children
A	Blepharophimosis syndrome	1
(Established)	Balman syndrome	1
	Down syndrome	15
	Neural tube defects	2
	Autism	1
	Visual Impairment (<20/200)	1
	Severe congenital hypotonia	1
	Hydrocephalus	2
	Congenital Arthrogryposis	1
	Cornelia de Lange syndrome	1
	Williams syndrome	1
	Glutaric acidemia Type I	1
	4P syndrome	1
	Apert syndrome	1
	Congenital toxoplasmosis	1
	Trecher Collins syndrome	1
B	Porencephaly	2
(Biologic)	Lissencephaly	1
	Birthweight < 1,000 grams	3
	Cerebral palsy	9
	Microcephaly	1
	Infantile spasms	1
	Periventricular leukomalacia	1
	Hypoxic ischemic encephalopathy	2
C	Developmental Delay	21

Table 2

Alpha Coefficients for Total Scales and Subscales - DP II and ABILITIES Index

		Previous Study		Present Study					
				Mothers		Interventionists		Both	
Measure	v	alpha	n	alpha	n	alpha	n	alpha	n
1. **DP II**									
Total	186	NR	NR	.9680	73	.9738	73	.9710	146
PHYS[1]	39	.7900[a]	1,050	.8871	73	.8949	73	.8903	146
HELP[2]	39	.7800[a]	1,050	.8773	73	.9104	73	.8963	146
SOC[3]	36	.8200[a]	1,050	.8685	73	.8866	73	.8790	146
AC[4]	34	.8700[a]	1,050	.8674	73	.8764	73	.8709	146
COMM[5]	38	.8300[a]	1,050	.9146	73	.9038	73	.9110	146
2. **AI**									
Total	19	NR[b]	NR	.8960	73	.9016	73	.8975	146
3. **TTS**									
Total	97	.53-.86[c]	304	.7583	73	.8687	66	.8214	139
Rhyth[6]	11	NR	NR	.6118	73	.7016	66	.6538	139
Activ[7]	12	NR	NR	.6008	73	.8287	66	.7451	139
Inten[8]	10	NR	NR	.4000	73	.6647	66	.5578	139
Mood[9]	13	NR	NR	.6171	73	.7188	66	.6637	139
Appr[10]	12	NR	NR	.7486	73	.8161	66	.7913	139
Pers[11]	11	NR	NR	.5995	73	.6850	66	.6420	139
Thre[12]	8	NR	NR	.2218	73	.5067	66	.4045	139
Adap[13]	9	NR	NR	.4904	73	.7675	66	.6531	139
Dist[14]	11	NR	NR	.7302	73	.8298	66	.7811	139
4. **EPS**									
Total	88	NR[d]	NR	.9802	73	.9821	73	.9813	146
FM[15]	9	NR	NR	.8767	73	.8943	73	.8853	146
GM[16]	18	NR	NR	.9450	73	.9495	73	.9470	146
SH[17]	14	NR	NR	.9113	73	.9081	73	.9103	146
COG[18]	18	NR	NR	.9033	73	.9277	73	.9162	146
COM[19]	22	NR	NR	.9665	73	.9669	73	.9670	146
SOC[20]	7	NR	NR	.8444	73	.8419	73	.8482	146
5. **FRS**									
Total	31	.9200[c]		.9101	73	.9439	73	.9304	146
6. **FNS**									
Total	35	NR[e]	NR	.9422	73	.9511	73	.9495	146

Info[21]	7	NR	NR	.8652	73	.8258	73	.8546	146
Supp[22]	8	NR	NR	.8923	73	.9054	73	.9010	146
Finc[23]	6	NR	NR	.8334	73	.8638	73	.8512	146
Expl[24]	5	NR	NR	.8237	73	.8685	73	.8473	146
Care[25]	3	NR	NR	.7083	73	.8120	73	.7733	146
ProS[26]	3	NR	NR	.6476	73	.6805	73	.6994	146
Serv[27]	3	NR	NR	.6808	73	.8478	73	.7790	146
7. **FFIS**									
Total	78	NR	NR	.9481	73	.9652	73	.9655	146
Oftn[28]	39	NR	NR	.9173	73	.9573	73	.9427	146
SysO[29]	10	.8900[f]	503	.7340	73	.8739	73	.8153	146
ChIn[30]	8	.8500[f]	503	.7541	73	.8266	73	.7985	146
FmIn[31]	7	.8600[f]	503	.7367	73	.8605	73	.7965	146
FmAs[32]	8	.8200[f]	503	.7819	73	.8404	73	.8189	146
RsAs[33]	6	.7800[f]	503	.7527	73	.8884	73	.8411	146

