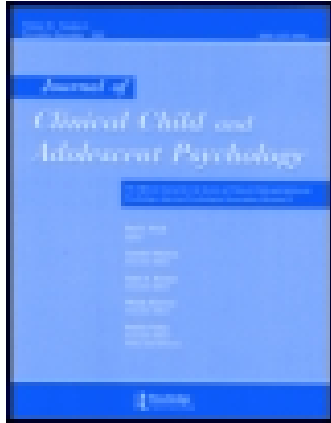


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## Journal of Clinical Child & Adolescent Psychology

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/hcap20>

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Published online: 07 Jun 2010.

To cite this article: Mary E. Haskett , Lisa S. Ahern , Caryn S. Ward & Jason C. Allaire (2006) Factor Structure and Validity of the Parenting Stress Index-Short Form, Journal of Clinical Child & Adolescent Psychology, 35:2, 302-312, DOI: [10.1207/s15374424jccp3502\\_14](https://doi.org/10.1207/s15374424jccp3502_14)

To link to this article: [http://dx.doi.org/10.1207/s15374424jccp3502\\_14](http://dx.doi.org/10.1207/s15374424jccp3502_14)

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## Factor Structure and Validity of the Parenting Stress Index–Short Form

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*The psychometric properties of the Parenting Stress Index–Short Form (PSI–SF) were examined in a sample of 185 mothers and fathers. Factor analysis revealed 2 reasonably distinct factors involving parental distress and dysfunctional parent–child interactions. Both scales were internally consistent, and these scales were correlated with measures of parent psychopathology, parental perceptions of child adjustment, and observed parent and child behavior. PSI–SF scores were related to parent reports of child behavior 1 year later, and the Childrearing Stress subscale was a significant predictor of a parental history of abuse.*

Elevated stress associated with the demands of parenting is related to a host of negative parenting characteristics, including low levels of parental warmth and reciprocity, unhealthy parenting styles, and use of harsh discipline (e.g., Rogers, 1993; Shiflet & Winsler, 2002; Springer & Cohen, 1998). Furthermore, parenting stress tends to be high among abusive and negligent parents (Dopke, Lundahl, Dunsterville, & Lovejoy, 2003; Ethier, Lacharite, & Couture, 1995; Rodriguez & Green, 1997). Given the impact of stress on childrearing and the influence of parenting on children's social adjustment (e.g., Darling & Steinberg, 1993), evaluation of parenting stress is relevant to many clinical decisions for families. For example, assessment of parenting stress is recommended in divorce mediation and child custody proceedings and in determination of parenting competence and risk for abuse (Budd, 2001; Heinze & Grisso, 1996). Reduction in parenting stress is considered important for parents of children with disruptive behavior problems (Kazdin, Siegel, & Bass, 1992), developmental disabilities and delays (Smith, Oliver, & Innocenti, 2001), and chronic illness (Hauenstein, 1990).

To have confidence in decisions made on the basis of parents' levels of distress, mental health professionals must have reliable and valid measures of parenting stress. One of the most common tools for this purpose is the Parenting Stress Index (PSI; Abidin, 1983). In spite of its strong properties, the PSI is a lengthy instrument, and in the context of a substantial assessment battery the time requirement can be prohibitive. As a result, Abidin (1995) developed a 36-item derivative of the instrument (the short form; PSI–SF) based on factor analyses of the PSI that indicated a three-factor solution with the three dimensions labeled Difficult

Child, Parent Distress, and Parent–Child Dysfunctional Interaction. Abidin's (1995) validation of the PSI–SF was based on two samples of mostly White, primarily married mothers of young children (mean age under 4 years). The correlation between the total scores on long and short form was quite high (.87) in this sample. However, given the important decisions often made using the PSI–SF, its validity requires further testing.

Although the PSI–SF has been used in a variety of applications (e.g., Britner, Morog, Pianta, & Marvin, 2003; Button, Pianta, & Marvin, 2001; Wolfe & Hirsch, 2003), few investigators have examined its psychometric integrity. Deater-Deckard and Scarr (1996) conducted a confirmatory factor analysis (CFA) of the PSI–SF with a sample of married couples, and results indicated a poor fit for a three-factor model. Based on item loadings in an exploratory factor analysis, the authors dropped 17 items and retested the fit of a three-factor structure using CFA; fit indexes suggested improved fit. In terms of discriminant validity of the revised scales, the Difficult Child subscale was more strongly associated with parent reports of child emotional lability and misbehavior than to measures of marital dissatisfaction and spousal support. Evidence for discriminant validity of the other subscales was mixed.

Reitman, Currier, and Stickle (2002) evaluated the PSI–SF using a sample of 192 primarily African American mothers of preschool children. Using CFA of nested three-, two-, and one-factor models, the authors found that all models demonstrated reasonable fit (comparative fit index = .90 for each). Although there was little statistical support for a three-factor solution over a more parsimonious one-factor solution, there was some support for the discriminant validity of the three scales. To illustrate, children's oppositional behavior was more strongly associated with the Difficult Child subscale than with the Parent Distress and Parent–Child Dysfunctional Interaction subscales.

