

Assessing Psychological Well-Being in Mothers of Children with Disability: Evaluation of the Parenting Morale Index and Family Impact of Childhood Disability Scale

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Objective Process model of stress and coping guided psychometric assessment of two brief measures of psychological well-being: Parenting Morale Index (PMI); Family Impact of Childhood Disability (FICD) scale. **Methods** Canadian mothers ($N = 195$) of children with disability (CWD) completed PMI, FICD, and validation measures (Brief Family Assessment Measure [FAM], Personal Well-Being Index, Positive and Negative Affect Schedule, General Self-Efficacy Scale, Social Desirability Scale) via computer-assisted telephone interview. Of these, 154 completed additional validation measures (Center for Epidemiological Studies—Depression Scale, Parenting Stress Index, Family Hardiness Index, Brief FAM) 1 year later.

Results Factor structures of PMI and FICD were supported; both demonstrated internal consistency, temporal stability, and convergent and discriminant validity. After 1 year, PMI and FICD jointly predicted depressive symptoms, parenting stress, family hardiness, and family adjustment. **Conclusion** PMI and FICD can identify mothers of CWD at risk for poor psychological well-being to increase the specificity of supports.

Key words adjustment; children; coping skills; developmental disabilities; family functioning; parents; psychosocial functioning.

Accurately identifying mothers of children with disability (CWD) who are at greater risk for poor psychological well-being creates an opportunity to increase the specificity of supports, and has the potential to improve outcomes for mothers and CWD. Disability is defined as a long-term motor, language, adaptive/cognitive, or personal/social impairment (McDougall & Miller, 2003). Childhood disability often imposes a social and emotional burden for children and their families (Farmer, Marien, Clark, Sherman, & Selva, 2004; Webster, Majnemer, Platt, & Shevell, 2008), including considerable costs for health and social services (Newacheck, Inkelas, & Kim, 2004). Collectively, parents of CWD are often resilient in the face of managing their child (Flaherty & Masters

Glidden, 2000; Glidden & Schoolcraft, 2003; Hastings, Beck, & Hill, 2005; Scorgie & Sobsey, 2000). However, the process model of stress and coping (Lazarus & Folkman, 1984) suggests that some subgroups may be at greater risk for clinically significant psychological distress (Baker, Blacher, & Olsson, 2005; Brehaut et al., 2004; Mulvihill et al., 2005; Neely-Barnes & Marcenko, 2004; Plant & Sanders, 2007; Smith, Oliver, & Innocenti, 2001; Webster et al., 2008) and impaired coping (Grant & Whittell, 2000; Patenaude & Kupst, 2005).

The process model of stress and coping posits that a stressor (i.e., CWD) is mediated by coping resources and cognitive appraisal of the stressor to predict adaptation (Lazarus & Folkman, 1984). Park (1998) provides a

review of the model that suggests internal coping resources (i.e., parenting morale; Trute & Hiebert-Murphy, 2005) and cognitive appraisal (i.e., perceptions of the impact of the CWD on the family; Trute, Hiebert-Murphy, & Levine, 2007) predict adaptation (i.e., psychological well-being). For the purpose of this article, psychological well-being includes depression, parenting stress, family resilience, and family adjustment. Unless there is a heritable component to the child's disability, most of the time, families of CWD are typical families with a special child (Seligman & Darling, 1997). These families have diverse adaptational profiles (Ferguson, 2002), and therefore diverse needs for additional supports and services to care for the child (Farmer et al., 2004). While it is acknowledged that CWD live in, and are cared for by families, typically mothers are the primary caregiver and are therefore the focus of this study.

With current measures, it is difficult to identify early in the child's interaction with service providers those mothers whose psychosocial well-being will enable them to mobilize their own internal coping resources to provide care for their child, and those who will require additional intensive emotional and social supports. Most often the initial assessment to access child disability services is based on an open-ended interview between the family and a service coordinator (Summers et al., 1990). These interviews may be time consuming and are generally without a standard protocol. When standardized maternal and family assessment measures are used, they tend to be long with limited immediate relevance to service planning. Some mothers find these measures inconvenient and inconsistent with their experiences and needs (Slentz & Bricker, 1992). Thus, assessments can vary greatly in the quantity and quality of information upon which to base decisions about service requirements. The end result may be a mismatch between needs and the services provided (Krauss, Wells, Gulley, & Anderson, 2001). While it is clear that standardized approaches to assessment at intake to services are needed, brief and psychometrically sound measures are not readily available. The overall aim of this study was to assess the psychometric properties of two brief measures of psychological well-being in mothers of CWD: Parenting Morale Index (PMI) and Family Impact of Childhood Disability (FICD) scale. Scores on the PMI and FICD may be able to (a) reliably identify mothers of CWD at risk for poor psychological well-being, (b) increase the specificity of psychosocial supports, (c) more effectively allocate services within an environment of limited resources, and (d) potentially improve outcomes for mothers and CWD.