Note. "NR" = "Not reported".
[a]Lawhon (1977).
[b]Bailey, Simeonsson, Buysse, and Smith (1992); Coefficients reported by these authors are inter-rater reliability.
[c]Fullard, McDevitt, and Carey (1978); Coefficients for individual subscales not reported.
[d]Bailey and Bricker (1986); Coefficients reported by these authors are inter-rater reliability.
[e]Dunst and Leet (1987); Internal consistency coefficients reported by these authors based on 30-item version of FRS.
[f]Bailey and Simeonsson (1988b). Coefficients reported by these authors are six-month stability reliability estimates.
[g]Mahoney, O'Sullivan, and Dennebaum (1990); Coefficients reported by these authors based on 40-item version of FFIS.
[1]Physical subscale.
[2]Self-help subscale.
[3]Social subscale.
[4]Academic subscale.
[5]Communication subscale.
[6]Rhythm subscale.
[7]Activity subscale.
[8]Intensity subscale.
[9]Mood subscale.
[10]Approach subscale.
[11]Persistence subscale.
[12]Threshold subscale.
[13]Adaptability subscale.
[14]Distractibility subscale.
[15]Fine motor subscale.
[16]Gross Motor subscale.
[17]Self-care subscale.

[18]Cognitive subscale.
[19]Communication subscale.
[20]Social subscale.
[21]Information subscale.
[22]Family and social support subscale.
[23]Financial subscale.
[24]Explaining to others subscale.
[25]Child care subscale.
[26]Professional support.
[27]Community services.
[28]How "Often" provided a service subscale.
[29]Systems engagement subscale (often).
[30]Child information subscale (often).
[31]Family instructional activities subscale (often).
[32]Personal family assistance subscale (often).
[33]Resource assistance subscale (often).

Table 3
Salient FRS Items for Varimax-Rotated Principal Components
(**Mothers**, n=73, v=31)

Exp[a]	Str[b]	No.[c]	Item
			Factor I
GS	.798	30	Money to save~
GS	.792	29	Money for family entertainment~
GS	.762	28	Money to buy things for yourself~
GS	.743	31	Time and money for travel/vacation~
HN	.636	22	Money to buy special equipment/supplies for children~
CC	.572	21	Child care/day care for children
NP	.517	13*	Furniture for your home or apartment~
GS	.441	24*	Someone to talk to
			Factor II
GS	.785	25	Time to socialize
GS	.775	17	Time to be with spouse/partner~
@	.755	18	Time to be with close friend(s)
GS	.701	26	Time to keep in shape and look nice
GS	.679	14*	Time to be by yourself
IS	.656	15*	Time for family to be together
IN	.656	12	Time to rest/sleep
IS	.587	16	Time to be with your child(ren)
			Factor III
HN	.794	3	Money to buy necessities~
CE	.750	11	Dependable transportation (own car or provided by others)~
HN	.747	23	Dental care for your family
HN	.672	4	Enough clothes for your family~
IN	.450	8	Good job for yourself or spouse/partner~
CE	.434	20*	Baby sitting for your child(ren)~
CE	-.415	10	Public Assistance (SSI, AFDC, Medicaid, etc.)~
			Factor IV
PS	.677	5	Heat for your house or apartment~
HN	.635	27	Toys for your children~
HN	.584	9*	Medical care for your family
PS	.512	6	Indoor plumbing/water
			Factor V
PS	.781	2	House or apartment
HN	.463	7	Money to pay monthly bills
NP	.448	1	Food for 2 meals a day

Note. FRS item number 19, "Telephone or access to a phone", was not associated with any factor greater than |.40|.

[a]"Exp" = the subscale to which items were assigned by Dunst and Leet (1987). The "Exp" factors were coded "GS"= "Growth/Support"; "HN" = "Health/Necessities"; "NP" = "Nutrition/Protection"; "PS" = "Physical Shelter"; "IS" = "Intrafamily Support"; "CE" = "Communication/Employment"; "CC" = "Child Care"; "IN" = "Income".

[b]"Str" = the factor structure coefficient for the item.

[c]"No" = the number for each scored item on the 30-item version of the FRS. "@" = item not on the 30-item version of the FRS. "*" = item correlated greater than |.40| with more than one factor in present study. "~" = item associated greater than |.40| with more than one factor in Dunst and Leet (1987) study.

