The development and validation of the protective factors survey: A self-report measure of protective factors against child maltreatment[☆]

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ABSTRACT

Objective: The objective of this study was to evaluate the internal structure of a self-report measure of multiple family-level protective factors against abuse and neglect and explore the relationship of this instrument to other measures of child maltreatment.

Methods: For the exploratory factor analysis, 11 agencies from 4 states administered the Protective Factors Survey (PFS), the Brief Child Abuse Potential Inventory (Ondersma et al., 2005), and another measure to establish content validity ($N = 249$ participants). Exploratory factor analyses were conducted to obtain a small, integrated set of items that tap the targeted protective factors correlated with other theoretically important constructs. Correlations were computed to explore PFS criterion-related validity. Confirmatory factor analyses were conducted on an additional sample of 689 participants from 19 agencies across the United States.

Results: Exploratory and confirmatory factor analyses yielded a 4-factor solution, consisting of Family Functioning, Emotional Support, Concrete Support, and Nurturing and Attachment. Four measures were administered to assess constructs that were predicted to correlate negatively with the protective factors: child abuse potential, depression, stress, and maladaptive coping. The PFS was also predicted to correlate positively with adaptive coping such as use of emotional and instrumental social support and positive reframing. Overall, the PFS subscales were significantly related to these measures in the directions predicted.

Conclusions: The PFS is a valid and reliable instrument to measure individual differences in multiple protective factors in families. The measure is an easily administered tool that offers programs an alternative to costly, time-intensive measures.

Practice implications: The PFS offers community-based prevention programs a valid and reliable survey instrument that measures multiple protective factors. The subscales—Family Functioning, Emotional Support, Concrete Supports, and Nurturing and Attachment—can be used by practitioners to understand the service population more fully, inform services, and contribute to the evidence base of a protective factors approach. Practitioners can build on the strengths or protective factors in parents and select services to address areas that are less developed.

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Introduction

The prevention field struggles to find agreed-upon, valid, and reliable child and family outcome measures to define the role and potential of prevention. Traditionally, many programs measured effectiveness by looking at reductions in abusive behaviors and the number of reports to child protective services. Because these measures of incidence are not easily accessible and are unreliable, the field focused on reductions in risk factors to child maltreatment, and more recently on increases in protective factors (Ross & Vandivere, 2009).

The protective factors movement has been largely influenced by the Strengthening Families Initiative work of the Center for the Study of Social Policy (CSSP, 2004), which reframed maltreatment prevention using a strengths-based approach with early care and education programs. The CSSP developed a systemic, high-impact primary prevention strategy that targeted children under the age of 5 and their families (Langford & Harper-Browne, in press). A protective factors framework enables programs to focus on factors that are malleable to prevention strategies. For example, programs can reasonably expect changes in parental behaviors and attitudes as a result of parent education or home visitation. Risk factors such as low maternal age or significant reductions in neighborhood crime rates, on the other hand, are not amenable to short or medium term programmatic interventions (Ross & Vandivere, 2009). A protective factors lens also enlarges the circle of prevention partners as early care and education programs may be unfamiliar with a risk paradigm (Langford & Harper-Browne, in press).

This study focuses on the development of an instrument to measure five malleable protective factors commonly addressed in prevention programs, including early childhood programs: Family functioning, emotional support, concrete support in times of need, knowledge of parenting and child development, and nurturing and attachment.

Family functioning

Family functioning is defined as the well-being or performance of the family unit in such domains as relationships within the family health/competence, conflict resolution, cohesion, leadership, and expressiveness (Beavers & Hampson, 1990). Research has shown that neglectful families show significantly lower levels of functioning than non-neglectful families (Gaudin, Polansky, Kilpatrick, & Shilton, 1996). Studies have also shown that assessments of family functioning, including structure, organization, cohesion, conflict management, and communication and corresponding interventions can lead to improved parenting quality (Gaudin et al., 1996). Further, a meta-analysis of 40 evaluation studies reported that parent education programs are effective at improving family functioning, thus reducing the risk of child maltreatment (Geeraert, Noortgate, Grietens, & Onghena, 2004).

Emotional support

Emotional support is defined as the individual's perception that empathy, caring, reassurance, or understanding will be provided by social network members if needed. Individuals with emotionally supportive environments feel they have opportunities for emotional expression and venting (Rodriguez & Cohen, 1998). Social networks, including family and non-family support, benefit families by providing parents with information on appropriate childrearing methods (Brofenbrenner & Crouter, 1983; Moncher, 1995), moderating maladaptive parenting and stresses (Voight, Hans, & Bernstein, 1996), and supporting positive environments for infants and children. This type of support assists in creating a positive home environment for children and families; parents who receive non-critical emotional support are better able to be sensitive to their children's needs and have empathy for their feelings (Moncher, 1995). Studies have shown that social support buffers against child maltreatment. Parents exhibiting abusive behaviors toward their children are typically more isolated than parents who do not (Corse, Schmid, & Trickett, 1990; McLoyd, 1995). Abusive mothers report negative relationships with family members, less support from outside their families, and limited and unsatisfying access to informal support than do non-abusing parents (Corse et al., 1990; MacPhee, Fritz, & Miller-Heyl, 1996).