Trute and colleagues developed the PMI and FICD to provide health and social service professionals with brief, easy-to-score, and interpret measures of psychological well-being in mothers of CWD (Trute & Hiebert-Murphy, 2002, 2005; Trute et al., 2007). Preliminary psychometric testing in one sample ($N=103$) of Canadian mothers of CWD suggested that the PMI and FICD show promise. Exploratory factor analyses suggested stable factor structures in both measures and acceptable initial reliability and validity data.

This study contributes to family assessment in pediatric psychology by reporting on the psychometric properties of two measures of maternal psychological well-being. In order to be confident in recommending these measures to assess psychological well-being in mothers of CWD at intake to services, it was critical to confirm the factor structures and better establish reliability and validity across samples that vary by geographic and sociodemographic characteristics. If the PMI and FICD show adequate psychometric strength, they hold the potential to serve as a standardized, brief, and convenient package of measures to augment clinical interview findings in the determination of maternal psychological well-being and service needs in mothers of CWD. If the PMI and FICD are effective in specifying service needs based on potential maternal outcomes, then the use of these measures may result in more efficient allocation of limited resources.

The purpose of this study was to (a) assess the factor structure of the PMI and FICD, (b) evaluate their internal consistency and temporal stability, (c) test the construct validity using instruments of similar and divergent concepts, (d) test the predictive validity over 1 year, and (e) examine social desirability response bias. First, we hypothesized that factor analyses would confirm a unidimensional structure of the PMI and a two-dimensional (Positive and Negative subscales) structure of the FICD. Second, we expected that the PMI and FICD would demonstrate acceptable internal consistency and temporal stability over 4 weeks. Third, the PMI was conceptualized as a unique measure of parenting morale, so we expected positive relationships with measures of global well-being, positive affect, and self-efficacy. We expected negative relationships with measures of family adjustment and negative affect. Fourth, the FICD was conceptualized as a unique measure of cognitive appraisal of the family consequences of having a CWD. We expected positive relationships between the FICD Positive subscale and measures of global well-being, positive affect, and self-efficacy. We expected negative relationships between the FICD Negative subscale and measures of family

adjustment, global well-being, positive affect, and self-efficacy. Finally, we hypothesized that together, the PMI and FICD Positive and Negative subscales would predict maternal depressive symptoms, parenting stress, family hardiness, and family adjustment over a 1-year interval.

Method

Recruitment

We recruited participants with the assistance of Family Support for Children with Disabilities (FSCD), Alberta Children and Youth Services. FSCD is a government-sponsored support program that is offered to all families of CWD or complex health conditions. Family support services are provided without fee and include a key or dedicated worker who coordinates community based health and social services for CWD and their family members.

We created a sampling frame ($N = 1,019$) that included all families of CWD, with first entry to disability services in the previous 3–12 months. To preserve confidentiality, we used passive recruitment methods. FSCD mailed an invitation to participate in the study with a reminder to non-respondents 6-weeks later. This resulted in an estimated response rate of 29% ($N = 296$), which is typical for single-mode survey designs (Dillman, Smyth, & Christian, 2009). This is conservative estimate because the response rate calculation could not account for non-respondents who were ineligible (indeterminates; Allison & Yoshida, 1989).