Table 4
Salient **FRS** Items for Varimax-Rotated Principal Components
(**Interventionists**, n=73, v=31)

Exp[a]	Str[b]	No.[c]	Item
			Factor I
GS	.802	30	Money to save~
GS	.785	29	Money for family entertainment~
GS	.775	31	Time and money for travel/vacation~
GS	.760	28	Money to buy things for herself~
HN	.753	7*	Money to pay monthly bills
IN	.727	12*	Time to rest/sleep
HN	.673	27*	Toys for children~
HN	.667	23*	Dental care for family
HN	.529	9	Medical care for family
IN	.513	8	Good job for mother or spouse/partner~
HN	.430	22	Money to buy special equipment/supplies for children~
CE	-.422	10	Public Assistance (SSI, AFDC, Medicaid, etc.)~
			Factor II
PS	.888	6	Indoor plumbing/water
PS	.861	5	Heat for house or apartment~
PS	.852	2	House or apartment
CE	.793	19	Telephone or access to a phone
HN	.758	4*	Enough clothes for family~
NP	.697	13*	Furniture for home or apartment~
HN	.631	3*	Money to buy necessities~
CC	.501	21	Child care/day care for children
			Factor III
@	.800	18	Time to be with close friend(s)
GS	.798	25	Time to socialize
IS	.793	15	Time for family to be together
IS	.731	16	Time for mother to be with child(ren)
CE	.627	20	Baby sitting for your child(ren)~
GS	.627	14*	Time for mother to be by herself
GS	.615	24*	Someone to talk to
GS	.546	26	Time to keep in shape and look nice
			Factor IV
CE	.607	11*	Dependable transportation (own car or provided by others)~
GS	.526	17*	Time to be with spouse/partner~
NP	.522	1	Food for 2 meals a day

[a]"Exp" = the subscale to which items were assigned by Dunst and Leet (1987). The "Exp" factors were coded "GS"= "Growth/Support"; "HN" = "Health/Necessities"; "NP" = "Nutrition/Protection"; "PS" = "Physical Shelter"; "IS" = "Intrafamily Support"; "CE" = "Communication/Employment"; "CC" = "Child Care"; "IN" = "Income".
[b]"Str" = the factor structure coefficient for the item.
[c]"No." = the number for each scored item on the 30-item version of the FRS. "@" = item not on the 30-item version of the FRS. "*" = item correlated greater than |.40| with more than one factor in present study. "~" = item associated greater than |.40| with more than one factor in Dunst and Leet (1987) study.

Table 5
Salient **FNS** Items for Varimax-Rotated Principal Components
(**Mothers**, n=73, v=35)

Exp[a]	Str[b]	No.[c]	Item
			Factor I
SUP	.753	SUP7	Deciding who will do household chores, child care, and other family tasks
SUP	.744	SUP6	Helping our family support each other during difficult times
SUP	.733	SUP4	Helping my spouse accept any condition our child might have
SUP	.699	SUP5	Helping our family discuss problems and reach solutions
SUP	.677	SUP8	Deciding on and doing family recreational activities
EXP	.581	EXP1	Explaining my child's condition to my parents or spouse's parents
SUP	.523	SUP2	Having friends to talk to
SUP	.515	SUP1	Talking with someone in my family about concerns
			Factor II
INF	.733	INF2	How to play or talk with my child
INF	.733	INF4	How to handle my child's behavior
INF	.718	INF1	How children grow and develop
EXP	.654	EXP3	Knowing how to respond when friends, neighbors, or strangers ask questions about my child
INF	.636	INF3	How to teach my child
EXP	.589	EXP4	Explaining my child's condition to other children
			Factor III
CAR	.664	CAR1	Locating babysitters or respite care providers who are willing and able to care for my child
CAR	.662	CAR2	Locating a day care program or preschool for my child
PRO	.610	PRO3	More time to talk to my child's teacher or therapist
FIN	.600	FIN1*	Paying for expenses such as food, housing, medical care, clothing or transportation
SER	.571	SER3	Locating a dentist who will see my child
SER	.568	SER2	Locating a doctor who understands me and my child's needs
PRO	.501	PRO2	Meeting with a counselor (psychologist, social worker, or psychiatrist)
PRO	.479	PRO1	Meeting with a minister, priest, or rabbi

(table continues)

Table 5 (continued)
Salient **FNS** Items for Varimax-Rotated Principal Components
(**Mothers**, n=73, v=35)