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A variety of validity indicators have been utilized to examine validity of the PSI and PSI-SF. In terms of emotional health, past research indicates that scores on the PSI are related to scores on the Symptom Checklist-90-Revised (SCL-90-R; Abidin, 1995), and Reitman and colleagues (2002) found that scores on the Brief Symptom Index, a derivative of the SCL-90-R, were related to PSI-SF scores. With respect to parenting behavior, Pinderhughes, Dodge, Bates, Pettit, and Zelli (2000) found that parents' scores on the PSI predicted the disciplinary strategies they reported using with their children. Similarly, Bhavnagri (1999) found that PSI-SF scores were related to parents' reports of their use of various strategies to promote their children's peer relationships. Although the longer PSI has also been shown to be related to observed parenting (e.g., Bigras, LaFreniere, & Dumas, 1996; Darke & Goldberg, 1994), we found no validation studies of the PSI-SF using direct observation of parenting. In terms of children's social and emotional adjustment, many studies show that the PSI (e.g., Eyberg, Boggs, & Rodriguez, 1992) and PSI-SF (e.g., Hart & Kelley, in press; Reitman et al., 2002) are related to parents' perceptions of their children's adjustment, but the PSI-SF has not been validated using nonparent reporters of child functioning. Furthermore, although observed child behavior during interactions with parents has been related to PSI scores (e.g., Teti, Nakagawa, Das, & Wirth, 1991), to our knowledge the relation between PSI-SF scores and direct observation of child behavior has not been examined.

A measure of parenting stress also should discriminate between parents with inadequate caregiving and those whose parenting practices are positive and healthy. Several studies indicate that PSI scores are related to child abuse potential (e.g., Holden & Banez, 1996; Rodriguez & Green, 1997), and some investigations indicate that PSI scores of abusive and neglectful parents are higher than scores of nonabusive parents (Ethier, Lacharite, & Couture, 1995; Mash, Johnson, & Kovitz, 1983). However, those findings are not stable across studies (see Holden & Banez, 1996; Holden, Willis, & Foltz, 1989; Whipple & Webster-Stratton, 1991). To date there have been no examinations of the utility of the PSI-SF in differentiating abusive and nonabusive parents; however, one study reported that substance-abusing mothers, many of whom had abused their child, obtained significantly higher scores than nonsubstance-abusing mothers on all three subscales of the PSI-SF (Kelley, 1998).

To further examine the psychometric properties of the PSI-SF, we tested the structure of the instrument using a combination of confirmatory and exploratory factor analysis. We also examined the correlations between subscales and measures of related constructs (i.e., parent emotional health, parent behavior, and child adjustment). We explored the predictive validity

of the scale by examining the relation between PSI-SF scales and subsequent child adjustment and its ability to differentiate parents with histories of physical abuse from parents without histories of reported abuse.

## Method

### Participants and Procedures

Two hundred four parents and their children were enrolled in a study of the social adjustment of young children approved by the North Carolina State University Institutional Review Board. The purposes of the broader study were (a) to examine the influence of socialization variables (i.e., parenting and family processes) and children's social information processing operations on social competence of abused and non-abused children and (b) to investigate interactions of emotional and social cognitive functioning in the prediction of parenting competence. Several measures administered in that study were used to address our research questions. Two hundred of the parents enrolled in the study completed the PSI-SF. Fifteen of the 200 parents had elevated scores on the Defensive Responding scale of the PSI-SF, and they were omitted from analyses.

Of the remaining 185 parents (80% mothers or mother figures, 20% fathers or father figures), 90 had documented histories of reported physical abuse and 95 had no known history of abuse. Children (48% female) were between the ages of 4 and 10 years ( $M = 7$  years,  $SD = 1.5$ ). The majority (68%) were African American, 34% were Caucasian, and 2% were Hispanic or biracial. Forty-five percent of parents were married or living with a partner. Although 18% had not completed high school, 23% had a college degree. The full range of socioeconomic status (SES; Hollingshead, 1975) was represented, with 36% at the two highest levels and 43% at the two lowest levels. Mean parent age was 34.4 years ( $SD = 8.0$ ). Abused children ( $M = 7.5$  years) were significantly older than comparison children ( $M = 7.0$  years), but there were no other group differences on any sociodemographic characteristics. Scores on all measures for the full sample and subsamples are provided in Table 1 to aid interpretation of findings.