Inclusion criteria were (a) over the age of 18 years, (b) English sufficient to complete a telephone interview, and (c) CWD living with the respondent. Duplicate initial contacts, unavailability for interview, insufficient English proficiency, inability to contact, and insufficient access to a telephone further reduced the eligible respondents to 286. Of those, 237 completed a telephone survey. Only mother ($N = 195$) survey information was used. There were two reasons for this. First, mothers constituted the largest proportion of the overall sample (195/237). Second, there are important gender differences in parental psychological response to childhood disability (Hastings et al., 2005; Trute, 1995), in mothers' and fathers' coping with stress (Nagy & Ungerer, 1990) and in their assessment of family needs (Bailey, Blasco, & Simeonsson, 1992). There were no statistically significant differences on maternal age, child age, child sex, or disability characteristics of the child between mother respondents who participated in the study ($n = 195$) and those who did not ($n = 23$).

Table 1. Characteristics of Mothers and Their Child with Disability ($N = 195$)

	Mean	SD	Frequency	Percentage (%)
Mother				
Age (years)	37.6	6.5		
Married/cohabiting			161	82.5
Completed high school			176	90.3
Employed			118	60.5
Low-income family			44 ^a	23.1
Child with disability				
Age (years)	7.92	4.72		
Gender (% males)			138	70.8
Child age at diagnosis				
Prenatal			28	14.4
Neonatal (<28 days)			12	6.2
Infant (<1 year)			15	7.7
Toddler (1–3 years)			49	25.1
Preschool (4–5 years)			42	21.5
School age (6–12 years)			43	22.1
Adolescent (13–17 years)			6	3.1
Diagnostic categories				
Developmental conditions			107	55.7
Physical/motor impairments			12	6.3
Mental health disorder			36	18.8
Sensory impairment			4	2.1
Complex health condition			27	14.1
Unconfirmed conditions			6	3.1

^aData are missing for five participants.

Participants

Participants were 195 mothers of CWD. See Table 1 for sociodemographic characteristics of mothers and CWD. Nearly one-quarter (23.1%) of mothers reported an annual household income <\$40,000CDN, which approximates the Canadian before-tax, low-income cut-off (LICO; \$39,399) for a family of four in 2006 (Statistics Canada, 2006). LICO is a proxy measure of poverty in Canada. Geographically, mothers were representative of both rural and urban areas.

Procedure

Between May and September 2007, mothers completed the PMI and FICD, and validation measures, via computer assisted telephone interviews (CATI). CATI is an interactive computer system that aids interviewers to ask questions over the telephone and immediately key answers into a data file. Telephone interviewers were trained to ensure sensitivity to the mothers and were monitored for interview quality throughout the study. To prevent respondent burden, we randomly selected 51 mothers (26.2%) who

completed the interview again 4-weeks later to test temporal stability. All mothers selected agreed to participate. To assess predictive validity 1 year after the first interview, 154 mothers completed the PMI and FICD again, along with other validation measures used in these analyses. There were no statistically significant differences on maternal age, family income, child age, or child sex between mothers who completed the longitudinal follow-up ($n = 154$) and those who did not ($n = 41$). We obtained informed consent verbally during the CATI. Two university institutional review boards approved the study. We mailed a gift certificate (\$40CDN) to recognize mothers' contributions to the study.

Target Measures

PMI

The PMI (Trute & Hiebert-Murphy, 2005) is a 10-item measure designed to capture positive spirits, psychological energy, and enthusiasm for parenting a CWD. Item (e.g., "When you think of your daily life as a parent, how often do you feel optimistic?") responses range from 1 (*not at all*) to 5 (*very often*). Six items were scored in reverse so all items on the scale were pointed in the same direction; all items were summed to create a total score. Higher scores indicate higher parenting morale. A Canadian study with a sample of 111 mothers of CWD (Trute & Hiebert-Murphy, 2005) reported moderate correlations between scores on the PMI and Parenting Stress Index-Short Form (PSI-SF; $r = -.59$; Abidin, 1995), and the PMI and Family Assessment Measure (FAM) Brief Form ($r = -.50$; Skinner, Steinhauer, & Santa-Barbara, 1995). A principal components analysis with varimax rotation yielded a solution with one underlying factor, and a Cronbach's alpha for mothers of .86 (Trute & Hiebert-Murphy, 2005).