Concrete support

Concrete or instrumental support is defined as the tangible resources such as food, cash, child care assistance, and clothing that social networks may provide as buffers against parenting stresses (Cochran & Niego, 1995). Parents experiencing financial difficulties suffer from elevated levels of depression and, in turn, lower psychological functioning (Jackson, Brooks-Gunn, Chien-Chung, & Glassman, 2000). Both elements contribute to the stress of parenting, increasing the likelihood of inconsistent and punitive discipline (McLoyd, 1998). These elements contribute to less than optimal home environments and heightened parenting stress, increasing the likelihood of inconsistent, coercive, and punitive discipline (Cole & Cole, 1993; McLoyd, 1998). Concrete support can moderate financial strain and lower risk factors for abuse (Cochran & Niego, 1995).

Nurturing and attachment

Early research on attachment explored aspects of infant behavior and also focused on the relationship between the child and caregiver (Ainsworth, Blehar, Waters, & Wall, 1978). All infants develop some attachment between themselves and their

caregivers, however, the quality and strength of this relationship varies. Maltreated children show lower quality attachment than non-maltreated children and exhibit higher rates of aggression, and lower social competence and empathy (Crittenden, 1988; George & Main, 1979; Morton & Browne, 1998; Shonkoff & Phillips, 2004). Some argue that the window to establish quality attachments remains open during the early childhood years (Shonkoff & Phillips, 2004), offering opportunities to develop and strengthen bonds between the child and caregivers. Prevention efforts such as home visitation include strategies to strengthen early relationships and show effectiveness in increasing parent-child bonding (Olds et al., 2002).

Knowledge of parenting and child development

Participation in parent education programs has been linked to positive outcomes such as improved emotional well-being, changed parent beliefs about corporal punishment as an effective discipline technique, more realistic expectations for children, and increased skills to communicate and interact with children (Geeraert et al., 2004; Lundahl, Nimer, & Parsons, 2006; MacLeod & Nelson, 2000; Repucci, Britner, & Woolard, 1997). The focus of such programs can include increasing knowledge of child development and stress management skills. While an increase in this knowledge alone may not lead to changes in behavior, parenting programs may translate such information into appropriate parenting skills that diminish the risk of abuse (Kaminski, Valle, Filene, & Boyle, 2008).

Instruments and the protective factors

The shift towards a protective factors framework brings with it the need to document the effectiveness of program strategies to increase protective factors. In the authors' review of over 70 instruments included in the FRIENDS Compendium of Annotated Measurement Tools (FRIENDS National Resource Center, September 2, 2008), there were no instruments that included all 5 of the aforementioned protective factors against child maltreatment. Table 1 shows valid and reliable instruments that measure 1 or more protective factors. FACES IV (Olson, Gorall, & Tiesel, 2004), FAF (McCroskey, Sladen, & Meezan, 1997), FES (Moos & Moos, 1983), and NCFAS-G (Reed-Ashcraft, Kirk, & Fraser, 2001) explore aspects of family functioning. The operational definitions vary slightly from instrument to instrument with some measuring aspects that are not addressed by prevention programs. Several instruments, including FAF (McCroskey et al., 1997), FSS (Dunst, Trivette, & Deal, 1988), FRS (Dunst et al., 1988), ISSB (Barerra, Sandler, & Ramsay, 1981), NCFAS-G (Reed-Ashcraft et al., 2001), and PCRI (Gerard, 1994), address emotional and concrete supports through various operational definitions. Most of these instruments measure the presence of supports either through worker observation or behavioral transactions as reported through frequency, rather than whether the person perceives the helpful support to exist. The perception of support rather than simply the quantity of support is important as a protective factor (Cohen & Wills, 1985; Rodriguez & Cohen, 1998), therefore these instruments may be limited in measuring social support as a protective factor against maltreatment. Further, the ISSB was primarily tested with college students, suggesting limited generalizability to parents.

Measures addressing nurturing and attachment are the HOME (Caldwell & Bradley, 1984), NCFAS-G (Reed-Ashcraft et al., 2001), PCRI (Parent-Child Relationship Inventory, 1998), and the PCERA (Clark, 1999). The HOME, PCRI, and NCFAS-G are designed for families with children of all ages. The PCERA is limited to infants and young children. Only the PCRI is a self-report measure; the remaining instruments are observational assessments that must be conducted by trained workers. Most of the observational tools look at nurturing and attachment as part of the larger domain of family interactions, and do not specifically focus on the parent's perception of the parent-child relationship or changes over time in the quality of the relationship.

