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Assessing Family Outcomes: Psychometric Evaluation of the Beach Center Family Quality of Life Scale

There is currently a lack of reliable scales with which to assess the construct of family quality of life, particularly for families who have children with disabilities. The current work presents 2 studies, including a total of 488 families with children with disabilities, which were conducted to complete the development of a scale to assess family quality of life. The measure was refined through confirmatory factor analyses into 25 items that assess 5 domains of Family Quality of Life: Family Interaction, Parenting, Emotional Well-Being, Physical/Material Well-Being, and Disability-Related Support. Each subscale was found to be unidimensional and internally consistent. An initial examination of test-retest reliability and convergent validity is also presented. Implications for future research, scale use, and policy are discussed.

The concept of quality of life is often an important outcome in both research and applied settings but has been difficult to quantify empirically. Research on quality of life has traditionally focused on individuals rather than families (Blake & Anderson, 2000; Chipuer & Bramston, 2003; Holloway & Carson, 2002; Meuleners, Lee, Binns, & Lower, 2003). In the developmental disabilities field, the conceptualization of individual quality of life as a multidimensional construct has matured significantly over the past 20 years (Cummins, 1997; Felce, 1997; Goode, 1997; Schalock et al., 2002), expanding to include such factors as emotional well-being, interpersonal relationships, material well-being, personal development, physical well-being, self-determination, social inclusion, and disability-related rights. Improved individual quality of life is often an important outcome of research interventions and service programs (e.g., Bailey et al., 1998; Dunst & Bruder, 2002; McKenzie, 1999) and thus measures of quality of life are important in demonstrating the effectiveness of policies, programs, or treatments. In many cases, however, the resulting overall quality of life of the family receiving the intervention or services is of interest instead of, or in addition to, the quality of life of the individual. As such, it is important to have an appropriate measure of quality of life when the unit of analysis is the family.

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Key Words: child with disabilities, family interaction, family policy, family resource management.

The increased emphasis on accountability at the federal level has led to a call for identification and measurement of program outcomes. Health, social service, and education programs frequently espouse a *family-centered* approach to practice; consequently, policy makers at the federal level increasingly recognize the importance of including family outcome measures. For example, the Office of Special Education Programs has mandated the measurement of family outcomes for early intervention programs (Early Childhood Outcomes Center, 2005). The concept of family quality of life provides a comprehensive indicator of program outcome that encompasses the broad impacts of services and offers opportunities to compare program effects across different service models.

Although family quality of life has been the topic of previous empirical inquiry, the measures that have been developed thus far have been qualitative in nature (e.g., extensive family interviews; Brown, Anand, Fung, Isaacs, & Baum, 2003) or have been designed for a specific population (e.g., families of adolescents; Olson & Barnes, 1982). On the one hand, a qualitative approach to assessing subjective family well-being has the advantage of providing a grounded theory – based (Strauss & Corbin, 1990) measure that is reflective of the language and voices of the participants, the lengthy administration and level of skill required to interpret the results prohibit use of such a measure in large-scale theoretical or applied research. On the other hand, a measure developed through a theory-based process, such as the Olson and Barnes scale, may exclude essential elements of family quality of life. A quantitative instrument that is grounded in extensive qualitative investigation, that is reasonably efficient, and that has undergone psychometric evaluation would be helpful in evaluating family-level outcomes within both research and applied settings. Additionally, the inclusion of issues in such an instrument that are relevant to families who have children with disabilities would greatly facilitate research and service efforts for families with special needs.

The two studies reported here are from the third phase of an ongoing research program focused on the measurement of family quality of life, particularly for families who have children with disabilities. The overall goal of this program of research is to create an instrument with which to measure family quality of life that is both psychometrically appropriate for use in research studies and practically useful as an evaluation tool for service programs or policy makers. As reported in Poston et al. (2003), the first phase involved qualitative inquiry to develop grounded theory in order to conceptualize and organize the different domains of family quality of life. Families were asked to describe the factors that help things go well and the factors that contribute to difficult times. Items were written to represent the indicators of family quality of life suggested by the qualitative data, resulting in 112 items on the pilot scale designed to measure quality of life for families, including families of children with disabilities.

The second phase included the initial psychometric evaluation of the pilot version of the Beach Center Family Quality of Life Scale (Park et al., 2003). Each item began with the phrase, "in order for my family to have a good life together …" Family members were asked to consider the importance of each item with respect to their overall family life, and then to rate the importance of each item on a 5-point scale, where 1 = *not at all important*, 3 = *somewhat important*, and 5 = *very important*. Exploratory factor and item analyses were conducted to refine the overall scale and reduce the number of items. Because we intended for the scale to be used both as a research tool and as a measure for practical policy or program evaluation, items were removed that received relatively low ratings on importance. Further, because the scale needed to have excellent psychometric properties (e.g., convergent validity, internal consistency), items were also removed that did not share significant common variance with other items. A five-factor solution was accepted that included factors of Family Interaction, Parenting, General Resources, Health and Safety, and Support for Persons with Disabilities, with each factor comprising eight items. Four factors pertain to the general roles of the family as a social unit (e.g., care, protection, socialization of the younger generation), and an additional factor addresses concerns specific to families who have children with disabilities.