FICD

The FICD (Trute et al., 2007) is a 20-item measure designed to assess parents' appraisal of the family consequences of their child having a disability. Item responses range from 1 (*not at all*) to 4 (*substantial degree*) on two subscales: FICD Positive (e.g., "Raising a disabled child has made life more meaningful for family members"), and FICD Negative (e.g., "There has been an unwelcome disruption to normal family routines"). FICD Positive and Negative scores were obtained by summing the items in each subscale. In a prior study ($N = 103$), the Negative and Positive subscales of the FICD significantly predicted maternal perceptions of family functioning (Trute et al., 2007). High internal consistency was reported for mothers ($\alpha = .81$ Positive; .89 Negative;

Trute et al., 2007). An exploratory factor analysis with varimax rotation yielded a two-factor solution with items loading on positive and negative subscales (Trute & Hiebert-Murphy, 2002), and the FICD was correlated concurrently with maternal depression ($r = .24$), parenting stress ($r = .64$), and family adjustment ($r = .34$; Trute & Hiebert-Murphy, 2002). FICD positive ($r = -.07$) and negative ($r = -.10$) subscales were not significantly related to social desirability.

Validation Measures

Validation measures were selected for (a) coherence with constructs in the process model of stress and coping (Lazarus & Folkman, 1984), (b) sound psychometric properties, (c) suitability for the population, and (d) ability to capture constructs critical to positive adaptation. Respondent burden, social desirability response bias, and ordering of measures were also considered. Measures were ordered to start with general information about the family, then move to more emotionally laden information (e.g., depressive symptoms), and end with demographic information, plus an offer of a gift certificate. Measures could not be counterbalanced because the order was fixed in the CATI delivery format.

Baseline Validation Measures

Brief FAM: General Scale

The Brief FAM—General Scale (Skinner et al., 1995) is a shorter (14-item) version of the full 50-item, 9 subscale version which provides an overall rating of family functioning. Item (e.g., "We feel loved in our family") responses range from 0 (*strongly agree*) to 3 (*strongly disagree*). Items are summed and translated to *T*-scores. Lower scores indicate stronger family functioning. Test-retest reliability is .56–.66 over 12 days with good internal consistency ($\alpha = .86$ –.94; Skinner et al., 1995). For this study, Cronbach's alphas were .88 at baseline and .87 1-year later, and temporal stability over a 4-week interval was $r = .71$.

Personal Well-Being Index

The Personal Well-Being Index (PWI; Trivette & Dunst, 1986) is a well-established measure of parental global well-being with 16-items on four subscales: General Emotional; General Physical; Child-Related Emotional; and Child-Related Physical. Each subscale has two positive (e.g., "Feeling that my life is going just great"), and two negative (e.g., "Feeling trapped by my responsibilities") items rated from 1 (*never*) to 5 (*quite often*). Subscale scores are determined by subtracting the negative item points from the positive item points then adding 8.

The PWI Total score is the sum of all of the subscale total scores; higher scores indicate higher well-being. The PWI has concurrent validity with the Family Support Scale (Trivette & Dunst, 1986). Test-retest reliability is .56 over 1 month, with strong internal consistency ($\alpha = .88$). For this study, Cronbach's alpha for the PWI Total score was .90, and temporal stability over a 4-week interval was $r = .82$.

Positive and Negative Affect Schedule

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item measure of the frequency of positive and negative emotions over a defined period of time, from *right now* to *in the past year*, without affecting internal consistency or factor structure. For this study, *in the past week* was used. Item (e.g., "excited", "distressed") responses range from 1 (*rarely or none of the time*) to 4 (*most or all of the time*). Higher scores indicate greater Positive or Negative affect. Test-retest reliabilities over 8 weeks range from .47 to .68. The PANAS Negative is correlated with the Beck Depression Inventory ($r = .56-.58$; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Hopkins Symptom Checklist ($r = .65-.74$; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; Watson et al., 1988). For this study, Cronbach's alphas were .88 and .89 for the PANAS Positive and Negative, respectively; temporal stability over a 4-week interval was $r = .65$ and .80, respectively.

General Self-Efficacy Scale

The General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) is a 10-item measure of personal competence. Item (e.g., "I can usually handle whatever comes my way") responses range from 1 (*not at all true*) to 4 (*exactly true*) with higher scores indicating greater perceptions of competence. Internal consistency ranges from .75 to .91 in various cultures (Scholz, Dona, Sud, & Schwarzer, 2002). For this study, Cronbach's alpha was .82, and temporal stability over a 4-week interval was $r = .57$.