Although the instruments reviewed are valid and reliable and assess components of the protective factors, community-based agencies interested in measuring multiple protective factors against child maltreatment would have to use several measures, which could become costly and time prohibitive. Further, some instruments such as the Coping Health Inventory (McCubbin et al., 1983) were designed for specific populations such as children with special needs. Some measures present additional barriers for community-based agencies. For example, the FACES IV (Olson, Gorall, & Tiesel, 2004) requires specific training and education in order to administer the survey—a minimum of a Master's degree—which may pose challenges for community-based programs, particularly in rural areas with a scarcity of agency staff with advanced degrees. The HOME is a 6-scale instrument that requires an hour of observation by a trained worker (Caldwell & Bradley, 1984). The FAF (McCroskey et al., 1997) is administered by a home visitor or family support worker over 3–4 family contacts. Administration time of more than 1 hour may make it difficult for community-based programs with limited staff resources.

While there are numerous instruments to measure individual protective factors there is no single instrument that assesses *multiple* protective factors against child maltreatment that can be addressed by prevention programs. The Protective Factors Survey (PFS) was developed to address this need. The purposes of this study were to (1) evaluate the internal structure of the instrument using exploratory factor analysis, (2) support the internal structure of the instrument using confirmatory factor analysis on a new data set, and (3) establish criterion-related validity by examining the relationships among the protective factors and other measures of risk for child abuse and neglect. The intent was to retain a small, integrated set of items with at least three to four highly correlated items per construct.

Table 1
Instrument review.

Instrument and reference	Psychometrics	Limited protective factors and other considerations
Coping Health Inventory for Parents (CHIP: McCubbin et al., 1983)	Internal consistency—subscale 1 = .79; subscale 2: = .79; subscale 3 = .71	PF: Family Functioning, Emotional Support, Concrete Support. Specifically for families of children with special health care needs
Family Adaptability and Cohesion Evaluation Scale (FACES)	Internal consistency—disengaged = .87; enmeshed = .77; rigid = .83; chaotic = .85 balanced cohesion = .80; balanced flexibility = .80; validity = .91–.93	PF: Family Functioning. Cost associated and requires Masters degree to administer. Designed for clinical use and not explored for evaluation
Family Assessment Form (FAF: McCroskey et al., 1997)	Construct validity = .63; inter-rater reliability: 75–80%; inter-item reliability: .68–.90	PF: Family Functioning, Emotional Support, Concrete Support, Child Development/Knowledge of Parenting. Designed for clinical use for individual families to determine services. Not used for program evaluation. Completed by worker based on their knowledge of parents
Family Environment Scale (FES: Moos & Moos, 1983)	Internal consistency—manual reports = .61–.78 Boyd study = .31–.72	PF: Family Functioning. Used mainly for therapeutic decision making. Must be knowledgeable in family systems theory to use. Internal consistency in the borderline range. Family functioning operational definition covers different aspects than PFS
Family Support Scale (FSS: Dunst et al., 1988)	Internal consistency = .77; split-half = .75; test–retest = .75 (scale items), and .91 (total scale scores)	PF: Emotional Support, Concrete Support. Assesses helpfulness of different providers of social supports, and does not specifically focus on parent perceptions
Family Resource Scale (FRS: Dunst et al., 1988)	Internal reliability = .92; split-half = .95; test–retest = .52, concurrent validity: .57, .63	PF: Concrete Support. Used primarily as a clinical tool for treatment of children with disabilities. Assesses time burdens associated with care to possible determine need for respite care. Validity based on sample of 45 participants
Home Observation for Measurement of the Environment Inventory (HOME: Caldwell & Bradley, 1984)	Reliability = .89 for total HOME and avg. of .70 for six subscales	PF: Nurturing and Attachment. Scales vary depending on the age of the child. Cost associated. Minimum of 1 hour required for experienced worker to complete assessment
Inventory of Socially Supportive Behaviors (ISSB: Barerra et al., 1981)	Reliability = .90; internal consistency = .93 to .94; test–retest reliability = .63–.88	PF: Emotional Support, Concrete Support. Instrument developed from sample of single, college students. Focuses on behavioral transactions that occurred within the past 4 weeks
Knowledge of Infant Development Inventory (KIDI: MacPhee, 1981)	Internal consistency = .67 (pretest), .55 (posttest) in college students; .82 for parents; .50 for professionals	PF: Child Development/Knowledge of Parenting assess knowledge of infant development only. Cost associated
North Carolina Family Assessment Scale-General (NCFAS-G: Reed-Ashcraft et al., 2001)	Cronbach's α = .71–.94	PF: Family Functioning, Concrete Support, Nurturing and Attachment. Completed by the worker who must know the family well in order to rate them. Items based on practice considerations and used to determine whether or not clients should continue to receive services
Parent-Child Early Relational Assessment (PCERA: Clark, 1999)	Internal consistency of subscales = .75–.96	Nurturing and Attachment trained raters use videotaped episodes to assess quality of parent-child interactions. Cost associated. Designed for families with infants and young children
Parent-Child Relationship Inventory (PCRI: 1998)	Internal consistency = .82, test–retest = .81.	PF: Emotional Support, Nurturing and Attachment. Findings do not render it suitable for making recommendations in legal arenas—needs more research on usage. Costs associated

Table 2
Demographic characteristics of study participants.