The purpose of the current study is to describe the third phase of this research, psychometric evaluation within a confirmatory framework of the factor structure of the Beach Center Family Quality of Life Scale that resulted from the previous exploratory analyses. Two additional studies were conducted to address the following issues. The first issue was the replicability across independent samples of the factor structure obtained through exploratory factor analysis. The second issue was the maintenance of the psychometric behavior of the individual items, given that the wording on some items had been changed somewhat. The third issue concerned encouraging variability among the responses, given that items of low importance had been eliminated. In order to encourage variability of response, the anchors of the items were changed to 1 = *a little important*, 3 = *important*, and 5 = *critically important*. Fourth, because the scale was intended to assess not only importance but also the families' levels of satisfaction with their quality of life, psychometric properties of the instrument for satisfaction responses were also of interest. These concerns needed to be addressed satisfactorily to ensure that the Beach Center Family Quality of Life Scale would be useful for both research and program/policy evaluation purposes. In accordance with these issues, Study 1 was conducted to examine the conceptual and statistical fit of the items within each subscale, and Study 2 was conducted to examine the overall structure of the Beach Center Family Quality of Life Scale and to obtain additional information regarding its psychometric properties, including convergent validity.

STUDY 1

Method

Sampling and Procedure. The sample of families with children with disabilities for Study 1 was recruited through a variety of methods intended to maximize the demographic and geographic diversity across the sample. The sampling procedure is described in detail in Summers et al. (2005) and is summarized here. One method was to present information about the Beach Center Family Quality of Life Scale at national and state meetings of parents, after which audience members completed and returned the booklets. Alternatively, we presented information about the scale during parent meetings of local agencies, after which parents completed the scale and returned it in a sealed envelope. Finally, we supplied copies of the scale to individual programs, which then solicited parent responses. The responses were placed in envelopes and returned by mail. In each case, the confidentiality of the responses was maintained. Data were included from the completed scales in Study 1 only for families with a child with a disability. In total, we obtained respondents from the West (Washington), Midwest (Kansas, Michigan, and Indiana), Northeast (Pennsylvania), and South (North Carolina and Texas).

Participant Description

Individual- and family-level demographic information for the 208 families in Study 1 is displayed in Tables 1 and 2, respectively. Only one respondent was used per family; in the 13 families in which more than one person responded, the mother's responses were used where available ($n = 8$). Respondents consisted of 198 (95%) biological, foster, or adoptive parents (170 mothers, 82% of total sample), 8 (4%) other relatives, and 2 (1%) other nonrelatives. With regard to the child with the disability in the family, 66 (32%) were girls and 142 (68%) were boys. The children's ages in years were as follows: 0 – 4, $n = 85$ (41%); 5 – 12, 81 (39%); 13 – 18, 29 (14%); and 19+, 13 (6%). The reported disabilities included developmental delay, autism spectrum disorder, ADD/ADHD, mental retardation, emotional disorders, learning disabilities, and various physical and health disabilities. Levels of reported disabilities were as follows: mild, $n = 29$ (14%); moderate, 86 (41%); severe, 54 (26%); very severe, 17 (8%); unknown, 19 (9%); with 3 (1%) missing responses.

RESULTS AND DISCUSSION

Analytic Rationale

Initially, we fit single-factor measurement models (i.e., confirmatory factor analyses) for each of the subscales, and we examined the factor loadings and overall model fit. Given the skewness of the items, we used full-information robust maximum likelihood estimation within Mplus 3.13 (Muthén & Muthén, 1998 – 2004) in all factor analyses. We used three indices to evaluate the quality of model fit in the factor analyses: the obtained χ^2, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). The χ^2 value is an index of the extent to which the observed pattern of variances and covariances is accounted for by the system of equations specified in the model. A nonsignificant (small) χ^2 is desirable (i.e., no significant discrepancy between the model and

Table 1. *Participant Individual Demographics*

Variables for Individuals	Study 1 ($N = 208$) *n*	Study 1 ($N = 208$) %	Study 2 ($N = 280$) *n*	Study 2 ($N = 280$) %
Sex				
Female	178	85.6	269	96.1
Male	27	13.0	11	3.9
Missing	3	1.4	0	0.0
Age of respondent				
16 – 20	2	1.0	0	0.0
20s	36	17.3	73	26.1
30s	83	39.9	144	51.4
40s	61	29.3	52	18.6
>50	23	11.0	7	2.5
Missing	3	1.4	4	1.4
Ethnic background				
White Hispanic	2	1.0	8	2.9
White non-Hispanic	154	74.0	221	78.9
American Indian or Alaskan Native	4	1.9	6	2.1
Asian or Pacific Islander	9	4.3	7	2.5
Black or African American	27	13.0	8	2.9
Other	7	3.4	26	9.3
Missing	5	2.4	4	1.4
Marital status				
Living with a partner (option for Study 2 only)			17	6.1
Married	147	70.7	219	78.2
Widowed	3	1.4	2	0.7
Divorced	21	10.1	15	5.4
Separated	9	4.3	11	3.9
Never married	26	12.5	12	4.3
Missing	2	1.0	4	1.4
Educational background				
No high school diploma or GED	23	11.0	16	5.7
High school graduate (diploma or GED)	35	16.8	54	19.3
Some college but no degree	48	23.1	81	28.9
Associate degree (AA, AS, etc.)	18	8.7	24	8.6
Bachelor's degree (BA, BS, etc.)	59	28.4	67	23.9
Graduate degree	24	11.5	31	11.1
Missing	1	0.5	7	2.5

the data). This is often difficult to achieve, however, because the χ^2 values increase as a function of sample size. Therefore, we used additional practical indices to assess fit. The CFI is a measure of goodness of fit, where values above .90 or .95 indicate acceptable and excellent fit, respectively. The RMSEA is a measure of lack of fit, where values below .08 or .05 indicate acceptable and excellent fit, respectively (see Loehlin, 1998, for a more thorough treatment).