Abusive parents were recruited from child protective services, and comparison parents were recruited by distribution of flyers posted in neighborhoods where abusive participants resided. Comparison parents were screened for child abusive behavior through (a) a psychosocial phone interview that included questions about contact with child protection agencies, (b) administration of a modified version of the Conflict Tactics Scale (CTS) by phone, and (c) a review of the child protective services register. Any pro-

**Table 1.** Scores for Comparison<sup>a</sup> and Abusive<sup>b</sup> Parents and Full Sample

	Full Sample		Abusive		Comparison		<i>t</i> Value ( <i>df</i> )	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Parent Stress Index/Short Form								
Personal Distress <sup>c</sup>	2.44	0.62	2.54	0.64	2.35	0.58	5.17(184)*	0.76
Childrearing Stress <sup>c</sup>	2.27	0.62	2.44	0.66	2.11	0.55	13.72(184)***	2.02
Total Stress <sup>d</sup>	83.90	20.40	89.20	21.20	79.00	18.30	12.38(184)***	1.83
Validation Variables								
Global Severity Index <sup>e</sup>	56.20	9.90	57.90	10.20	54.60	9.50	5.18(184)*	0.76
ECBI: Intensity <sup>c</sup>	3.00	0.89	3.20	0.93	2.80	0.78	6.57(140)**	1.11
Conflict Tactics Scale <sup>f</sup>	14.40	2.50	14.80	2.60	13.90	2.30	4.61(162)*	0.92
Sensitive Parenting <sup>c</sup>	4.30	1.00	4.10	0.11	4.50	0.11	-2.30(167)*	0.36
Negative Parenting <sup>c</sup>	2.20	0.89	2.30	0.09	2.10	0.09	1.42(167)	0.22
Positive Child Behavior <sup>c</sup>	5.50	0.62	5.30	0.64	5.70	0.54	-4.20(167)***	0.65

Note: ECBI = Eyberg Child Behavior Inventory. *T* values are for comparisons of Abusive and Comparison samples; Cohen's *d* is the effect size for group differences. Missing data are due to inclusion of an additional measure late in the study (ECBI) or failure to complete a measure due to time constraints. All analyses were repeated using only participants with complete data, and the pattern of findings was the same as the pattern using the full sample.

<sup>a</sup>*n* = 95. <sup>b</sup>*n* = 90. <sup>c</sup>*M* score. <sup>d</sup>Percentile score. <sup>e</sup>*T* score. <sup>f</sup>Raw score sum.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

spective comparison parent with a history of abuse based on any of those procedures was not enrolled in the study (*n* = 3). Parents who met criteria for inclusion were scheduled for a family assessment at a university-based clinic. Parents were informed prior to the psychosocial screening interview conducted by phone and again prior to data collection in the clinic that the investigators would abide by their legal responsibility to report to the county child protection agency any suspicions of unreported abuse or neglect that might arise in the context of the interview or data collection. Parents gave written informed consent for participation, and children indicated verbal assent prior to data collection. Parents were paid \$75 for participation. Six months later, measures of school-based child adjustment were collected; observers conducted observations of child behavior on the playground, and teachers completed a behavior checklist. School-based data were available for 154 children.

A secondary goal of the broader project was to examine stability of functioning of abusive parents and their children; thus, the last 35 abusive parents enrolled in the study were contacted 1 year after initial data collection and invited to return for a second assessment. The follow-up sample was limited in number due to funding constraints. Twenty-one of the 35 parents (66%) agreed to participate. The PSI-SF and Eyberg Child Behavior Inventory (ECBI) administered again at the follow-up session, were used in this study to examine test-retest stability and predictive validity of the PSI-SF.

## Measures

**PSI-SF.** The PSI-SF (Abidin, 1995) is a 36-item self-report measure of parenting stress. Three sub-

scales consist of 12 items each. Parents use a 5-point scale to indicate the degree to which they agree with each statement. The Parental Distress subscale yields a score that indicates level of distress resulting from personal factors such as depression or conflict with a partner and from life restrictions due to the demands of child-rearing. The Parent-Child Dysfunctional Interaction subscale provides an indication of parents' dissatisfaction with interactions with their children and the degree to which parents find their children unacceptable. The Difficult Child subscale measures parents' perceptions of their children's self-regulatory abilities. The PSI-SF includes a Defensive Responding scale (seven items from the Parental Distress scale) that indicates the degree to which the parent might be attempting to deny or minimize problems.

**Emotional health.** The SCL-90-R (Derogatis, 1983) is a self-report inventory designed to assess current patterns of psychological symptoms experienced by adults. It consists of 90 symptoms that are rated on a 5-point scale to indicate how much each symptom has bothered parents in the past 7 days. The Global Severity Index, utilized in this research, combines the number of symptoms reported and intensity of distress to yield a single indicator of current emotional health. Raw scores were converted to *T* scores using adult nonpatient norms. Psychometric properties of the SCL-90-R have been examined extensively. Convergent-discriminant validity studies indicate SCL-90-R scales have moderate to high correlations with corresponding Minnesota Multiphasic Personality Inventory scales; for example, correlations between the analogous depression scales range from .68 to .75. The SCL-90-R also has been effective in discriminating



diagnostic categories of psychopathology and measuring amelioration of relevant symptoms within the therapeutic process (see Derogatis & Lazarus, 1994). Internal consistency of scales for this sample ( $\alpha = .74-.88$ ) was consistent with the range reported by the author.