Characteristic	EFA and validation (N = 249)[a]	CFA (N = 689)[a]
Marital status	n = 248	n = 681
Married	39.0%	51.7%
Partnered	9.2%	7.0%
Single	36.1%	26.6%
Divorced	7.6%	9.1%
Widowed	.8%	.6%
Separated	6.8%	5.0%
Education	n = 248	n = 680
Elementary or junior high school	.4%	2.6%
Some high school	2.8%	12.4%
High school diploma or GED	21.3%	27.4%
Trade/vocation school	6.0%	6.9%
Some college	18.9%	23.5%
2-Year college degree	7.6%	9.4%
4-Year college degree	2.8%	11.2%
Master's degree	1.2%	5.1%
Income level	n = 245	n = 671
$0–10,000	41.0%	24.4%
$10,001–20,000	22.5%	17.7%
$20,001–30,000	16.9%	16.1%
$30,001–40,000	7.2%	11.2%
$40,001–50,000	5.2%	7.9%
More than $50,000	5.6%	22.7%
Housing	n = 247	n = 683
Own	24.5%	43.5%
Rent	53.8%	44.7%
Shared housing	18.1%	10.0%
Temporary	2.8%	1.9%
Services	n = 248	n = 687
Food stamps	47.8%	34.5%
Medicaid	65.9%	42.8%
Earned income tax credit	23.3%	14.4%
TANF	6.4%	6.8%
Head start/early head start	10.8%	7.3%

[a] The N is the overall sample size for each study. The n's represent the number of participants who responded to each demographic item.

Methods

Procedures and participants

Data were collected in 2 phases—1 for the exploratory factor analysis and criterion-related validity study and 1 for the confirmatory factor analysis. Community-based prevention agencies from across the United States were invited to participate in both phases. Agencies were recruited through the distribution of a recruitment flyer on numerous national electronic-mail based listservs. Interested agencies completed a web-based registration survey and received survey administration training and support materials. Eleven agencies (N = 249) participated in the first phase of data collection between February and May 2007 (see Table 2 for demographics). For the confirmatory factor analysis, additional survey data were collected between August and September 2007 from 19 agencies (N = 689). Human subjects approval was granted by the University of Kansas. Participants were not compensated for completing the PFS or validation measures.

Measures

Each agency received a survey packet composed of three instruments: the Protective Factors Survey, the Brief Child Abuse Potential Inventory (Ondersma, Chaffin, Simpson, & LeBreton, 2005), and one validation instrument (a measure of coping, depression, or stress). The additional measures were selected based on a literature review of risk factors for abuse and neglect.

Completion order of the PFS scales and the validation measures was counterbalanced to reduce the possibility of order effects (Shadish, Cook, & Campbell, 2002). To ensure adequate sample size, the assignment of the validation measure and completion order for each agency was determined by the authors. Respondents were only asked to complete the BCAP and only one other validation instrument to reduce participant burden.

Protective Factors Survey. The Protective Factors Survey is an instrument designed to assess multiple protective factors against child maltreatment. The PFS was initiated in 2005 by a workgroup of program staff, researchers, and technical assistance providers. A mixed methods approach, including survey research and focus groups, guided the development process. Items

Table 3
Constructs and operational definition.

Construct	Operational definition
Family Functioning	Having adaptive skills to persevere in times of crisis. Family ability to openly share positive and negative experiences and mobilize to accept, solve, and manage problems
Social Support	Perceived informal support (from family, friends, and neighbors) that helps provide for emotional needs
Concrete Support	Perceived access to tangible goods and services to help families cope with stress, particularly in times of crisis or intensified need
Nurturing and Attachment	The emotional tie along with a pattern of positive interaction between the parent and child that develops over time
Knowledge of Parenting and Child Development	Understanding and utilizing effective child management techniques and having age-appropriate expectations for children's abilities

were preliminarily tested by asking participants to complete the instrument along with a survey assessment form evaluating each of the individual items across four areas: the participants' interpretation of the meaning of the question, the cultural appropriateness/offensiveness of the items, necessary revisions for questions, and the appropriateness of the answer options. Focus groups were then conducted to gather input on the items as written and suggestions for revisions. The resulting items were field tested with programs in Texas (N = 272) and Healthy Families programs in Kansas (N = 74).

Psychometric information was used to refine the item pool and create the current version of the instrument. The survey contains demographic questions and 65 items to measure the protective factors. Table 3 shows the protective factors and their operational definitions. Participants are asked to respond to each item using a 7-point frequency or agreement scale.