Social Desirability Scale

The Social Desirability Scale (SDS) is a 10-item adaptation by Strahan and Gerbasi (1972) of the Marlowe-Crowne (MC) Social Desirability Scale (Crowne & Marlowe, 1960) to capture social desirability response bias. True and false items (e.g., "I have never intensely disliked anyone") are summed for a total score. The MC 2(10) has internal consistency ranging from .49 to .75. For this study, Cronbach's alpha was .58, and temporal stability over a 4-week interval was $r = .76$.

One Year Later Validation Measures

Center for Epidemiological Studies-Depression Scale

The Center for Epidemiological Studies-Depression (CES-D; Radloff, 1977) is 20-item scale designed to measure depressive symptoms in the past week. Item (e.g., "I felt depressed") responses range from 0 (*rarely or none of the time*) to 3 (*all of the time*); higher scores indicate more depressive symptoms. The clinical cut point on the CES-D is 16 (Anthony & Barlow, 2002). Internal consistency is strong ($\alpha = .84-.93$). Concurrent validity with the Beck Depression Inventory is .86 (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995). For this study, Cronbach's alpha was .86.

PSI-SF

The PSI-SF (Abidin, 1995) is a 36-item measure of stress related to the parenting role on three subscales: Parental Distress; Parent-Child Dysfunctional Interaction; and Difficult Child. Item (e.g., "My child seems to cry or fuss more than most children") responses range from 1 (*strongly agree*) to 5 (*strongly disagree*); higher scores indicate greater parenting stress. The PSI-SF has concurrent validity with family flexibility and family resources (Abidin, 1995). Internal consistency is strong ($\alpha = .80-.91$). For this study, Cronbach's alpha for the PSI-SF Total score was .88.

Family Hardiness Index

The Family Hardiness Index (FHI; McCubbin, McCubbin, & Thompson, 1987) is a 20-item measure of resistance to stress, and adaptation in families on three subscales: Commitment, Challenge, and Control. Item (e.g., "We work together to solve problems") responses range from 0 (*false*) to 3 (*true*); higher scores indicate greater family hardiness. The FHI has concurrent validity with family flexibility and family time and routines (McCubbin, Thompson, & McCubbin, 1996). Internal consistency is satisfactory ($\alpha = .65-.82$) and temporal stability is strong ($r = .86$). For this study, Cronbach's alpha was .85.

Brief FAM: General Scale

In addition to being used as a baseline measure, the Brief FAM (Skinner et al., 1995) was used as a 1 year later validation measure. See information in Baseline Validation Measures.

Data Analyses

There were few missing responses on either the PMI (0.17% missing) or FICD (2.53% missing). Missing values were imputed using regression with the other items on each scale and standard decision rules for each

measure. Prior to analyses, data were examined for linearity and normality. Data were not markedly skewed for any measure. Significance was set at $p < .05$ for all statistical tests. We conducted all analyses in Statistical Package for the Social Sciences (SPSS) version 16.0 software (SPSS, version 16.0; SPSS Inc., Chicago, IL). We calculated descriptive statistics for all measures, including percentile scores for the PMI and FICD. Using maximum likelihood estimation and oblique Promax rotation, as appropriate, we conducted factor analyses on the items for the PMI and FICD to assess the correspondence with the previously identified factor structures from two separate samples of CWD (Trute & Hiebert-Murphy, 2005; Trute et al., 2007). We calculated internal consistency coefficients (Cronbach's α) and used Pearson's correlations to calculate temporal stability. We used Pearson's correlations to assess convergent and discriminant validity (Kazdin, 2003) between the target and validation measures. We used Cohen's (1969) guidelines to interpret the strength of correlations (i.e., small = .10, medium = .30, and large = .50). Using the PMI and FICD as predictors, we ran separate multiple regression models to predict maternal depressive symptoms, parenting stress, family hardiness, and family functioning over a 1-year interval.