Exp[a]	Str[b]	No.[c]	Item
			Factor IV
FIN	.826	FIN5	Paying for babysitting or respite care
FIN	.766	FIN6	Paying for toys that my child needs
FIN	.665	FIN3	Paying for therapy, day care, or other services my child needs
FIN	.507	FIN4	Counseling or help in getting a job
			Factor V
SER	.604	SER1	Meeting and talking with other parents who have a child like mine
EXP	.595	EXP2	Explaining my child's condition to his or her siblings
EXP	.594	EXP5	Finding reading material about other families who have a child like mine
SUP	.483	SUP3*	Finding more time for myself
CAR	.454	CAR3	Getting appropriate care for my child in a church or synagogue during religious services
			Factor VI
INF	.787	INF7	Information about the services my child might receive in the future
INF	.718	INF6	Information about services that are presently available for my child
INF	.649	INF5*	Information about any condition or disability my child might have
FIN	.618	FIN2*	Getting any special equipment for my child's needs

[a]"Exp" = the subscale to which items were assigned by Bailey, Blasco, and Simeonsson (1992). The "Exp" factors were coded "SUP" = "Family and Social Support"; "EXP" = "Explaining to Others"; "FIN" = "Financial"; "INF" = "Information"; "CAR" = "Child Care"; "PRO" = "Professional Support"; "SER" = "Community Services".
[b]"Str" = the factor structure coefficient for the item.
[c]"No." = the number for each scored item on the 1990(b) version of the FNS. "*" = item correlated greater than |.40| with more than one factor in the present study.

Table 6
Salient **FNS** Items for Varimax-Rotated Principal Components
(**Interventionists**, n=73, v=35)

Exp[a]	Str[b]	No.[c]	Item
			Factor I
SUP	.743	SUP7	Deciding who will do household chores, child care, and other family tasks
SUP	.722	SUP5*	Helping her family discuss problems and reach solutions
SUP	.706	SUP6	Helping her family support each other during difficult times
SUP	.645	SUP8	Deciding on and doing family recreational activities
SUP	.619	SUP1	Talking with someone in family about concerns
SUP	.611	SUP2*	Having friends to talk to
SUP	.550	SUP3	Finding more time for mother
SUP	.503	SUP4	Helping her spouse accept any condition her child may have
			Factor II
CAR	.665	CAR3*	Getting appropriate care for child in a church or synagogue during religious services
SER	.650	SER1*	Meeting and talking with other parents who have a child like mine
CAR	.638	CAR1	Locating babysitters or respite care providers who are willing and able to care for child
PRO	.632	PRO3	More time to talk to child's teacher or therapist
CAR	.622	CAR2	Locating a day care program or preschool for my child
SER	.618	SER3	Locating a dentist who will see my child
PRO	.600	PRO1*	Meeting with a minister, priest, or rabbi
SER	.566	SER2	Locating a doctor who understands her and her child's needs
PRO	.557	PRO2*	Meeting with a counselor (psychologist, social worker, psychiatrist)
			Factor III
FIN	.775	FIN6	Paying for toys that child needs
FIN	.741	FIN1	Paying for expenses such as food, housing, medical care, clothing, or transportation
FIN	.718	FIN3	Paying for therapy, day care, or other services child needs
FIN	.686	FIN2	Getting any special equipment for child's needs
FIN	.627	FIN4	Counseling or help in getting a job
FIN	.588	FIN5	Paying for babysitting or respite care

(table continues)

Table 6 (continued)
Salient **FNS** Items for Varimax-Rotated Principal Components
(**Interventionists**, n=73, v=35)

Exp[a]	Str[b]	No.[c]	Item
			Factor IV
INF	.774	INF3	How to teach child
INF	.721	INF2	How to play or talk to child
INF	.716	INF1	How children grow and develop
EXP	.588	EXP5*	Finding reading material about other families who have a child like hers
			Factor V
EXP	.768	EXP1	Explaining child's condition to her parents or her spouse's parents
EXP	.673	EXP2	Explaining her child's condition to child's siblings
EXP	.665	EXP3	Knowing how to respond when friends, neighbors, or strangers ask questions about child
EXP	.633	EXP4	Explaining child's condition to other children
			Factor VI
INF	.715	INF5	Information about any condition or disability child may have
INF	.706	INF6	Information about services that are presently available for child
INF	.684	INF7	Information about the services child might receive in the future
INF	.672	INF4	How to handle child's behavior

[a]"Exp" = the subscale to which items were assigned by Bailey, Blasco, and Simeonsson (1992). The "Exp" factors were coded "SUP" = "Family and Social Support"; "EXP" = "Explaining to Others"; "FIN" = "Financial"; "INF" = "Information"; "CAR" = "Child Care"; "PRO" = "Professional Support"; "SER" = "Community Services".
[b]"Str" = the factor structure coefficient for the item.
[c]"No." = the number for each scored item on the 1990b version of the FNS. "*" = item correlated greater than |.40| with more than one factor in the present study.