**Parent perceptions of child adjustment.** The ECBI (Eyberg & Pincus, 1999) was used to assess parents' perceptions of their children's adjustment. The ECBI is a parent rating scale covering 36 common child behavior problems, and parents estimate (using a 7-point scale) the frequency with which their child exhibits each the behaviors. The resulting sum comprises the Intensity score. Mean Intensity scores of 3.5 or greater (raw score of 127) are considered to be within the "conduct problems" range. The ECBI is a widely used measure of behavior problems, is sensitive to effects of parent training interventions, and has strong psychometric properties. Twelve-week test-retest stability is high (.75), and correspondence between mothers and fathers on the Intensity score is good (.69). Scores on the ECBI are correlated with observational measures of child affect and behavior during mother-child interactions and with parent-reported temperament (for a summary of psychometric properties, see Eyberg & Pincus, 1999). For this sample, internal consistency of the Intensity score was .92.

**Parenting behavior.** The two measures of parenting employed in this study were a self-report measure of discipline and an observational measure of parenting. The CTS (Straus, 1979) served as the measure of self-reported discipline tactics. A 20-item modified CTS (Kaufman, Jones, Stieglitz, Vitulano, & Mannarino, 1994) was administered orally by phone in the context of a comprehensive psychosocial interview. Respondents used a 3-point scale of 1 (*never*), 2 (*once*), or 3 (*more than once*) to indicate the frequency with which they used each discipline strategy (e.g., "reasoned with your child," "hit your child with strap, belt, or rope") in the 3 months preceding the interview. A total raw score was generated by summing frequency ratings for the 11 items that represented harsh physical discipline; scores thus ranged from 11 through 33. The CTS is a frequently used measure of family violence, and there is a substantial body of support for its validity (see Strauss, 1990). In support of the form utilized in this study, the modified CTS was used to identify clusters of abusive parents that were subsequently validated on the basis of differential functioning in emotional health, perceptions of child's adjustment, and problem solving (Haskett, Smith Scott, & Ward, 2004).

To observe parenting behavior, each parent and his or her child participated in a 30-min interaction session videotaped for later coding. During the first 10-min

segment, dyads were instructed to play together in a room with a standard set of age-appropriate toys. In the second 10-min segment, parents were told to ask their child to clean up the toys, draw a picture of a person, and then sit quietly while the parent read a magazine. In the final 10-min segment, the parent was instructed to help the child quickly complete two puzzles. The parent was not allowed to touch the puzzle pieces. A visible and audible timer was set for 10 min. Parenting behavior was coded from videotapes using the Qualitative Ratings of Parent-Child Interactions (Cox, 1997). The six parenting dimensions coded were Sensitivity, Intrusiveness, Detachment, Positive Regard for the Child, Negative Regard for the Child, and Flatness of Affect. The Sensitivity category refers to the degree to which the parent responds to the child's needs. The Intrusiveness category reflects the parent's interference with the child's needs, interests, or actions or dominance in the interaction. The Detachment category represents the level of parental interest and emotional involvement with the child. The Positive Regard category represents the parent's verbal and physical warmth, shown by such behaviors as smiles, hugs, praise, and enthusiasm. Negative Regard refers to the intensity and frequency of parental negative affect toward the child. Physical tension, harsh voice tones, and punitive comments are characteristic of this domain. The final category is Flatness of Affect, which represents the parent's level of animation and apparent energy as reflected in face, voice, and body.

Undergraduate and graduate students were trained to conduct reliable coding. Interrater reliability was examined for 25% of the dyads, and kappa coefficients for exact agreement on codes for the six categories ranged from .76 to .92. Scoring of the scales involved ratings from 1 to 7 (with 7 indicating that the category was highly indicative of the observed parenting) on each of the six parenting dimensions for each of the three 10-min segments, for a total of 18 data points for each dyad. Bivariate correlations of ratings across the three segments showed significant intersegment consistency in ratings, thus a mean score of 1 to 7 was generated by averaging ratings across the three segments. Factor analysis supported further data reduction to scores for Sensitive Parenting (i.e., Detachment and Flatness of Affect reverse coded, Sensitivity, and Positive Regard) and Negative Parenting (i.e., Intrusiveness, Negative Regard). Internal consistency (Cronbach's alpha) was .84 for Positive Parenting and .68 for Negative Parenting.

**Observed positive child behavior.** A measure of child behavior was derived from the parent-child interaction session described previously. Child behavior was coded using a 7-point scale (similar to that described earlier) for Positive Mood, Negative Mood, Persistence, and Compliance (Cox, 1997). Positive

Mood was indicated by signs of contentment such as smiles, laughter, and animated play. Negative Mood was indicated by signs of discontent such as irritability, crying, and turning away from the parent. Persistence referred to on-task behavior; children who scored high were consistently focused on the play materials or their parent. Compliance referred to the degree to which the child followed parental requests or commands. Reliability across coders was examined for 34% of the interaction sessions, and kappa coefficients ranged from .75 to .94 for exact agreement on codes. Data consisted of a rating from 1 to 7 on each dimension for the three 10-min segments. A summary score was generated for Positive Child Behavior by totaling mean scores for Positive Mood, Negative Mood (reverse coded), Persistence, and Compliance across three situations and dividing by 3 for a mean total score. Internal consistency of the scale was rather low (.54) with a mean item-total correlation of .67.