Results

PMI Factor Analysis, Reliability, and Validity

Factor analysis, using maximum likelihood estimation and no rotation, suggests that a single factor solution fits the data, $\chi^2(35) = 191.87$, $p < .001$. Uni-dimensionality was also indicated with an assessment of the intersection of the confidence intervals for the eigenvalues (Reddon, 1997). Factor loadings ranged from .52 (optimistic) to .75 (satisfied). Descriptive statistics, reliabilities, and percentile scores for the PMI are presented in Table II. Internal consistency and temporal stability for the PMI were strong. Descriptive statistics on baseline validation measures are presented in Table III. Based on Cohen's (1969) guidelines for interpreting the strength of correlations, there was a large correlation, in the expected direction, between scores on the PMI and Brief FAM, $r(194) = -.48$, $p < .01$. Correlations between target and baseline validation measures are presented in Table IV. Similarly, there was a large, positive correlation between scores on the PMI and PWI Total, $r(193) = .84$, $p < .001$. There were large correlations in the expected direction between scores on the PMI and PANAS Positive, $r(195) = .63$, $p < .001$ and Negative subscales, $r(193) = -.69$, $p < .001$.

Table II. Descriptive Statistics, Reliabilities, and Percentiles for the Parenting Morale Index and Family Impact of Childhood Disability Positive and Negative Subscales

Scale	Number of items	Full sample ^a			Percentile ^a			Test-retest ^b
		α	<i>M</i>	<i>SD</i>	80th	90th	98th	
PMI	10	.88	30.5	7.1	37	39	44	.88
FICD Positive	10	.85	29.9	5.9	36	37	40	.77
FICD Negative	10	.86	26.5	7.0	33	36	39	.86

^a*N* = 195.

^b*n* = 51.

Table III. Scores on Measures to Establish Concurrent Validity and Predictive Validity One Year Later

Validation measures	<i>n</i>	<i>M</i>	<i>SD</i>	Range
Baseline				
Brief FAM	194	10.42	5.99	0–29
PWI General Emotional	193	9.64	3.50	0–16
PWI General Physical	193	7.03	3.42	0–16
PWI Child Emotional	193	9.78	3.56	1–16
PWI Child Physical	193	8.11	3.37	1–16
PWI Total	193	34.56	11.88	6–61
PANAS Positive	195	29.82	5.98	12–40
PANAS Negative	193	19.06	6.49	10–39
General Self-Efficacy	193	31.34	3.82	19–40
One year later				
CES-D	151	19.34	6.39	10–39
PSI-SF	145	99.20	24.88	45–164
FHI	150	46.13	8.07	24–60
Brief FAM	151	10.87	6.10	0–28

Table IV. Correlations between Mothers' Scores on Target and Baseline Validation Measures

Validation measures	Target measures		
	PMI	FICD positive	FICD negative
Brief FAM	-.48***	-.42***	.11
PWI General Emotional	.77***	.15*	-.47***
PWI General Physical	.72***	.20**	-.48***
PWI Child Emotional	.68***	.25**	-.52***
PWI Child Physical	.71***	.21**	-.57***
PWI Total	.84***	.24**	-.59***
PANAS Positive	.63***	.31***	-.33***
PANAS Negative	-.69***	-.10	.39***
General Self-Efficacy	.35***	.20**	-.19**

* $p < .05$, ** $p < .01$, *** $p < .001$.

In contrast, there was a medium, positive correlation between scores on the PMI and GSE, $r(193) = .35$, $p < .001$. Similarly, there was a medium, positive correlation between scores on the PMI and SDS, $r(193) = .26$, $p < .001$.

Table V. Summary of Multiple Regressions with the PMI and FICD Predicting Depressive Symptoms, Parenting Stress, Family Hardiness, and Family Functioning 1 Year Later

	CES-D (<i>n</i> = 151) ^a			PSI-SF (<i>n</i> = 145) ^b			FHI (<i>n</i> = 150) ^c			Brief FAM (<i>n</i> = 151) ^d		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
PMI	-.51	.08	-.55**	-1.46	.31	-.41**	.50	.11	.43**	.38	.08	.44**
FICD Positive	.02	.08	.02	-.84	.31	-.19*	.30	.11	.22*	.21	.08	.20*
FICD Negative	.03	.08	.03	.67	.31	.19*	-.06	.11	-.05	.10	.08	.12

^aAdjusted $R^2 = .30$, $F(3, 147) = 22.86$, $p < .001$.

^bAdjusted $R^2 = .36$, $F(3, 141) = 27.99$, $p < .001$.

^cAdjusted $R^2 = .29$, $F(3, 146) = 21.17$, $p < .001$.