Following the confirmatory analyses, we used the results to conduct item analyses within each of the five domains. We adopted four criteria, two conceptual and two statistical, to identify any problematic items and to make each subscale as efficient as possible. First, because we intend for the scale to address aspects of family life considered important for overall family quality of life, we once again removed items if they were not evaluated as sufficiently important (our criterion was a mean greater than 4 on our 5-point scale). Second, we considered the content of each item for potential ambiguity. Third, we eliminated items with low loading on a factor or for

Table 2. *Participant Family Demographics*

	Study 1 ($N = 208$)		Study 2 ($N = 280$)	
Variables for Individuals	*n*	%	*n*	%
Total household income				
Less than $13,999	31	14.9	27	9.6
Between $14,000 and $17,999	14	6.7	19	6.8
Between $18,000 and $21,999	11	5.3	17	6.1
Between $22,000 and $26,999	12	5.8	14	5.0
Between $27,000 and $34,999	19	9.1	35	12.5
Between $35,000 and $41,999	15	7.2	21	7.5
Between $42,000 and $54,999	25	12.0	27	9.6
Between $55,000 and $64,999	18	8.7	16	5.7
Between $65,000 and $74,999	18	8.7	27	9.6
Over $75,000	37	17.8	55	19.6
Missing	8	3.8	22	7.9
Community type				
Large city or metropolitan area (>200,000)	58	27.9	69	24.6
Urbanized area (50,000 – 200,000)	34	16.3	63	22.5
Town or small city (2,500 – 50,000)	86	41.3	99	35.4
Rural area or town (<2,500)	27	13.0	37	13.2
Missing	3	1.4	12	4.3

loading on more than one factor. Fourth, we examined items for problems with internal consistency (i.e., high alpha-if-deleted levels) using Cronbach's alpha (α), in which a value above .80 is considered acceptable. We then examined the model fit after these modifications.

We report the model fit statistics subsequently, first for the models rating importance and then for the models using satisfaction. We also note possible modifications arising from these results.

Importance Ratings by Subscale

Family Interaction. Model fit for the eight items was excellent, $\chi^2(20) = 25.26$, $p = .19$, CFI = .99, RMSEA = .04, $\alpha = .89$. Two items with relatively high alpha-if-deleted levels and low factor loadings, and whose content was only marginally related to family interaction, were eliminated. The measurement model for the remaining six items had excellent fit, $\chi^2(9) = 8.26$, $p = .51$, CFI = 1.00, RMSEA = .00, $\alpha = .87$; mean importance ratings ranged from 4.2 to 4.7.

Parenting. Model fit for the eight items was moderate, $\chi^2(20) = 50.66$, $p < .001$, CFI = .93, RMSEA = .09, $\alpha = .89$. Two items were eliminated: one item with a mean importance rating below 4 and another item with relatively high alpha-if-deleted levels and low factor loadings. The measurement model for the remaining six items had excellent fit, $\chi^2(9) = 6.80$, $p = .66$, CFI = 1.00, RMSEA = .00, $\alpha = .86$; mean importance ratings ranged from 4.2 to 4.7.

General resources. Model fit for the eight items was moderate, $\chi^2(20) = 34.44$, $p = .02$, CFI = .95, RMSEA = .06, $\alpha = .81$. Two items with mean importance ratings below 4, relatively high alpha-if-deleted levels, and low factor loadings were eliminated. Examination of the content and interitem correlations of the remaining six items suggested that the items addressed two distinct resources: emotional and material. Therefore, we modified this domain as discussed below.

Health/Safety. Although model fit for the eight items was excellent, $\chi^2(20) = 21.92$, $p = .34$, CFI = 1.00, RMSEA = .02, $\alpha = .88$, the content of this subscale was not sufficiently balanced in that it included seven health-related items and only one safety-related item. Upon further reflection, we decided that seven questions focused solely on health issues were overly specific relative to the more general nature of the items in the other domains (i.e., a "bloated specific") and inconsistent with our overall goal of measuring *general* family quality of life. Therefore, we reduced the number of health items and modified this domain as discussed below.

Modifications for general resources and Health/safety. Given the concerns noted above, we reorganized the items from these two subscales to make each more internally consistent, unidimensional, and parsimonious. Four items from the former General Resources subscale that addressed social support and stress relief formed a new factor, Emotional Well-Being, which had excellent model fit, $\chi^2(2) = 1.69$, $p = .43$, CFI = 1.00, RMSEA = .00, $\alpha = .79$; mean importance ratings ranged from 4.1 to 4.4. Two health items and the lone safety item from the former Health/Safety subscale were combined with two items assessing material well-being from the former General Resources subscale to form a new factor, Physical/Material Well-Being. Model fit for these five items was excellent, $\chi^2(5) = 6.58$, $p = .25$, CFI = .99, RMSEA = .04, $\alpha = .81$; mean importance ratings ranged from 4.3 to 4.7.

Disability-Related Support (formerly named Support for Persons with Disabilities). Model fit for the eight items was unacceptable, $\chi^2(20) = 57.04$, $p < .001$, CFI = .85, RMSEA = .10, $\alpha = .86$, suggesting that the items in this domain do not appear to reflect a unidimensional latent factor. Examination of the interitem correlations revealed several pairs of items with correlations greater than .8, an indication of substantial overlap. After eliminating four redundant items, the measurement model for the remaining four items had excellent fit, $\chi^2(2) = 3.35$, $p = .18$, CFI = .99, RMSEA = .06, $\alpha = .79$; mean importance ratings ranged from 4.4 to 4.7.