**Teacher report of child adjustment.** Six months after the initial family assessment, the Social Behavior Scale was administered. The Social Behavior Scale includes 39 descriptions of child behavior that comprise seven scales. Prosocial Behavior, Relational Aggression, Depressed, and Overt Aggression subscale items were drawn from the Children's Social Behavior Scale (Crick, 1996) and the Preschool Social Behavior Scale (Crick, Casas, & Mosher, 1997). The Excluded and Victimized scale items were taken from the Child Behavior Scale (Ladd & Profilet, 1996). Factor analysis of the Social Behavior Scale, based on 180 participants in the larger study on which this sample was drawn, supported the seven-factor structure, and internal consistency of subscales was high (Cronbach's  $\alpha = .78-.93$ ). Scales used in this study were Prosocial Behavior and Overt Aggression; based on research showing links between parental distress and teacher reports of maladaptive child behavior (Abidin, Jenkins, & McGaughey, 1992; Creasey & Reese, 1996), it was thought that those scales were the most likely to be predicted by PSI-SF scores.

**Observed playground behavior.** Children were observed for 30 min during recess on their school playground. Using a 15-sec interval recording system, the child was observed for 10 sec and the occurrence of target behaviors was recorded during the next 5 sec. Engagement was defined as behavior that had the purpose of engaging peers in interaction or continuing the interaction initiated by peers. Negative Behavior included negative verbal expressions or negative physical gestures directed to peers. Rough Play included physical contact of a negative nature but without the strength or intensity to be classified as aggressive (e.g., tugging on clothes, shouldering or elbowing). Aggression was contact with a peer that included the potential for harm

or damage (e.g., hitting, throwing objects at a peer). Percentage of intervals in which each behavior occurred was calculated. Interrater reliability of coding was determined for 25% of the observations using a second observer. Intraclass correlations (2, 1) using an absolute agreement definition were .80 for Rough Play, .86 for Negative Behavior, .88 for Aggression, and .95 for Engagement. A ratio of the percentage of intervals in which negative behavior occurred (Negative Behavior, Rough Play, and Aggression) to the percentage of intervals in which any social behavior occurred (i.e., negative social behavior/total social behavior) served as the indicator of observed peer social behavior.

## Results

### Factor Structure

To test the fit of a three-factor model, CFA was conducted using the AMOS structural equation modeling software program (Arbuckle & Wothke, 1999). Factors included those items that represented each of the three published subscales. The model was not a good fit for the observed data,  $\chi^2(557) = 1037.08, p < .01$ ; comparative fit index = .77; normed fit index = .62, incremental fit index = .78, Tucker-Lewis Index = .74. To follow up on the failure of CFA to support a three-factor structure, an exploratory factor analysis with promax rotation was conducted to consider alternative factor structures. Examination of the scree plot led us to consider two-, three-, and four-factor models (first eight eigenvalues: 9.91, 2.63, 2.07, 1.73, 1.40, 1.24, 1.21, 1.12). The pattern matrix (see Table 2) for the two-factor solution (31% of the variance explained) showed that only a few items failed to load on either factor at .40 or higher or loaded on both factors. Interestingly, one factor was made up exclusively of items from the Parent Distress subscale and the other included items from the Parent-Child Dysfunctional Interaction and Difficult Child subscales. The three-factor solution (accounting for 41% of the variance) resulted in four orphaned items and several cross-loading items. Two items were associated with a factor other than the one to which Abidin (1995) had assigned them. The four-factor solution (accounting for 46% of the variance) resulted in two orphaned items and several cross-loading items; three items loaded on a factor other than the one to which Abidin had assigned them.

On review of these models, there appeared to be strongest support for a two-factor model. First, a two-factor model provided the most parsimonious solution. Second, while remaining parsimonious, the two-factor solution also was the most theoretically defensible model. In contrast, one of the factors in the four-factor model consisted of items that did not appear to represent a unified dimension of parenting stress, and all of the cross-loading items were on a single factor, which