Table 7
Salient **FFIS** Items for Varimax-Rotated Principal Components
(**Mothers**, n=73, v=39 - "Often" Subscale)

Exp[a]	Str[b]	No.[c]	Item
			Factor I
FIS	.758	10	Show you how to help your child develop~
PFA	.755	15	Show interest in hearing about your family
FIS	.749	11	Show you how to play with your child
SYS	.700	35	Encourage you to be the major decision maker about the care and education of your child
REA	.601	31	Help you fill out forms
SYS	.573	16*	Help you to be an informed advocate for your child
CHI	.566	5	Talk to you about your child's developmental growth
@	.521	2*	Ask what you want for your family
CHI	.486	3*	Ask what you need for your child
SYS	.458	38*	Help you learn how to deal with the system
			Factor II
FIS	.671	13	Give you a plan to carry out during the month
FIS	.657	14	Provide books and pamphlets for you to use
SYS	.635	17	Want you to choose what you do in the program
CHI	.592	19	Ask how you are coping with your child
PFA	.570	22*	Assist you in getting help from friends and neighbors~
SYS	.566	18	Help you prepare for your child's next educational setting
FIS	.506	7	Want you to be there while your child is being tested
FIS	.483	12	Provide you with toys for your child
PFA	.477	24*	Provide information on stress management strategies
CHI	.445	20	Provide opportunities for you to share your feelings with the program staff
FIS	.430	39	Assess how you play or interact with your child~
			Factor III
REA	.737	27	Help you get medical care for your child
PFA	.730	25	Help you to take time for yourself

(table continues)

Table 7 (continued)
Salient **FFIS** Items for Varimax-Rotated Principal Components
(**Mothers**, n=73, v=39 - "Often" Subscale)

Exp[a]	Str[b]	No.[c]	Item
SYS	.726	26	Assist you in getting your spouse or other relatives to help you with your child
@	.573	36	Help you to find babysitting or child care
PFA	.563	37	Help you with personal problems
PFA	.422	23*	Provide family counseling
			Factor IV
CHI	.748	4	Talk to you about your child's health
SYS	.676	9	Help to prepare you for your child's future
PFA	.666	21	Provide opportunities for you to share your feelings with other parents~
@	.558	6	Explain why tests are used
CHI	.548	1*	Discuss the philosophy of the program
SYS	.529	30	Provide opportunities for you to participate in parent groups
			Factor V
@	.800	29	Make referrals to other Early Intervention Programs
REA	.670	28	Make referrals to professionals such as social workers or family counselors
REA	.571	33*	Help you obtain funding that you are qualified to receive~
SYS	.554	32*	Help you obtain services for your child from other programs
REA	.450	34	Help you find transportation for services or meetings if needed

Note. FFIS "Often" subscale item 8, " Explain the results of tests to you", was not associated greater than |.40| with any factor.
[a]"Exp" = the subscale to which items were assigned by Mahoney, O'Sullivan, and Dennebaum (1990). The "Exp" factors were coded "SYS" = "Systems Engagement"; "CHI" = "Child Information"; "FIS" = "Family Instructional Activities"; "PFA" = "Personal Family Assistance"; "REA" = "Resource Assistance".
[b]"Str" = the factor structure coefficient for the item.
[c]"No." = the number for each scored item on the 1990 version of the FFIS. "*" = item correlated greater than |.40| with more than one factor in the present study. "~" = item associated greater than or equal to |.40| with more than one factor in the Mahoney et al. (1990) study. "@" = items added to 1991 version of FFIS that were not on earlier version used by Mahoney et al. (1990).

Table 8
Salient **FFIS** Items for Varimax-Rotated Principal Components
(**Interventionists**, n=73, v=39 - "Often" Subscale)