Satisfaction Ratings by Subscale

We used the modified domains suggested from the importance ratings to analyze the satisfaction ratings. For Family Interaction, the 6-item model had excellent fit: $\chi^2(9) = 10.07$, $p = .34$, CFI = 1.00, RMSEA = .03, $\alpha = .85$; mean satisfaction ratings ranged from 3.6 to 4.3. For Parenting, the 6-item model had moderate fit: $\chi^2(9) = 22.95$, $p < .01$, CFI = .92, RMSEA = .09, $\alpha = .81$; mean satisfaction ratings ranged from 3.7 to 3.9. For Emotional Well-Being, the 4-item model had excellent fit, $\chi^2(2) = 3.84$, $p = .14$, CFI = .99, RMSEA = .07, $\alpha = .83$; mean satisfaction ratings ranged from 2.9 to 3.4. For Physical/Material Well-Being, the 5-item model had moderate fit, $\chi^2(5) = 14.63$, $p = .01$, CFI = .88, RMSEA = .10, $\alpha = .64$; mean satisfaction ratings ranged from 3.5 to 4.4. Finally, for Disability-Related Support, the 4-item model had moderate fit, $\chi^2(2) = 4.06$, $p = .13$, CFI = .98, RMSEA = .08, $\alpha = .70$; mean satisfaction ratings ranged from 3.2 to 4.3.

The results of Study 1 can be summarized as follows. First, the subscales of Family Interaction and Emotional Well-Being appear to be unidimensional and internally consistent with regard to both importance and satisfaction ratings. Second, although the subscales of Parenting and Disability-Related Support appear to be unidimensional and internally consistent with regard to importance ratings, they are less so with regard to satisfaction ratings. Finally, although the subscale of Physical/Material Well-Being appears to be unidimensional and internally consistent with regard to importance ratings, this does not appear to be the case for satisfaction ratings. This suggests that participants were not uniformly satisfied with each indicator within this subscale.

STUDY 2

The purposes of Study 2 were (a) to examine the extent to which the psychometric properties of the five revised subscales in Study 1 would be replicated in an additional sample, (b) to examine the model fit of the overall Beach Center Family Quality of Life Scale, and (c) to obtain additional information about the reliability and convergent validity of the overall scale with regard to the measurement of family quality of life.

METHOD

Measures

Beach Center Family Quality of Life Scale. The revised instrument resulting from Study 1 was administered, consisting of 25 items across five subscales: Family Interaction, Parenting, Emotional Well-Being, Physical/Material Well-Being, and Disability-Related Support. The same response options were used in Study 2 as in Study 1.

Convergent validity measures. The closest existing measure to the Beach Center Family Quality of Life Scale appeared to be the Olson and Barnes (1982) Quality of Life Scale. Closer inspection, however, found this scale to have more emphasis on family financial well-being and community or neighborhood concerns, and no items related to disability concerns in families. Further, this scale was developed specifically to focus on families of adolescents. We therefore chose two other existing scales, each approximating one or more of the subscales of the Beach Center Family Quality of Life Scale. The first measure, the Family APGAR (Smilkstein, Ashworth, & Montano, 1982), is a 5-item measure assessing satisfaction with aspects of family interaction and support. It is used in health care and rehabilitation settings with individuals with health problems or disabilities (see Hunter et al., 2003). We selected this measure because of its brevity, its relevance to the Beach Center Family Quality of Life subscale of Family Interaction, its acceptable reliability ($\alpha = .80 - .85$), and its evidence for convergent validity (e.g., significant correlations with the Pless-Satterwhite Index and the FACES [Family Adaptability and Cohesion Scale] Cohesion Scale).

The second convergent validity measure selected was the Family Resource Scale (Dunst & Leet, 1985). This measure was initially developed for use with families of children with disabilities. It contains items that are similar to the Physical Well-Being and Emotional Well-Being subscales of the Beach Center Family Quality of Life Scale. The Family Resource Scale has shown acceptable levels of reliability ($\alpha = .92$) and evidence for convergent validity (e.g., significant correlations with measures of general well-being and maternal commitment; Dunst & Leet, 1985, 1987; Dunst, Trivette, & Deal, 1988).

Sampling and Procedure

Stratified sampling was used to select families who have children with disabilities from early childhood programs and agencies in four regions of a Midwestern state. We selected 30 Part B programs (serving preschool children with disabilities aged 3 – 5 years) and Part C programs (serving families of infants and toddlers with disabilities aged 0 – 2 years) with respect to both geographic (i.e., urban, suburban, and rural locations) and ethnic diversity. Of the 13 programs that expressed interest in participating, four programs provided services to children aged 0 – 5 years, four served children aged 0 – 2 years, and five served children aged 3 – 5 years. Copies of the scale and postage-paid envelopes were then mailed to participating agencies for distribution to the parents. To investigate the convergent validity, the Family APGAR and the Family Resource Scale were also administered to separate subsamples of participants. To assess test-retest reliability, the Beach Center Family Quality of Life Scale was readministered to an additional subsample of participants 3 months after the first administration.