**Table 2.** *Parenting Stress Index–Short Form: Factor Loadings for Two-Factor Solution*

Item and Description	Personal Distress	Childrearing Stress
1. Feel that I cannot handle things	<b>.450</b>	.411
2. Gave up my life for children's needs	<b>.457</b>	.265
3. Feel trapped by parenting responsibilities	<b>.623</b>	.456
4. Unable to do new and different things	<b>.525</b>	.207
5. Never able to do things that I like to do	<b>.584</b>	.414
6. Unhappy with last purchase of clothing for myself	<b>.447</b>	.072
7. Quite a few things bother me	<b>.547</b>	.325
8. Having a child caused problems with spouse	<b>.192</b>	.175
9. Feel alone and without friends	<b>.563</b>	.260
10. Expect not to enjoy myself at parties	<b>.438</b>	.345
11. Not as interested in people as I used to be	<b>.493</b>	.191
12. Don't enjoy things as I used to	<b>.533</b>	.283
13. Child rarely does things for me	.509	<b>.657</b>
14. Child does not like me or want to be close	.443	<b>.693</b>
15. Child smiles at me less than expected	.428	<b>.667</b>
16. My efforts for child aren't appreciated	.421	<b>.690</b>
17. Child doesn't giggle or laugh much when playing	.218	<b>.519</b>
18. Child doesn't learn as quickly as other children	.330	<b>.564</b>
19. Child doesn't smile as much as other children	.401	<b>.663</b>
20. Child isn't able to do as much as expected	.318	<b>.548</b>
21. Takes a long time for child to get used to new things	.272	<b>.553</b>
22. Parent's rating of competence	.392	<b>.411</b>
23. Expected to have closer feelings for my child	.481	<b>.645</b>
24. Child does things that bother me to be mean	.330	<b>.545</b>
25. Child cries or fusses more often than other children	.223	<b>.558</b>
26. Child wakes in bad mood	.385	<b>.670</b>
27. Child is moody and easily upset	.311	<b>.713</b>
28. Child does things that bother me a great deal	.386	<b>.584</b>
29. Child reacts strongly	.129	<b>.434</b>
30. Child gets upset easily	.217	<b>.507</b>
31. Child's sleeping or eating schedule hard to establish	.186	<b>.368</b>
32. Getting child to do something is hard	.387	<b>.427</b>
33. Parent report a number of bothersome things child does	.479	<b>.420</b>
34. Child does some things that bother me	.421	<b>.438</b>
35. Child is more of a problem than expected	.362	<b>.501</b>
36. Child makes demands on me	.335	<b>.610</b>

*Note:* Factor loadings are based on exploratory factor analysis with promax rotation. Factors on which items load are represented in boldface.

reduced the interpretability of that factor. Third, the two-factor model had the fewest cross-loading items. Finally, estimates of internal consistency for Factor 1 ( $\alpha = .78$ ) and Factor 2 ( $\alpha = .91$ ) were acceptable ( $\alpha = .83$  for the Total scale). Factor 1 included the items that comprise the Parent Distress scale in the published version of the PSI-SF, and the second factor consisted of items on the original Parent–Child Dysfunctional Interaction and Difficult Child subscales. For purposes of this study, the first factor was labeled Personal Distress (PD), and the second factor was labeled Childrearing Stress (CS). The correlation between the PD and CS scales was  $.58$  ( $p < .001$ ), and the PD and CS were highly related to the Total scale, at  $.79$  ( $p < .001$ ) and  $.95$  ( $p < .001$ ), respectively.

### Tests of Construct Validity

**Correlations with criterion variables.** The first assessment of validity involved tests of the relation be-

tween scores on the two scales and scores on criterion measures (Table 3). As anticipated, scores on the PD scale were significantly related to Global Severity Index scores on the SCL-90-R,  $r(185) = .54$ ,  $p < .001$ . Also as expected, scores on the CS scale were significantly related to parenting behavior as measured by the CTS,  $r(163) = .23$ ,  $p < .01$ , and by the observed Sensitive Parenting index,  $r(168) = -.22$ ,  $p < .01$ . Finally, scores on the CS scale were significantly related child behavior, as measured by observed Positive Child Behavior scores,  $r(168) = -.25$ ,  $p < .001$ , and parent reports on the ECBI,  $r(141) = .61$ ,  $p < .001$ . Scores on the observed Negative Parenting index were unrelated to either scale, so that variable was excluded from subsequent analyses.

In terms of discriminant validity, each scale was expected to be uniquely related to specific outcomes in theoretically meaningful ways. For instance, the Global Severity Index, which assesses parents' emotional health, should be best predicted by the PD scale as opposed to the CS scale. Positive child behavior should

**Table 3.** Correlations Between PSI-SF Scores and Scores on Criterion Measures

	PSI-SF Subscales		
	Personal Distress	Childrearing Stress	Total Stress
Parent Report Data			
Global Severity Index	.54***	.48***	.56***
ECBI Intensity Scale	.31***	.61***	.55***
Conflict Tactics Scale	.18*	.23**	.23**
Observational Data			
Sensitive Parenting	-.09	-.22**	-.20**
Negative Parenting	.05	.11	.10
Positive Child Behavior	-.16*	-.25***	-.24***

Note: PSI-SF = Parenting Stress Index–Short Form; ECBI = Eyberg Child Behavior Inventory.

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

**Table 4.** Hierarchical Regression of PSI-SF Scales Predicting Parenting Measures and Child Adjustment

Criteria	Observed Sensitive Parenting		Conflict Tactics Scale		Positive Child Behavior		Eyberg Child Behavior Inventory	
	B	R <sup>2</sup>	B	R <sup>2</sup>	B	R <sup>2</sup>	B	R <sup>2</sup>
Step 1								
Personal Distress	-.10	.01	.18*	.03	-.16*	.03	.31***	.10
Step 2								
Personal Distress	.04		.06		-.03		-.08	
Childrearing Stress	-.25**	.05	.19*	.05	-.23**	.06	.66***	.38

Note: PSI-SF = Parenting Stress Index–Short Form; B = standardized coefficient.