Exp[a]	Str[b]	No.[c]	Item
			Factor I
FIS	.861	10	Show the parent(s) how to help their child develop~
FIS	.808	11	Show the parent(s) how to play with their child
SYS	.712	9	Help to prepare the parent(s) for their child's future
CHI	.712	20*	Provide opportunities for the parent(s) to share their feelings with the program staff
SYS	.682	17	Encourage the parent(s) to choose what they do in the program
FIS	.676	13	Give the parent(s) a plan to carry out during the month
CHI	.621	1	Discuss the philosophy of the program with the family
FIS	.617	14	Provide books and pamphlets for the parent(s) to use
PFA	.607	21*	Provide opportunities for the parent(s) to share their feelings with other parents~
CHI	.558	4	Talk to the parent(s) about their child's health
SYS	.518	16*	Help the parent(s) become informed advocates for their child
FIS	.515	39	Assess how the parent(s) play or interact with their child~
SYS	.507	35*	Encourage the parent(s) to be the major decision maker about the care and education of their child
FIS	.410	12	Provide the parent(s) with toys for their child
			Factor II
REA	.823	34	Help the parent(s) find transportation for services or meetings if needed
REA	.820	28	Make referrals to professionals such as social workers or family counselors
REA	.798	27	Help the parent(s) get medical care for their child
REA	.756	31	Help the parent(s) fill out forms
@	.658	36*	Help parents to find babysitting or child care
SYS	.625	32	Help the parent(s) obtain services for their child from other programs
PFA	.556	37*	Help the parent(s) with personal problems

(table continues)

Table 8 (continued)
Salient **FFIS** Items for Varimax-Rotated Principal Components
(**Interventionists**, n=73, v=39 - "Often" Subscale)

Exp[a]	Str[b]	No.[c]	Item
@	.554	29	Make referrals to other Early Intervention Programs
REA	.489	33*	Help the parent(s) obtain funding that they are qualified to receive~
			Factor III
PFA	.834	24	Provide information on stress management strategies
PFA	.787	25	Help the parent(s) to take time for themselves
SYS	.672	26*	Assist the parent(s) in getting their spouse or other relatives to help them with their child
PFA	.659	23	Provide family counseling
PFA	.656	22*	Assist the parent(s) in getting help from friends and neighbors~
SYS	.486	30*	Provide opportunities for the parent(s) to participate in parent groups
SYS	.437	38*	Help the parent(s) learn how to deal with the system
			Factor IV
CHI	.827	3	Ask what the parent(s) need for their child
@	.816	2	Ask what parent(s) want for their family
CHI	.633	5*	Talk to the parent(s) about their child's developmental growth
@	.574	6*	Explain why tests are used
PFA	.567	15*	Show interest in hearing about the family
CHI	.550	19	Ask how the parent(s) are coping with their child
			Factor V
CHI	.798	8	Explain the results of tests
FIS	.753	7	Want the parent(s) to be there while their child is being tested
SYS	.513	18	Help the parent(s) prepare for their child's next educational setting

[a]"Exp" = the subscale to which items were assigned by Mahoney, O'Sullivan, and Dennebaum (1990). The "Exp" factors were coded "SYS" = "Systems Engagement"; "CHI" = "Child Information"; "FIS" = "Family Instructional Activities"; "PFA" = "Personal Family Assistance"; "REA" = "Resource Assistance"; [b]"Str" = the factor structure coefficient for the item.

[c]"No." = the number for each scored item on the 1990 version of the FFIS. "*" = item correlated greater than |.40| with more than one factor in the present study. "~" = item associated greater than or equal to |.40| with more than one factor in the Mahoney et al. (1990) study. "@" = items added to 1991 version of FFIS that were not on earlier version used by Mahoney et al. (1990).

Table 9

Concurrent Validity between DP II and EPS

Mothers (n=73)

Scale[a]	MDPTOTL	MDPPHYS	MDPHELP	MDPSOC	MDPACAD	MDPCOM
MEPSTOT	.8657**					
MEPSFINE		.6585**				
MEPSGROS		.7902**				
MEPSHELP			.7918**			
MEPSSOC				.7976**		
MEPSCOG					.6597**	
MEPSCOM						.8453**

[a]Scale MDPTOTL=DP II total, MEPSTOT=EPS total, MDPPHYS=DP II Physical subscale, MEPSFINE=EPS Fine motor subscale, MEPSGROS=EPS Gross motor subscale, MDPHELP=DPII Self-help subscale, MEPSHELP=EPS Self-help subscale, MDPSOC=DP II Social subscale, MEPSSOC=EPS Social subscale, MDPACAD=DP II Academic subscale, MEPSCOG=EPS Cognitive subscale, MDPCOM=DP II Communication subscale, and MEPSCOM=EPS Communication subscale.