Participant Description

Individual- and family-level demographic information for the 280 families in Study 2 is displayed in Tables 1 and 2, respectively. Only one respondent was used per family; in the 129 families in which more than one person responded, the mother's responses were used where available (n = 120). Respondents included 265 (95%) biological, foster, or adoptive parents (257 mothers, 92% of total sample), 6 (2%) other relatives, and 2 (1%) other nonrelatives, with 7 (3%) missing responses. With regard to the children with disabilities whose families were sampled, there were 91 (33%) girls and 179 (64%) boys, with 10 (4%) missing responses. Ages of the children in years were as follows: 0 – 4, 187 (67%); 5 – 12, 82 (29%); with 12 (4%) missing responses. The reported disabilities were as reported in Study 1. Levels of disabilities were as follows: mild, n = 143 (51%); moderate, 57 (20%); severe, 25 (9%); very severe, 8 (3%); unknown, 34 (12%); with 13 (5%) missing responses. As seen in Tables 1 and 2, the sample for Study 2 differed from that of Study 1 in several respects. The sample for Study 2 included a larger proportion of women, a smaller age range with mostly younger children, and more children with less severe disabilities.

RESULTS AND DISCUSSION

Importance Ratings by Subscale

Single-factor measurement models were first estimated separately for importance ratings of items within each subscale. All of the subscales had good to excellent fit. The 6-item model for Family Interaction had excellent fit, $\chi^2(9) = 9.80$, $p = .41$, CFI = 1.00, RMSEA = .01, $\alpha = .92$; mean importance ratings ranged from 4.4 to 4.7. The 6-item model for Parenting had good fit, $\chi^2(9) = 27.71$, $p < .001$, CFI = .94, RMSEA = .09, $\alpha = .88$; mean importance ratings ranged from 4.2 to 4.6. The 4-item model for Emotional Well-Being had excellent fit, $\chi^2(2) = 3.27$, $p = .19$, CFI = .99, RMSEA = .05, $\alpha = .80$; mean importance ratings ranged from 4.2 to 4.4. The 5-item model for Physical/Material Well-Being had excellent fit, $\chi^2(5) = 3.06$, $p = .69$, CFI = 1.00, RMSEA = .00, $\alpha = .88$; mean importance ratings ranged from 4.5 to 4.7. Finally, the 4-item model for Disability-Related Support had excellent fit, $\chi^2(2) = 5.05$, $p = .08$, CFI = .98, RMSEA = .08, $\alpha = .92$; mean importance ratings ranged from 4.5 to 4.6.

Satisfaction Ratings by Subscale

Single-factor measurement models were first estimated separately for satisfaction ratings of items within each subscale. All of the subscales had excellent fit. The 6-item model for Family Interaction had excellent fit, $\chi^2(9) = 16.42$, $p = .06$, CFI = .98, RMSEA = .06, $\alpha = .90$; mean satisfaction ratings for items ranged from 4.0 to 4.5. The 6-item model for Parenting had excellent fit, $\chi^2(9) = 8.24$, $p = .51$, CFI = 1.00, RMSEA = .00, $\alpha = .86$; mean satisfaction ratings ranged from 4.1 to 4.3. The 4-item model for Emotional Well-Being had excellent fit, $\chi^2(2) = .91$, $p = .63$, CFI = 1.00, RMSEA = .00, $\alpha = .84$; mean satisfaction ratings ranged from 3.7 to 3.8. The 5-item model for Physical/Material Well-Being had excellent fit, $\chi^2(5) = 3.70$, $p = .60$, CFI = 1.00, RMSEA = .00, $\alpha = .74$; mean satisfaction ratings ranged from 4.0 to 4.6. Finally, the 4-item model for Disability-Related Support had excellent fit, $\chi^2(2) = 3.50$, $p = .17$, CFI = .99, RMSEA = .05, $\alpha = .85$; mean satisfaction ratings ranged from 4.3 to 4.5.

Overall Beach Center Family Quality of Life Scale Structure for Importance Ratings

Although the analyses described above examined the measurement model for each factor separately, it is also important to examine the fit of the factor analytic model for the scale when all factors are included in the analysis simultaneously. We estimated both item-level models and subscale-only models, as shown in Figure 1, to assess the fit of the total Beach Center Family Quality of Life Scale structure.

The subscale-only model (top of Figure 1). Using only the subscale mean scores for each respondent, the model includes a single, first-order factor of Family Quality of Life. The indicators for this factor are the subscale means calculated from the set of items for each of the five separate subscales. This subscale-level model had excellent fit, $\chi^2(5) = 4.06$, $p = .54$, CFI = 1.00, RMSEA = .00, $\alpha = .94$.

The item-level model (bottom of Figure 1). This is a more complex model; it uses the item scores for each respondent. Each of the five subscales is considered to be a first-order latent factor, each measured by its four to six items. The construct of Family Quality of Life is modeled as a single, second-order latent factor; its indicators are the five first-order latent factors. Table A1 provides each item, along with the standardized loadings and error variances both the item-level and subscale-only factor models for importance ratings. This item-level model had acceptable fit, $\chi^2(270) = 644.63$, $p < .001$, CFI = .87, RMSEA = .07.