Brief Child Abuse Potential Inventory (BCAP). The BCAP (Ondersma et al., 2005) is a 34-item screening tool for the detection of physical child abuse and neglect and is based on the Child Abuse Potential Inventory (CAP; Milner, 1986), a 160-item self-report measure that taps known correlates of child abuse. The CAP is the most widely used and researched measure of parental child abuse risk. None of the items directly assesses violence, which makes the instrument more acceptable to parents in a number of settings. Participants are asked to indicate whether they agree or disagree with the statements. The measure has the following subscales: (1) Distress Factor; (2) Family Conflict; (3) Happiness; (4) Rigidity; (5) Feelings of Persecution; (6) Loneliness; (7) Financial Insecurity; and (8) the Total Abuse Risk scale. Internal consistency for the subscales ranges from .89 to .95 (Ondersma et al., 2005).

Brief COPE. The Brief COPE (Carver, 1997) is a measure of adaptive and maladaptive coping strategies, which play a critical role in protecting against maltreatment. On the Brief COPE, participants are asked to indicate how they respond to stress using the following scale: 1 = I usually don't do this at all; 2 = I usually do this a little bit; 3 = I usually do this a medium amount; 4 = I usually do this a lot. For this study, the following subscales were used: (1) denial; (2) substance abuse; (3) positive reframing; (4) use of emotional social support; and (5) use of instrumental social support. Each scale has two items, for a total of 10 items. Internal consistency for the subscales ranges from .64 to .71 (Carver, 1997).

PRIME-MD Patient Health Questionnaire (PHQ). The PRIME-MD PHQ (Spitzer, Kroenke, & Williams, 1999) is a brief measure of depression, consisting of 9 items based on DSM-IV diagnostic criteria. Participants are asked to indicate whether, during the past 2 weeks, the symptom bothered them 1 = not at all, 2 = several days, 3 = more than half the days, or 4 = nearly every day. Internal consistency ranges from .70 to .72 (Spitzer, Kroenke, & Williams, 1999).

Perceived Stress Scale. The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) is a 10-item scale assessing the experienced level of stress. Participants are asked to indicate how often they have felt or thought a certain way using the following scale: 0 = never; 1 = almost never; 2 = sometimes; 3 = fairly often; 4 = very often. Internal consistency ranges from .84 to .86 (Cohen et al., 1983).

Analyses

The analyses proceeded in four steps: (1) descriptive statistics to examine normality, (2) exploratory factor analysis (EFA) to ascertain whether the theoretical factor structure exists in the original item set, (3) criterion-related validation to provide evidence that the subscales are measuring the expected constructs, and (4) confirmatory factor analyses (CFAs) using a cross-validation sample to provide further support for the theoretical factor structure. To obtain a small, integrated set of items that tap the targeted protective factors and are related to theoretically important constructs, items that did not contribute to a cohesive, clearly defined factor structure and/or did not correlate with criterion validity scales were discarded. Two discrete samples were used for the EFA and CFA (see Table 2).

Analysis and results

Descriptive statistics

In preparation for the analyses, the PFS items were examined for normality. Because of the mild skew in some items, data were treated as ordinal rather than interval-scaled during analyses by employing weighted least squares estimation with mean and variance (WLSMV), an estimation technique robust to moderate violations of normality. The authors conducted supplementary tests to ascertain whether the mode of administration was related to the PFS subscale scores. In both samples, few meaningful differences were found.

Exploratory factor analysis (EFA)

Analyses of the 65 items began with an examination of the theoretical underpinnings of the items within each construct. The nature of the *Knowledge of Parenting and Child Development* items did not lead to the expectation that they would necessarily be correlated, therefore there was no theoretical reason to expect them to conform to any particular factor structure (Bollen & Lennox, 1991); such items are often termed *formative* to denote their theoretical relationship to a hypothetical construct. As a result, the 20 formative items that assessed *Knowledge of Parenting and Child Development* were not included in the EFA or CFA. In the aggregate, however, these items were expected to be related to criterion-related validity scales.

The EFA included 45 items theoretically serving as indicators of 4 factors: *Family Functioning*, *Emotional Support*, *Concrete Support*, and *Nurturing and Attachment*. We used a scree plot (Gorsuch, 1983), parallel analysis (Horn, 1965), comparative model fit, and interpretability to help determine the most appropriate number of factors to retain. The scree plot showed some ambiguity regarding the number of factors, although $m = 5$ received the most support. Factor models were fit to the set of 45 items expected to conform to a factor structure, with the number of factors ranging from 2 to 7 as a reasonable range. Parameter estimates and the fit statistics root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) were obtained for each of these models using both WLSMV and traditional maximum likelihood (ML) estimation because it is currently unknown whether fit indices computed under WLSMV can be judged relative to traditional benchmarks. Traditional criteria for RMSEA are that values less than .05 reflect close fit, but values less than .08 are preferable and values greater than .10 unacceptable (Browne & Cudeck, 1992). Values of SRMR less than .06 are usually deemed acceptable. We used oblique direct quartimin rotation. We considered any loading above .3 to be noteworthy, although most of the noteworthy loadings greatly exceeded .3. Items that did not conform to this criterion were omitted from further consideration. The most interpretable factor structure emerging from the exploratory factor analysis retained 27 items, RMSEA = .09 and SRMR = .047. Based on a combination of standard factor retention criteria, model fit, and interpretability, a 4-factor EFA solution was chosen as the most appropriate model for the retained items. Additional items were removed due to low loadings, nontrivial cross-loadings, and parsimony, yielding a final scale with 22 items. Coefficient alphas for three subscales were acceptable for FF = .94, ES = .86, and NA = .83. The coefficient alpha for CS (.63) was below the acceptable range of .80.