** $p < .01$.

Table 10

Concurrent Validity between DP II and EPS

Interventionists (n=73)

Scale[a]	IDPTOTL	IDPPHYS	IDPHELP	IDPSOC	IDPACAD	IDPCOM
IEPSTOT	.8984**					
IEPSFINE		.6629**				
IEPSGROS		.8023**				
IEPSHELP			.8105**			
IEPSSOC				.7731**		
IEPSCOG					.7841**	
IEPSCOM						.8812**

[a]Scale IDPTOTL=DP II total, IEPSTOT=EPS total, IDPPHYS=DP II Physical subscale, IEPSFINE=EPS Fine motor subscale, IEPSGROS=EPS Gross motor subscale, IDPHELP=DPII Self-help subscale, IEPSHELP=EPS Self-help subscale, IDPSOC=DP II Social subscale, IEPSSOC=EPS Social subscale, IDPACAD=DP II Academic subscale, IEPSCOG=EPS Cognitive subscale, IDPCOM=DP II Communication subscale, and IEPSCOM=EPS Communication subscale.

** $p < .01$.

Table 11

Canonical Correlation Analysis - Interventionist Status Measures with Mother Status Measures

Variable	Function I Func	Function I Struc	Function I Sq Str	Function II Func	Function II Struc	Function II Sq Str	Function III Func	Function III Struc	Function III Sq Str
IDPPTOTL[a]	0.4669	0.9600	0.9216	0.9444	0.2108	0.0444	0.1195	0.0625	0.0039
IABILITY[b]	-.0955	-.4947	0.2447	0.4312	0.3961	0.1569	0.9611	0.7272	0.5289
ITTSTOTL[c]	0.0449	0.1160	0.0134	0.2965	0.5626	0.3165	-.4267	-.4424	0.1957
IEPSTOTL[d]	0.4774	0.9702	0.9412	-.6158	-.0463	0.0021	0.4129	0.0759	0.0058
IFRSTOTL[e]	-.0453	-.0504	0.0025	0.5153	0.6604	0.4361	-.2283	-.3254	0.1059
IFNSTOTL[f]	-.1124	-.1540	0.0237	0.1360	0.1771	0.0314	0.0525	-.0447	0.0020
IFFISTOT[g]	-.0679	-.2436	0.0594	0.3423	0.2056	0.0423	-.0254	-.0612	0.0037
Adequacy[1]			0.3152			0.1471			0.1208
Redundancy[2]			0.2821			0.1002			0.0432
R_c^2			0.8949			0.6810			0.3577
Redundancy[3]			0.2889			0.0866			0.0465
Adequacy[4]			0.3229			0.1271			0.1300
MDPPTOTL[h]	0.5130	0.9481	0.8989	1.2314	0.2281	0.0520	-.0534	0.1103	0.0122
MABILITY[i]	-.1081	-.5798	0.3362	0.4771	0.4201	0.1764	0.6799	0.4098	0.1679
MTTSTOTL[j]	-.0637	-.2055	0.0422	0.1922	0.3684	0.1357	-.3816	-.4479	0.2006
MEPSTOTL[k]	0.4187	0.9420	0.8873	-1.0089	-.2054	0.0422	0.5166	0.1559	0.0243
MFRSTOTL[l]	0.0409	0.1228	0.0151	0.1745	0.4365	0.1905	0.2586	0.2525	0.0637
MFNSTOTL[m]	-.0899	0.0736	0.0054	0.2046	0.4149	0.1721	0.1677	0.0901	0.0081
MFFISTOT[n]	-.1646	-.2735	0.0748	-.2287	-.3481	0.1212	0.6010	0.6579	0.4329

(table continues)

Table 11 (continued)

Canonical Correlation Analysis - Interventionist Status Measures with Mother Status Measures