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

be related more strongly to CS than the PD scale. Consequently, to test these and other predictive relations, hierarchical regression models were estimated. For each hierarchical model, the theoretically related scale of the PSI-SF was entered in the second of two steps to determine whether it was a unique and significant predictor after controlling for the other scale.

For the Global Severity Index measure, both scales were unique and significant predictors at Step 2 (CS scale  $B = .27$ ; PD scale  $B = .38$ ), together explaining 34% of the variance, of which 10% was uniquely explained by the PD scale. For the remaining outcomes (e.g., Sensitive Parenting, CTS, Positive Child Behavior, ECBI), it was expected that the CS scale would be a stronger predictor than the PD scale. As can be seen in Table 4, the PD scale was a significant predictor (with one exception) in Step 1, as was the CS scale in Step 2. Interestingly, however, the PD scale was no longer a significant predictor at Step 2, thereby indicating that the CS scale explained all of the variance in the outcomes associated with the PD scale, and it provided unique explanatory variance.

#### Test-Retest Stability and Predictive Validity

PSI-SF scores were highly stable over a 1-year period, based on a subsample of 21 abusive parents. Cor-

relations between the first and second assessments were  $r(21) = .61$ ,  $p < .005$  for the PD scale;  $r = .75$ ,  $p < .001$  for the CS scale; and  $r = .75$ ,  $p < .001$  for the Total scale. To determine whether the 21 participants in the follow-up sample were representative of the full sample of abusive parents, we examined subgroup differences on demographic and dependent variables. There were no significant subgroup differences on any dependent variable. However, the follow-up subsample was older ( $M = 39$  years) than the full sample ( $M = 33$  years) of abusive parents,  $t(1, 88) = 9.5$ ,  $p < .01$  (Cohen's  $d = 2.2$ ). The follow-up sample also was characterized by lower SES, with 71% of follow-up abusive parents in the lower two levels of SES compared to 41% of the full sample,  $\chi^2(4) = 13.7$ ,  $p < .01$  (Cramer's  $V = .35$ ).

We examined the degree to which PSI-SF scale scores were associated with later child adjustment. As hypothesized, scores on the first administration of the PD scale,  $r(21) = .31$ ,  $p < .001$ , and CS scale  $r(21) = .61$ ,  $p < .001$ , correlated with ECBI scores obtained 1 year later. However, correlations between PSI-SF scales and both observed playground behavior and teacher report (Overt Aggression and Prosocial Behavior) collected 6 months after the PSI-SF was first administered were extremely small and, with one exception, were nonsignificant. The one significant cor-



relation was between the CS scale and Prosocial Behavior ( $-.19, p < .05$ ).

**Clinical utility.** We examined clinical utility of the two PSI-SF scales in terms of their ability to predict abuse or comparison group status. More specifically, a logistic regression model was estimated to determine the extent to which the scales uniquely predicted group status (1 = abuse, 0 = comparison). Results indicated that the PD scale was not a significant and unique predictor of group status ( $B = .20, SE = .32, Wald = .40, p > .05$ ), whereas the CS scale was a significant predictor ( $B = 1.03, SE = .34, Wald = 9.72, p < .01$ ) even after controlling for the PD scale. That is, higher scores on the Childrearing Stress scale were associated with a significant increase in the odds of being in the abused group (odds ratio = 2.80, confidence interval = 1.44–5.45). With every unit increase in the CS scale, the odds of being in the abused group increased by 180%.

## Discussion

Because the PSI-SF is based on a psychometrically sound instrument and is less time-consuming to administer than the full version, its use probably will increase. Hence, examining properties of the PSI-SF with a diverse sample of parents is an important endeavor. In this study, the CFA failed to support a three-factor model. Likewise, Deater-Deckard and Scarr (1996) failed to find evidence for a three-factor structure using CFA. Although Reitman and colleagues (2002) found reasonable fit for a three-factor model using CFA, a two-factor model provided an equally good fit. In summary, lack of support for a three-factor model has been found across diverse samples, indicating that the failure of a three-factor solution for the PSI-SF is not likely to be sample-specific.

Results of our exploratory factor analysis indicated the presence of two reasonably discrete factors. This structure is consistent with early multidimensional models of parenting stress (Abidin, 1983; Burke & Abidin, 1980), which included a “mother characteristics” domain and a “child characteristics” domain (more recently referred to as parent and child domains). Many empirical studies (e.g., Bigras et al., 1996) and theoretical models (e.g., Deater-Deckard, 1998) published subsequent to Abidin’s (1983) early work have supported the presence of those two primary dimensions of parenting stress. These findings provide additional support for the existence of two related but qualitatively different domains of parenting stress.