^dAdjusted $R^2 = .22$, $F(3, 147) = 15.20$, $p < .001$.

* $p < .01$. ** $p < .05$. *** $p < .001$.

FICD Factor Analysis, Reliability, and Validity

Factor analysis, using maximum likelihood estimation and oblique Promax rotation, suggests that a two-factor solution fits the data, $\chi^2(151) = 314.57$, $p < .001$. Evidence in favor of the two-dimensional solution was also obtained with Reddon's (1997) confidence interval scree test. For the FICD Positive subscale, factor loadings ranged from .48 (item 3, "closer to God") to .77 (item 20, "life more meaningful"). For the FICD Negative subscale, factor loadings ranged from .40 (item 2, "unwelcome disruptions") to .78 (item 10, "reduction in time parents could spend with friends").

Descriptive statistics, reliabilities, and percentile scores are presented in Table II. Internal consistency and temporal stability for the FICD Positive and Negative subscales were strong. There was a medium, negative correlation between scores on the FICD Positive subscale and Brief FAM, $r(191) = -.42$, $p < .001$. Contrary to the hypothesis, there was a small, positive correlation between scores on the FICD Negative subscale and Brief FAM, $r(194) = .11$, $p = .12$. There was a large, positive correlation between scores on FICD Negative subscale and PWI Total scores, $r(193) = -.59$, $p < .001$, and a smaller, positive correlations between scores on the FICD Positive subscale, $r(190) = .24$, $p < .001$. FICD Positive and Negative subscales were statistically independent, $r(191) = .08$, $p = .27$. FICD Positive and Negative subscales were independent of the SDS score, $r(191) = .09$, $p = .23$, and $r(193) = -.12$, $p = .10$, respectively.

Predictive Validity

The PMI and FICD Positive and Negative subscales were significant predictors, and together explained 30% of the variance in maternal depressive symptoms 1-year later (see Table V). The PMI made the greatest contribution to the variance explained in maternal depressive symptoms; the FICD subscales failed to make a statistically significant

contribution. Together, the PMI and FICD Positive and Negative subscales explained 36% of the variance in parenting stress. Again, the PMI made the greatest contribution to the variance explained, while the FICD subscales made an additional, statistically significant contribution to the variance explained in parenting stress. A slightly different pattern emerges when using the PMI and FICD subscales to predict family hardiness. Together the PMI and FICD subscales explain 29% of the variance in family hardiness, and the PMI again makes the greatest contribution to the variance explained. However, only the FICD Positive subscale makes a statistically significant contribution to the amount of variance explained in family hardiness. This pattern is similar when using the PMI and FICD subscales to explain variance in family adjustment.

Discussion

This study contributes to family assessment in pediatric psychology by documenting the unique information about family adaptation that can be gleaned from two measures of psychological well-being in mothers of CWD. The results of this study provide a first step in the development of a brief, standardized package of measures (PMI and FICD) to complement clinical interviews for the assessment of psychological well-being in mothers of CWD. The results of this study suggest that these brief measures are of acceptable psychometric strength such that practitioners can have confidence in their empirical properties. Both measures showed high internal consistency (Cronbach's alpha) and temporal stability (test-retest) to suggest measurement reliability. Both showed strong evidence of factorial, discriminant, and predictive validity. There were very few missing values on the PMI and FICD. This suggests that these measures are acceptable to mothers when providing information on their personal and family situation in the context of childhood disability.

Consistent with the elements in the process model of stress and coping (Lazarus & Folkman, 1984), the PMI appears to be a brief and unique indicator of internal psychological coping resources that each mother draws upon to cope with the daily needs of their CWD. Scores on the PMI were strongly correlated with the PWI Total score suggesting convergent validity of the two measures. Smaller, but still strong correlations between the PMI and PANAS suggest that each is capturing similar, but not identical constructs. That is, the PMI does not appear to be a simple measure of affect. Medium correlations between the PMI and GSE suggest that the PMI is not a measure of self-efficacy. Correlations between the PMI and SDS were $< .30$, which suggests that social desirability response bias does not confound PMI scores. Over a 1-year interval, the PMI showed a moderate relationship ($r > .40$) with all criterion measures of parent and family functioning (CES-D, PSI-SF, FHI, and Brief FAM).