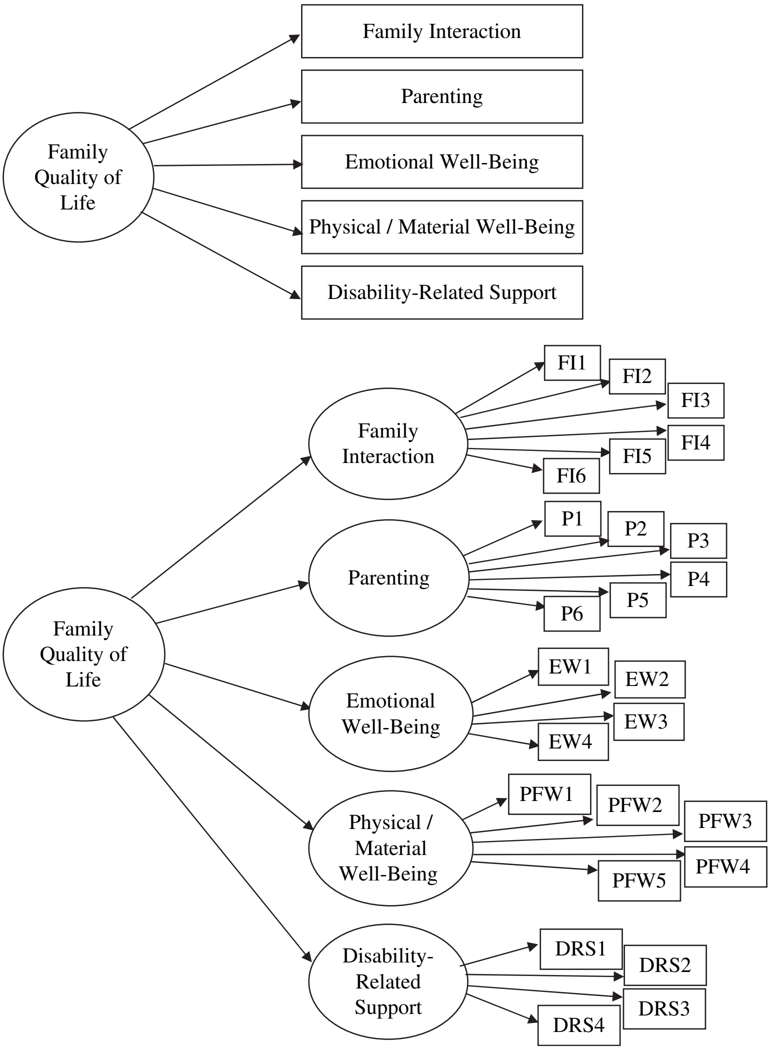
Overall Beach Center Family Quality of Life Scale Structure for Satisfaction Ratings

The subscale-only model had excellent fit for satisfaction ratings, $\chi^2(5) = 9.13$, $p = .10$, CFI = .99, RMSEA = .06, $\alpha = .88$. The item-level overall family quality of life structure had good fit for satisfaction ratings, $\chi^2(270) = 439.24$, $p < .001$, CFI = .92, RMSEA = .05. The standardized loadings and error variances for both the item-level and subscale-only factor models for satisfaction ratings are also provided in Table A1.

Convergent Validity and Test-Retest Reliability

We examined the extent to which the Beach Center Family Quality of Life subscales correlated with related existing measures within subsamples of participants. The Family APGAR, a 5-item measure of family functioning, was significantly correlated with the satisfaction mean for the Family Interaction subscale, $r(87) = .68$, $p < .001$. Similarly, the Family Resource Scale, a 30-item measure of family resources, was significantly correlated with the mean of the five items on the Physical/Material Well-Being subscale, which was most similar in content to the Family Resource Scale, $r(58) = .60$, $p < .001$.

FIGURE 1. FINAL SUBSCALE-ONLY AND ITEM-LEVEL STRUCTURES OF THE BEACH CENTER FAMILY QUALITY OF LIFE SCALE.



We then examined test-retest reliability in both importance and satisfaction responses for each of the family quality of life subscales. All correlations were significant at the .01 level or beyond (*df* from 59 to 63). For importance, the correlations between time points were .54 for Family Interaction, .66 for Parenting, .69 for Emotional Well-Being, .41 for Physical/Material Well-Being, and .82 for Disability-Related Support. For satisfaction, the correlations between time points were .74 for Family Interaction, .70 for Parenting, .75 for Emotional Well-Being, .77 for Physical/Material Well-Being, and .60 for Disability-Related Support.

GENERAL DISCUSSION

Summary of Findings

The general purpose of this research was to assess the psychometric characteristics of a new measure of family quality of life. The measure was initially developed from qualitative inquiry of the perceptions of families of children and youth with disabilities about the meaning of family quality of life (Poston et al., 2003). In the second phase of research, a statistical model of the qualitatively derived items was developed using exploratory factor analysis to reduce the data and form subscales (Park et al., 2003). The current work, encompassing the third phase of research and development, reports the results of two studies designed to confirm and refine the factor structure as well as to evaluate further the validity and reliability of the inferences made from the Beach Center Family Quality of Life Scale.

Psychometric analysis provided support for a five-factor solution of Family Interaction, Parenting, Emotional Well-Being, Physical/Material Well-Being, and Disability-Related Support. Separate models of the items for each factor (i.e., the single-factor measurement models) had good to excellent fit for both importance and satisfaction ratings. The overall scale structure (as evaluated by the subscale-level models) had excellent fit for both importance and satisfaction ratings. Both convergent validity measures were significantly correlated with their hypothesized subscales of the Beach Center Family Quality of Life Scale (Family APGAR to the Family Interaction subscale, Family Resource Scale to the Physical Well-Being subscale). Finally, test-retest reliability correlations were significant across subscales for importance and satisfaction ratings.

Limitations and Implications for Future Research

Sample diversity. A common concern for researchers is the extent to which respondents participating in the scale development are a representative sample of the population with which the scale will be used in the future. With respect to race/ethnic diversity, the 2000 U.S. census reports 69.1% White non-Hispanic adults and 28.6% non-White racial groups, with 2.4% nonrespondents (U.S. Census Bureau, 2000). Our sample had somewhat more White, non-Hispanics. Study 1 had 74% White, non-Hispanic, 23.6% non-White, and 2.4% missing. Study 2 had 79% White, non-Hispanic, 19.7% non-White, and 1.4% missing. Regarding income, the distributions of income are relatively the same in both studies (see Table 1) and do not appear different from the U.S. population. The proportion of families in the lower income group (less than $35,000 per year) is very similar to that reported by the U.S. Census Bureau. Study 1 had 42% in the lower group and Study 2 had 40%, whereas the U.S. value was 41.5%. Correspondingly, the proportions of families in the middle income group ($35,000 – $75,000) in the two samples were also similar to the U.S. population. Study 1 had 37% in this group and Study 2 had 32%, whereas the U.S. population was 36.0%. Altogether, the socioeconomic status of respondents in our study appears comparable to that of the U.S. population.