Criterion-related validity

Four measures were administered to assess constructs that were predicted to correlate negatively with the protective factors: child abuse potential (BCAP; Ondersma et al., 2005), depression (PRIME-MD PHQ; Spitzer, Kroenke, & Williams, 1999), stress (PSS; Cohen et al., 1983), and maladaptive coping (Brief COPE; Carver, 1997). As previously mentioned, all participants received the PFS, BCAP, and one other measure to minimize participant burden; thus, the sample sizes for the depression, stress, and coping measures are smaller than the overall sample size. An examination of the internal consistency of the validation measures was conducted to assess the reliability of the scales.

The BCAP was administered to a total of 249 participants from all 11 agencies ($M = 5.44$, $SD = 5.17$, $N = 209$). The BCAP demonstrated adequate inter-item consistency (Cronbach's $\alpha = .88$). The Brief COPE was administered to a total of 87 participants from 1 agency. Means and standard deviations for the 5 subscale sum scores are as follows: denial ($M = 3.19$, $SD = 1.53$, $N = 85$); substance abuse ($M = 2.10$, $SD = .41$, $N = 86$); positive reframing ($M = 5.92$, $SD = 1.62$, $N = 87$); use of emotional support ($M = 5.45$, $SD = 1.59$, $N = 86$); and use of instrumental social support ($M = 6.07$, $SD = 1.58$, $N = 86$). Items had negligible skew and kurtosis, with the exception of the 2 substance abuse items (skew = 3.14 and 5.16, kurtosis = 8.04 and 25.21). As a consequence of this, the substance abuse subscale sum is also markedly skewed and leptokurtic (skew = 4.03, kurtosis = 15.65).

The PRIME-MD PHQ was administered to a total of 67 participants from 3 agencies ($M = 14.21$, $SD = 4.55$). The PHQ demonstrated adequate inter-item consistency (Cronbach's $\alpha = .82$). The PSS was administered to a total of 60 participants from 4 agencies ($M = 24.28$, $SD = 7.09$). The PSS demonstrated adequate internal consistency (Cronbach's $\alpha = .83$).

To examine validity of the PFS, correlation coefficients were calculated between the PFS subscales and each of the other measures (see Table 4). As expected, all 4 subscales of the PFS were significantly negatively correlated with child abuse potential and stress. Similarly, all of the PFS subscales except *Concrete Support* were significantly negatively related to depression. A significant negative correlation also was observed between the *Family Functioning* subscale of the PFS and coping through denial, which is considered to be a maladaptive coping strategy. Unexpectedly, none of the PFS subscales

Table 4

EFA Sample correlations between PFS subscales and Knowledge of Parenting and Child and validation scales.

	BCAP (N = 204)	PSS (N = 60)	PHQ (N = 67)	COPE-D (N = 87)	COPE-SU (N = 87)	COPE-ESS (N = 87)	COPE-ISS (N = 87)	COPE-PR (N = 87)
FF	−.54**	−.38**	−.35*	−.26**	−.17	.38**	.26**	.39**
ES	−.43**	−.28*	−.54**	−.07	−.21	.58**	.52**	.36**
CS	−.35**	−.54**	−.09	−.17	−.10	.24*	.25*	.32*
NA	−.34**	−.30*	−.27*	.16	−.16	.21	−.03	.24*
KPCD Items								
Don't know what to do as parent[a]	−.41**	−.27*	−.28*	−.31**	−.30**	−.03	−.26*	.18
Know how to help child learn	−.20*	−.22	−.17	−.09	−.21	−.12	−.17	.04
Child misbehaves to upset me[a]	−.28**	−.55**	−.15	−.29**	−.07	−.10	−.14	.17
Praise child when behaves well	−.20**	−.38**	−.02	.06	−.40**	−.03	.10	.14
When discipline, lose control[a]	−.20**	−.13	−.26*	−.20	−.19	−.09	−.09	−.06
Child has friends own age	−.30**	−.28*	−.27*	−.05	.07	−.07	−.16	−.05

Note. BCAP = Brief Child Abuse Potential Inventory; PSS = Perceived Stress Scale; PHQ = PRIME-MD Patient Health Questionnaire; Cope Scales–D = Denial; SU = Substance Use; ESS = Emotional Social Support; ISS = Instrumental Social Support; PR = Positive Reframing. FF = Family Functioning; ES = Emotional Support; CS = Concrete Support; NA = Nurturing and Attachment; KPCD = Knowledge of Parenting/Child Development.