Within the process model of stress and coping (Lazarus & Folkman, 1984), the FICD provides unique information about the cognitive appraisal, or the meaning parents make of childhood disability as a factor in their family life and family well-being. Factor analysis helped to establish that the FICD has two orthogonal subscales: positive and negative appraisal of the family impact of childhood disability. Further, the results of correlation analysis suggest that each of these dimensions tap a different element of parenting stress and parental psychological coping resources. Positive appraisal appears to be related to mothers' view of the ongoing functioning of their family (Brief FAM). This suggests that the measures share common variance (i.e., a focus on the family), but are unique enough that the FICD Positive subscale is measuring something other than family functioning. In contrast, the FICD Negative subscale was unrelated to family functioning suggesting that there was little relationship between mothers' perceptions of the negative family impact of childhood disability and family functioning. Negative appraisal was found to be moderately related to mothers' overall expression of affect (PANAS), and a measure of their emotional well-being (PWI).

After a 1-year interval, the FICD was significantly (albeit weakly) related to measures of parenting stress (PSI-SF), family hardiness (FHI), and family functioning (Brief FAM). Negative appraisal was found to have a moderate relationship with parenting stress (PSI-SF). This suggests that the negative appraisal subscale is a brief indicator of level of parenting stress mothers will experience in the longer term. Small, non-significant correlations between scores on the FICD and SDS suggest that social desirability response bias is not an issue with the FICD. Neither FICD

positive nor negative appraisal appeared to be a significant predictor of mothers' symptoms of depression (CES-D) over the 1-year interval suggesting the FICD does not forecast mothers' psychological well-being in the longer term.

It seems that the PMI and FICD are unique, yet complement one another, with the PMI offering an overall indicator of mothers' parenting morale or psychological coping resources and the FICD serving as an overall indicator of mothers' attitudes and perceptions of the impacts that a CWD has on the well-being of their family. This joint relationship was confirmed in predictive validity testing using multiple regression analysis. After 1 year, the PMI and FICD jointly explained 30% of the variance in mothers' symptoms of depression, and 36% of the variance in parenting stress. Similarly, the PMI and FICD jointly explained 22% of the variance in mothers' assessment of overall family functioning, and 29% of family hardiness after 1 year.

This research is limited by a sample of mother only respondents. Given the differences in parental responses to CWD (Hastings et al., 2005; Trute, 1995), future studies need to include fathers. Previous studies of the PMI and FICD validated a face-to-face delivery format (Trute & Hiebert-Murphy, 2002, 2005; Trute et al., 2007), and the results of this study validated telephone delivery. Future studies are required to validate internet and mailed delivery formats. The diversity in the sample allows generalization to rural and urban mothers with a range of family incomes. However, the Canadian sample was largely comprised of mothers of European descent and results cannot, therefore, be generalized across cultures. Future studies need to include culturally diverse samples. Future research with culturally and diagnostically diverse subpopulations is needed to explore whether the PMI and FICD are similarly applicable. The wide range of ages for children in this study was a threat to internal validity. However, this age range is representative of the children served by FSCD, and thus strengthens the ecological validity of the study findings. Additionally, future research is required to determine whether the PMI and FICD can be used repeatedly to monitor changes in mothers' psychological well-being as a result of childhood disability services. Finally, the low Cronbach's alpha (.58) on the SDS for this study suggests that results related to social desirability response bias need to be treated with caution.

Maternal cognitive appraisal of the family impacts of childhood disability and parenting morale are not simple assessment issues that can be readily addressed and quickly understood during brief service intake interviews. It is important that professionals do not assume that just

because a child has a serious disability that this will inevitably lead to family distress. Many mothers will respond to the challenge of childhood disability with positive coping and resiliency. However, it is important to identify those situations where there is increased risk for maternal and family distress. The results of our study suggest that the FICD and PMI can complement and enrich a service intake interview when the need for resources to support the care of her CWD is being considered. In the early phases of childhood disability services, questions about the allocation of scarce resources to ultimately improve outcomes are at the core of service intake interviews when professionals must determine which mothers have a higher priority. Broad implementation and evaluation of the PMI and FICD as measures to complement clinical interviews at intake to service is required. Future research needs to examine whether the addition of the PMI and FICD to clinical interview results in more effective allocation of psychosocial supports and improved outcomes for mothers of CWD.

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