Applicability for specific populations. The samples on which the Beach Center Family Quality of Life Scale was developed did not contain sufficient numbers of persons from specific cultural groups to examine the invariance of the factor structure within these groups. Accordingly, although it would be appropriate to use the instrument with a general sample of U.S. families with children with disabilities, it has not yet been established that the factor structure reported here would be replicable for specific groups, such as Hispanic families or low-income families. Multiple-group confirmatory factor analyses should be conducted with sufficiently large samples to evaluate factorial invariance within specific groups.

Besides ethnic background and income level, the limitations of the current samples with regard to the characteristics of the child with a disability must also be considered. Given that the goal of the current work was to develop a general instrument for use with families of children of varying ages and disability types and severity, we constructed our samples accordingly. Although the children of the families in the current samples ranged in parent-reported type and severity of disability, most families had children with disabilities who were younger than 12 years. Accordingly, the extent to which the Beach Center Family Quality of Life Scale would be appropriate for children with specific types of disability or for older children and young adults should be evaluated in future work, as should the extent to which the scale would be appropriate for families of children without disabilities, although without the Disability-Related Support subscale. In addition, the current samples were comprised predominantly of mothers, and only one response from each family was analyzed. Factorial invariance has been found, however, across mothers and fathers in a separate investigation (Wang et al., 2006), suggesting that the same inferences from the Beach Center Family Quality of Life Scale can be drawn for mothers as for fathers. Finally, because potential respondents may choose to participate or not for reasons related to the issues under investigation, bias resulting from to selective response is always a potential concern.

Lack of variance in responses to importance. Another consideration is the extent to which the psychometric properties of the Beach Center Family Quality of Life Scale might be compromised by lack of variability in the responses. Factor analyses are generally most appropriate for stable characteristics such as personality traits, attitudes, and values, which is the type of information sought when asking about the importance of each item with regard to quality of life. In refining the Beach Center Family Quality of Life Scale to be of practical use, however, we sought to make it as efficient as possible by purposefully eliminating items rated relatively low in importance, such that only indicators most relevant to quality of life remained. The consequence of this refinement is a restriction in the range of responses (e.g., in Study 2, the range for the item means on importance was 4.1 – 4.7 out of 5), which, in turn, limits the strength of the observed correlations and the quality of model fit. Despite the lack of range in the responses, the scale nevertheless exhibited excellent psychometric properties.

Convergent validity. Although convergent validity analyses were conducted for some of the subscales, they were not conducted for all subscales or for the overall scale. Unfortunately, it was difficult to find other quantitative measures with which to relate the full scale or some of the subscales. Future research should assess the relationships of the Beach Center Family Quality of Life Scale and/or its subscales to other similar instruments if appropriate measures or methods are determined. For example, convergence could perhaps be assessed through comparisons with samples assessed using qualitative measures such as the Ecocultural Family Interview (Weisner, Coots, Bernheimer, & Nihira, 1997) or the Family Quality of Life Survey developed by Brown et al. (2003). Also, the psychometric behavior of the four nondisability subscales of the Beach Center Quality of Life Scale should be examined within a nondisability sample and should be compared to a scale developed for families of typically developing adolescents (e.g., Olson & Barnes, 1982).

Implications for Scale Use

An important issue in future uses of the scale concerns the reliability with which a single family member's report can be used to assess an entire family's quality of life. Although mother's responses were used predominantly in the current studies, this need not be the case. Instead of basing inferences about a family on the report of only one person, it would instead be desirable to obtain responses from multiple family members to the greatest extent possible. Although one could aggregate responses across family members to create a single score for each family, such aggregation artificially eliminates within-family discrepancies that could be informative in and of themselves. A better approach would be to make use of statistical analyses such as multilevel models or structural equation models that allow multiple responses per family to be included without the reduction of information resulting from aggregation. A second issue to consider in future uses of the scale is how to account best for the combination of importance and satisfaction ratings. Would inferences about families differ when satisfaction ratings are weighted by importance ratings? If so, how and under what circumstances should the weighting be done? Exploration of these and other issues is currently ongoing.

Implications for Family Theory and Policy

Implications for family theory, and specifically for family systems theory, lie in the identified factors for the Beach Center Family Quality of Life Scale. The domains of Family Interaction and Parenting concern family processes or the interactions among the family members that contribute to a subjective sense of family well-being. The other domains of Physical/Material Well-Being, Emotional Well-Being, and Disability-Related Support may be conceptualized as resources (i.e., material resources, family/friends social support, and service provider support), which may contribute to results seen in the Family Interaction and Parenting domains. Family systems theory posits that families and other complex systems utilize inputs and process them to seek goals (Broderick, 1993). Other theorists suggest that processes involved in interaction (e.g., developing cohesion and adaptability; Olson et al., 1983) are the central dimensions leading to balanced families. Future research focusing on the relationships among the five domains may shed more light on the dynamics of families and how resources contribute to family interactions. Investigations of resilience might also reveal to what extent social supports related to emotional well-being might mitigate lower levels of physical/material resources.