Variable	Function IV Func	Struc	Sq Str	Function V Func	Struc	Sq Str	Function VI Func	Struc	Sq Str
IDPPTOTL[a]	0.9500	0.0525	0.0027	0.2538	-.0408	0.0017	0.0436	0.0349	0.0121
IABILITY[b]	-.2255	-.1305	0.0170	0.0779	0.1082	0.0117	-.1522	-.1914	0.0366
ITTSTOTL[c]	-.7555	-.5943	0.3532	0.4511	0.2236	0.0500	-.3335	-.2665	0.0710
IEPSTOTL[d]	-1.0178	-.0895	0.0080	-.3427	-.1087	0.0118	0.2568	0.0764	0.0058
IFRSTOTL[e]	0.5376	0.3079	0.0948	-.4155	-.4201	0.1765	-.0852	-.2012	0.0405
IFNSTOTL[f]	-.4622	-.4719	0.2227	-.7195	-.7860	0.6178	0.5698	0.1491	0.0222
IFFISTOT[g]	-.0301	0.0975	0.0095	0.2327	0.5316	0.2826	1.0022	0.7571	0.5732
Adequacy[1]			0.1013			0.1642			0.1099
Redundancy[2]			0.0118			0.0131			0.0010
$\underline{R}_c^2$			0.1165			0.0798			0.0091
Redundancy[3]			0.0080			0.0109			0.0008
Adequacy[4]			0.0686			0.1366			0.0879
MDPPTOTL[h]	0.7744	0.0341	0.0012	-.2031	-.0969	0.0094	0.2793	0.0343	0.0012
MABILITY[i]	-.5622	-.2604	0.0678	0.6429	0.4882	0.2383	0.0277	-.0533	0.0028
MTTSTOTL[j]	-.7672	-.5781	0.3342	-.4334	-.3210	0.1031	-.3029	-.4150	0.1722
MEPSTOTL[k]	-1.3532	-.2038	0.0415	0.3564	-.0316	0.0010	-.2736	-.0248	0.0006
MFRSTOTL[l]	0.4944	0.1418	0.0201	-.0355	-.4315	0.1862	-.9628	-.4437	0.1969
MFNSTOTL[m]	-.4566	-.0999	0.0100	-.4978	-.5018	0.2518	0.9887	0.4403	0.1939
MFFISTOT[n]	-.1085	0.0726	0.0527	-.6640	-.4119	0.1696	0.0285	-.1109	0.0123

(table continues)

Table 11 (continued)

Canonical Correlation Analysis - Interventionist Status Measures with Mother Status Measures

Variable	Function VII Func	Struc	Sq Str	h^2
IDPPTOTL[a]	1.9474	0.1562	0.0244	1.00
IABILITY[b]	-.2494	-.0643	0.0041	1.00
ITTSTOTL[c]	-.0596	-.0067	0.0000	1.00
IEPSTOTL[d]	-2.0731	-.1587	0.0252	1.00
IFRSTOTL[e]	-.5958	-.3792	0.1438	1.00
IFNSTOTL[f]	0.3262	0.2831	0.0801	1.00
IFFISTOT[g]	-.1870	-.1713	0.0293	1.00
Adequacy[1]			0.0769	
Redundancy[2]			0.0001	
R_c^2			0.0013	
Redundancy[3]			0.0002	
Adequacy[4]			0.1538	
MDPPTOTL[h]	-1.1543	-.1584	0.0251	1.00
MABILITY[i]	0.0050	-.1021	0.0104	1.00
MTTSTOTL[j]	-.3362	-.1095	0.0120	1.00
MEPSTOTL[k]	0.8437	0.0552	0.0030	1.00
MFRSTOTL[l]	0.5957	0.5723	0.3275	1.00
MFNSTOTL[m]	0.2937	0.5990	0.3588	1.00
MFFISTOT[n]	-.5071	-.4289	0.1840	1.00

[a]Interventionist DP II total score.
[b]Interventionist ABILITIES Index total score.
[c]Interventionist TTS total score.
[d]Interventionist EPS total score.

[e]Interventionist FRS total score.
[f]Interventionist FNS total score.
[g]Interventionist FFIS total score.
[h]Mother DP II total score.
[i]Mother ABILITIES Index total score.
[j]Mother TTS total score.
[k]Mother EPS total score.
[l]Mother FRS total score.
[m]Mother FNS total score.
[n]Mother FFIS total score.
[1]Adequacy coefficient, criterion composite.
[2]Redundancy coefficient, criterion composite.
[3]Redundancy coefficient, predictor composite.
[4]Adequacy coefficient, predictor composite.

Table 12
Discriminant Analysis of Role of Rater[1] with Status Measures

Discriminating Variable	Discriminant Function Coefficient	Structure Coefficient	Squared Structure Coefficient
DPPTOTL[a]	0.34861	-.04607	0.0021
ABILITY[b]	-.16281	-.02521	0.0006
TTSTOTL[c]	0.11413	0.12717	0.0162
EPSTOTL[d]	-.43333	-.14428	0.0208
FRSTOTL[e]	0.52437	0.41131	0.1692
FNSTOTL[f]	-.31312	-.32088	0.1030
FFISTOT[g]	0.77281	0.80067	0.6411
R_c^2			0.36727[2]

[a]DP II total score.
[b]ABILITIES Index total score.
[c]TTS total score.
[d]EPS total score.
[e]FRS total score.
[f]FNS total score.
[g]FFIS total score.
[1]Role of rater = mother or interventionist.
[2]R_c^2 = 1 - Wilk's lambda = (1 - .637248).