[a] Item was reverse coded for correlational analyses.

* $p < .05$.

** $p < .01$.

were significantly related to the maladaptive coping strategy of coping through substance use. Given the highly skewed and leptokurtic nature of the substance abuse subscale, these findings should be interpreted with caution.

The PFS subscales were significantly positively related to the adaptive coping strategy of positive reframing. Significant positive correlations were observed between adaptively coping through emotional support and through instrumental support and three of the PFS subscales (*Family Functioning*, *Emotional Support*, and *Concrete Support*).

Correlation coefficients were calculated between the validation scales and the remaining 6 *Knowledge of Parenting and Child Development* (KPCD) items (see Table 4). KPCD Item 1 measuring the confidence level of a parent exhibited significant negative correlations to child abuse potential, stress, depression, and substance abuse and social support subscales of the COPE. KPCD Item 2 asks if parents know how to help their child learn. Child abuse potential was significantly negatively correlated with this item. KPCD Item 3 explores a parent's understanding of misbehavior (e.g., "My child behaves just to upset me") and was reverse coded. This item was significantly correlated with child abuse potential, stress, and denial. KPCD Item 4 taps the use of praise when a child behaves well and was significantly negatively correlated with child abuse potential, stress, and substance abuse. The parent's ability to maintain control when disciplining a child is explored through KCPD Item 5. Child abuse potential and depression were significantly negatively correlated with this item. KCPD Item 6 asks participants if their child has a lot of friends in the same age group and was negatively correlated with child abuse potential, stress, and depression.

Confirmatory factor analyses (CFA)

We fit a confirmatory factor model to the same 22 items assessed in a new data set (N = 689) to determine whether the factor structure would replicate in an independent sample. Table 2 shows the demographic characteristics of the CFA sample. Factor loadings using both maximum likelihood and WLSMV solutions supported those of the initial EFA sample. Maximum likelihood and WLSMV loadings are reported in Table 5. Factor correlations in the CFA sample, reported in Table 6, also remained consistent with those from the original sample. Model fit indices were (for maximum likelihood) RMSEA = .079 {.075, .084} and SRMR = .07. Results demonstrate that the factor structure generalized well to a new sample. Coefficient alphas of the scales in the CFA were FF = .92, ES = .91, NA = .83, and CS = .74.

Discussion

This study contributes to the validity and reliability evidence of the PFS and offers prevention programs a practical and affordable way to assess changes in multiple protective factors in one concise instrument. The four factors performed as predicted in exploratory and confirmatory factor analyses. Three subscales (FF, ES, NA) showed adequate to high levels of internal consistency, with the fourth (CS) approaching adequacy. The *Family Functioning, Emotional Support, Concrete Support*, and *Nurturing* and *Attachment* subscales demonstrated significant correlations with the measures of risk factors for child abuse in the predicted directions. All subscales were negatively related to child abuse potential, stress, and depression and positively associated with adaptive coping strategies (use of emotional and instrumental social support and positive reframing). The results of the criterion-related validation phase of this study suggest that the PFS is a valid instrument that taps factors buffering the risk of child abuse.

Table 5
CFA sample solution: standardized factor loadings (WLSMV/ML).

	FF	ES	CS	NA
PFS3: Talk about problems	.734/.696			
PFS7: Listen to both sides of story	.803/.755			
PFS8: Take time to listen	.854/.805			
PFS12: Help each other	.917/.823			
PFS13: Solve our problems	.814/.782			
PFS16: Talk about almost anything	.871/.796			
PFS10: Family pulls together	.840/.805			
PFS18: Family feels close	.805/.681			
PFS4: Have someone to talk to		.813/.701		
PFS11: Have family, friends, or neighbors to talk to if feeling down		.904/.858		
PFS14: Have others who will listen when need to talk about problems		.892/.866		
PFS19: When lonely, several people to talk to		.891/.843		
PFS34: If crisis, others to talk to		.886/.807		
PFS15: In need, get help food and clothing			.932/.502	
PFS29[a]: No idea where to turn to for food or housing			.815/.810	
PFS32[a]: Wouldn't know where to go for help making ends meet			.821/.821	
PFS36[a]: Wouldn't know where to go for help finding job			.543/.531	
PFS47: Happy being with child				.794/.658
PFS49: Child and I feel close				.886/.751
PFS54: Able to soothe child				.826/.780
PFS55: Spend time with child				.778/.711
PFS66: Child comes to me when upset				.792/.625

Note. FF = Family Functioning; ES = Emotional Support; CS = Concrete Support; NA = Nurturing and Attachment.

[a] Item was reverse coded for factor analysis.