With regard to family policy, the Beach Center Family Quality of Life Scale as an outcome measure has multiple potential contributions. As noted earlier, the increased emphasis on accountability at the federal level requires a means with which to assess family outcomes economically. There is some question as to extent to which family quality of life is an appropriate outcome measure for family services such as parenting education, counseling, or family support programs as some have suggested the construct is too broad and subjective to be sensitive to interventions (Bailey, Scarborough, Hebbeler, Spiker, & Mallik, 2004; Bruder, 2000). A recent study (Summers et al., in press) found that parents' ratings of adequacy of services received for their child and for themselves was predictive of their family quality of life; moreover, the effect of services was partially mediated by the perceived quality of the partnership with the service provider. Although this early finding requires replication and expansion into other types of services, it provides promising evidence that family quality of life may indeed serve as an appropriate outcome measure for services and service provision. If such a promise can be sustained, family quality of life as a construct amenable to service programs has implications for policy makers.

Conclusions

The current work describes the evaluation of the psychometric properties of the Beach Center Family Quality of Life Scale. This scale was designed for use with families of children with disabilities to assess families' perceptions of the importance of different aspects of family quality of life, as well as their level of satisfaction with their own family's quality of life. The scale was refined on the basis of two empirical studies. The final version of the scale includes 25 items capturing five domains of family life: Family Interaction, Parenting, Emotional Well-Being, Physical/Material Well-Being, and Disability-Related Support. Each of the five subscales was shown to be unidimensional and internally consistent. The Beach Center Family Quality of Life Scale has the potential to serve as a research tool to explore some of the dimensions of family dynamics. Further, it has the potential as an outcome measure for applied research to explore the effects of family-oriented services and policies.

NOTE

The findings reported here are based on research conducted as part of a Core Research Study of the Beach Center on Disabilities, a Rehabilitation Research and Training Center funded by the National Institutes of Disability and Rehabilitation Research, U.S. Department of Education, under Grant H133B980059 to the University of Kansas, and by an endowment from Ross and Marianna Beach to the University of Kansas. The overall research was a collaborative effort involving numerous contributions from a variety of people, and we are grateful for their contributions. Information about obtaining permission and copies of the Beach Center Family Quality of Life Scale can be obtained from the Beach Center Web site www.beachcenter.org, contact: Denise Poston.

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Table A1. *Beach Center Family Quality of Life Scale Items—Standardized Solution From the Item-Level Model and Subscale-Level Models in Study 2*

For my family to have a good life together …	Importance		Satisfaction	
How important is it that … How satisfied am I that …	Loading	Error Variance	Loading	Error Variance
Item-level model				
Family Interaction	0.988	0.024	0.879	0.227
My family enjoys spending time together	0.774	0.401	0.666	0.556
My family members talk openly with each other	0.830	0.311	0.801	0.358
My family solves problems together	0.793	0.371	0.824	0.321
My family members support each other to accomplish goals	0.825	0.319	0.809	0.346
My family members show that they love and care for each other	0.851	0.276	0.768	0.410
My family is able to handle life‘s ups and downs	0.797	0.365	0.750	0.438
Parenting	0.989	0.022	0.998	0.004
Family members help the children learn to be independent	0.739	0.454	0.636	0.596
Family members help the children with schoolwork and activities	0.762	0.419	0.700	0.510
Family members teach the children how to get along with others	0.804	0.354	0.679	0.539
Adults in my family teach the children to make good decisions	0.868	0.247	0.784	0.385
Adults in my family know other people in the children’s lives (i.e., friends, teachers)	0.609	0.629	0.660	0.564
Adults in my family have time to take care of the individual needs of every child	0.807	0.349	0.779	0.393
Emotional Well-Being	0.906	0.179	0.852	0.274
My family has the support we need to relieve stress	0.799	0.362	0.848	0.281
My family members have friends or others who provide support	0.713	0.492	0.758	0.425
My family members have some time to pursue their own interests	0.750	0.438	0.714	0.490
My family has outside help available to us to take care of special needs of all family members	0.628	0.606	0.685	0.531
Physical/Material Well-Being	0.954	0.090	0.793	0.371
My family gets medical care when needed	0.791	0.374	0.621	0.614
My family gets dental care when needed	0.716	0.487	0.633	0.599
My family members have transportation to get to the places they need to be	0.781	0.390	0.569	0.676
My family has a way to take care of our expenses	0.787	0.381	0.793	0.371
My family feels safe at home, work, school, and in our neighborhood	0.875	0.234	0.484	0.766
Disability-Related Support	0.875	0.234	0.659	0.566
My family member with special needs has support to make progress at school or workplace	0.872	0.240	0.753	0.433
My family member with special needs has support to make progress at home	0.935	0.126	0.848	0.281
My family member with special needs has support to make friends	0.852	0.274	0.836	0.301
My family has a good relationship with the service providers who work with our family member with a disability	0.796	0.366	0.650	0.578
Subscale-level model[a]				
Family Interaction	0.942	0.113	0.839	0.296
Parenting	0.939	0.119	0.919	0.155
Emotional Well-being	0.833	0.307	0.791	0.374
Physical/Material Well-being	0.893	0.203	0.694	0.518
Disability-Related Support	0.824	0.321	0.617	0.619

[a] The items from each of the five subscales (as listed above) may be averaged to reflect the observed score for each subscale, and an observed score of overall family quality of life may be derived from averaging across the five subscales. Alternatively, a latent construct of family quality of life may be represented via the second-order factor model presented here.