We proceeded to examine the convergent and discriminant validity of the two scales, which we labeled

PD and CS. As expected, and consistent with past research (Bigras et al., 1996; Douglas, 2000; Reitman et al., 2002; Willner & Goldstein, 2002), parents who reported a high level of stress on the PD subscale also reported poor overall emotional health on the SCL-90-R. Further, parents who reported difficulty with their child’s self-regulatory capacity and demandingness on the CS scale also viewed their child’s adjustment as highly problematic on a separate measure of child adjustment. That finding is congruent with research showing that the original Difficult Child subscale of the PSI-SF was related to other parent-report measures of child adjustment (e.g., Reitman et al., 2002; Silovsky & Niec, 2002) and with the broader literature that demonstrates a link between high parenting distress and parent reports of child maladjustment (e.g., Creasey & Reese, 1996). A more stringent test of convergent validity was our assessment of the relation between parents’ reports of stress in childrearing and observers’ reports of child behavior during a concurrent parent–child play session. The CS scale performed fairly well on that test, although scores on the CS scale were more closely related to parent reports of child behavior than to observed child behavior. That finding was not surprising given the impact of shared method variance, and it was consistent with findings of Bigras and colleagues.

A goal of this study was to determine the degree to which the two scales represented unique sources or dimensions of parenting stress. The correlation between the scales (.58) suggested that the PD and CS scales might represent overlapping yet distinct constructs. In our direct tests of discriminant validity, results indicated reasonable support for the distinction between the two scales. In particular, the CS scale was a better predictor of observed and parent-reported child adjustment than was the PD scale (although the relation between CS scale scores and observed behavior was admittedly modest). In fact, the PD scale was unrelated to child-related constructs when the CS scale was in the prediction model. Also consistent with our expectations, the PD scale predicted unique variance in parental emotional health even when controlling for the variance accounted for by the CS scale. These findings provide support for the independence of the two scales. It should be noted, however, that neither scale explained a large portion of variance for any criterion variable other than parent reports of child adjustment as measured by the ECBI.

With respect to predictive validity, PSI-SF scores were related to parents’ reports of their children’s disruptive behaviors in the home 1 year later. That finding is remarkable given the small sample size ( $n = 21$ ) on which the analysis was based. In contrast, PSI-SF scores were not significantly related to subsequent observational or teacher-report measures of children’s so-

cial adjustment. Our test of predictive validity was perhaps overly rigorous. Playground observations and teacher reports were conducted 6 months after the PSI-SF was administered. Furthermore, observations were designed to assess the quality of peer interactions outside the home setting. The task of predicting peer social adjustment using teacher and observer reports from a single measure of parenting stress administered 6 months earlier might be overly demanding. Indeed, even concurrent reports of child adjustment by teachers and parents do not converge highly (e.g., Glaser, Kronsoble, & Forkner, 1997; Stanger & Lewis, 1993). Test-retest stability of the PSI-SF was indicated by high correspondence between the scores of parents at two time points, separated by a full year. These findings point to stability of PSI-SF scores among a clinical population, specifically. All of the 21 parents for whom test-retest data were available had a substantiated history of abuse of their child, but mean scores (with a possible range of 1–5) on both PSI-SF scales were in the low average range at both assessments (PD scale  $M = 2.6$  and  $2.4$  for the first and second assessments, respectively; CS scale  $M = 2.3$  and  $2.1$  for the first and second assessments, respectively).

Because our sample included parents who were known to have physically abused their child as well as parents with no known history of abusive parenting, we were able to test the clinical utility of PSI-SF scores by determining whether those scores were predictive of abuse group status. Results provided modest support for clinical utility of PSI-SF scores, particularly for scores on the CS scale. Thus, as suggested by Abidin (1995), higher scores might indeed indicate a need for professional intervention. However, it is important to remain cognizant of the fact that determinations of parenting competence should not be made on the basis of an elevation on a single measure; a multimethod assessment of parenting is essential (Budd, 2001).

Several limitations of this study must be noted. First, findings are restricted to parents of preschool and elementary school age children. It is certainly possible that, because the challenges of parenting change over time, the psychometric properties of the PSI-SF could be different for parents of toddlers or adolescents. An advantage of this study was the use of observed parent and child behavior as criterion measures on which to validate the PSI-SF. However, the parent-child interaction coding system we employed was developed for younger children, and its validity for use with older children has not been established outside our research lab. Future studies should utilize observation systems with a broad base of empirical support, such as the Dyadic Parent-Child Interaction Coding System (Eyberg & Robinson, 1983). In addition, the global nature of codes for observational data might have obscured associations between scores on those measures and the PSI-SF. Further, internal consistency of the measure of

observed child behavior during interactions with parents was low. A final limitation is the small sample size for the assessment of stability of PSI-SF scores; although the follow-up sample was generally representative of the full sample of abusive parents, those in the follow-up sample were somewhat older and of lower SES.

In closing, our findings support a two-factor structure of the PSI-SF. In support of the validity of the two scales, scores were stable over time and were differentially related to observed and self-reported parenting and to parent emotional health and perceptions of children. In terms of clinical utility, the CS scale was predictive of membership in our subsample of abusive parents. If the two-factor solution is upheld in subsequent studies, the relative utility of the two scales in clinical decision making (e.g., different intervention needs might be indicated by elevations on each scale) and theory building (e.g., the two components of stress might predict unique dimensions of child adjustment) could be examined more fully. Such investigations have proven useful for the parent and child domains of the full version of the PSI.

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*Received February 7, 2005*

*Accepted November 28, 2005*