Implications for the field

The focus on protective factors is gaining momentum as a necessary and productive approach to child maltreatment prevention because protective factors benefit all families, help build positive relationships with service providers, and draw on natural support systems that contribute to long term success (Child Welfare Information Gateway, 2009). Programs targeting multiple protective factors currently have to piece together several instruments to assess effectiveness. The focus on protective factors and ability to measure changes is important to the field for several reasons. First, the protective factors approach has the potential to reach more parents than risk-based models. Prevention programs based on risk criteria engage a small segment of the population and serve approximately 11% of the 21 million children under the age of 5 (National Alliance of Children's Trust Funds, 2008; U.S. Census Bureau, 2008). For parents to be referred to and engage in risk programs, they have to acknowledge deficits or be court-mandated to participate in services. As a result, participating in a program based on a risk-model may be stigmatizing to parents and reduce participation in programs. The protective factors approach, on the other hand, may help overcome stigma of participating in prevention programs. A more universal approach based on protective factors would enlarge the breadth of partners to include child care and early education programs and providers. While parents may be resistant to acknowledging deficits or parent inadequacies in risk-focused programs, most parents, including those who utilize child care or early education programs, can relate to feeling overwhelmed at times and want to be better parents. They may be more open to and accepting of approaches that acknowledge and build on their strengths. In summary, protective-focused models may engage larger numbers of children and families because of greater reach, less stigma, and strong relationships with providers.

Second, in many practice settings, risk assessments are conducted at a static point in time, and services are based on the results. However, the child and the family constantly change. The family may develop risk factors that warrant different or additional services from other agencies or systems (Asawa, Hansen, & Flood, 2008; Sidebotham, 2001). For example, a family screened at the birth of a child may not be at risk at this time. Changes in marital or employment status in the first year of the child's life may place stressors on the family that could be mitigated through parent education, home visitation, or other family supports. Until the family asks for help or is referred to child welfare, the family would go without services because when screened presented low risk. A protective factors approach that includes a larger tent of prevention partners

Table 6
CFA sample maximum likelihood solution: factor correlations supplementary sample maximum likelihood CFA solution: factor correlations.

	1	2	3	4
1. FFR	–			
2. ES	.739	–		
3. CS	.347	.414	–	
4. NA	.483	.391	.222	–

Note. FFR = Family Functioning/Resiliency; ES = Emotional Support; CS = Concrete Support; NA = Nurturing and Attachment.

could elongate the continuum of screening points and result in multiple entry points for families. Families would benefit from ongoing support of the provider and would be referred for more intensive services, if needed.

Third, many risk factors such as low maternal age, maltreatment as a child, and marital status at child's birth, are static, therefore cannot be influenced by programmatic strategies (Ross & Vandivere, 2009). Models that focus on malleable protective factors and offer a continuum of programming must be able to document effectiveness to contribute to the evidence base. The PFS makes a contribution to the field to work towards that end.

In addition to the application of the PFS and a protective factors approach, the PFS can be used for a variety of program evaluation purposes. Given at the beginning of services, the PFS serves as a snapshot in time of the families being served. Staff can utilize the data to identify target areas and to select strategies that are aligned with the protective factor levels of their clients. As mentioned previously, the PFS can also be used as a summative measure to assess program effectiveness. The administration of the instrument at the beginning and end of services can provide programs with information about changes in protective factors. Analysis of subscale scores gives programs a detailed look at the types of changes participants are experiencing as a consequence of program participation. Program staff can also use the tool for continuous improvement purposes. In conjunction with program implementation data, the PFS data can be utilized to highlight effective practices or identify areas in need of improvement. Finally, documentation of protective factors will enable programs to determine if changes in the presence of these protective factors moderates the relationship between risk factors and abuse.

Limitations and directions for future research

While the PFS has demonstrated reliability and validity, some limitations must be noted, including internal consistency of the *Concrete Support* scale, generalizability, the unscalability of the *Knowledge of Parenting and Child Development* items, and limited criterion-related validity. The internal consistency of the *Concrete Support* scale increased in the CFA and demonstrated borderline-acceptable reliability (Lance, Butts, & Michels, 2006). Additional studies need to be conducted to refine and improve the scale. The 11 agencies participating in this study were primarily home visitation programs, therefore results can only be generalized to similar populations. Future studies need to be conducted to determine the applicability of the PFS with other types of programs, service delivery models, and populations, particularly parent education programs.

The formative nature of the *Knowledge of Parenting and Child Development* items does not enable the items to be combined in an easily interpretable scale. Thus, programs are not able to inform program strategies in the same way that the other scales allow. Discriminant validity with measures of risk factors has been demonstrated, however convergent validity and relationships between the PFS and other measures of individual protective factors (Table 1) and predictive validity of the occurrence of child maltreatment needs to be established. Finally, to address the changing demographics of service populations, it would be beneficial to translate the PFS into other languages to both tap protective factors in other cultural-linguistic groups and determine what, if any, cultural-linguistic group differences exist in these factors.

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