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Factor Analytic Structure and Validity of the Parental Feelings Inventory: A Brief Report

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Abstract Previous research has highlighted the important role of parental emotions in parent–child interactions and child development. The present study presents the Parental Feelings Inventory (PFI), a new rating scale designed to assess parental emotions within the parenting role. The PFI presents emotion adjectives and asks parents to indicate the degree to which they experience that emotion in their role as parents. This study investigates the factor analytic structure and psychometric properties of this scale in a sample of parents with 3-year-old children. Participants included 149 mothers and 107 fathers of preschool-age children. The results provide support for a three-factor solution (Angry, Happy, and Anxious/Sad). This scale demonstrated good reliability and correlated with other measures of parent and child functioning. These findings provide support for the overall utility of the PFI as a measure of emotional experiences in the parenting role.

Keywords Emotion · Parent child relations · Childhood · Psychosocial functioning · Parenting behaviors

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Introduction

Parents influence their children's development through the parent–child relationship and the types of child-rearing practices that they employ (Parke 2004). Considerable evidence has highlighted the importance of parental emotions or mood as a determinant of parent–child interactions and child development (Dix 1991). For example, maternal depression has been linked to low levels of positive emotionality in preschool children (Durbin et al. 2005). Experimental evidence suggests that maternal mood is causally linked to parenting and child functioning. Negative mood inductions in mothers have resulted in less positive, less engaged parenting, and less child compliance (Jouriles et al. 1989). Moreover, parents whose depression is adequately treated have shown improved parenting and child functioning (Garber et al. 2011). A large body of research linking parent psychopathology to parenting and child functioning further underscores the importance of parents' negative emotions for the parent–child dyad (Rueger et al. 2011; Zahn-Waxler et al. 2002).

Emotion, mood, and affect have also been widely studied as important psychological constructs outside of the parenting literature. Although these three terms are often used interchangeably, they are distinct yet overlapping constructs. Emotion generally refers to short-lived reactions in response to stimuli and involves changes in feeling states, behavior, and physiology, whereas moods are more lasting and less specific feeling states that are loosely connected to stimuli (Rottenberg 2005). In contrast, affect (or "core affect") refers to the simplest feelings experienced and are one component of mood or emotion (Yik et al. 2011). The current study focuses primarily on the measurement of the specific emotions that parents feel within their role as parents.

Much of the literature has focused on measuring parent symptoms of psychopathology or depressed mood. In order to better understand the emotions that parents experience, a measure is needed that more directly assesses the varied emotions that parents experience in their role as parents. Parenting is multifaceted and parents may experience different emotions in different aspects of this role, such as during interactions with their children, during interactions with others in their role as parents, as they evaluate themselves as parents, as they reflect on their children's well-being, and as they seek to integrate their parenting role with other roles and aspects of their identity. Although parents' global emotional experiences are likely to influence children, parents' emotional experiences within the parenting role are likely to be particularly important for children.

A variety of adjective checklists have been used in psychology to study affect, and analyses of the structure underlying the many feelings that humans experience point to multiple dimensions that have been characterized in circumplex models (Feldman Barrett and Russell 1998; Yik et al. 2011). However, of existing adjective checklists, none assess feelings specific to the parenting role. Assessing emotional experiences specifically in the parenting role rather than through general mood checklists is critical for advancing understanding of the relationship between parents' emotions and child functioning, because parents' emotions are likely to vary considerably across contexts. Global measures of mood may only partially capture emotions experienced within the parenting context. These parenting emotions may be most relevant for children's development and require further study. Developing a scale to directly assess emotions in the parenting context is an essential first step. The current study presents the Parental Feelings Inventory (PFI), a new rating scale designed to assess parental emotions within the parenting role, and examines its psychometric properties in a sample of parents of preschool-aged children.

Methods

Participants

Participants included 149 mothers and 107 fathers of 149 children (59.7 % boys and 40.3 % girls) who were between the ages of 37 and 50 months at the time of the first assessment. The sample was drawn from a longitudinal study of young children with behavior problems. The mean age for mothers was 33.05 years ($SD = 6.47$) and the mean age for fathers was 37.18 years ($SD = 7.03$). The median family income was $54,000, which was comparable to median family income in the counties in which participants resided. The mean years of education completed by mothers was 13.96 years ($SD = 2.82$), and mean years of education completed by fathers was 14.01 years ($SD = 2.81$). The sample included 197 European American parents (113 mothers and 84 fathers), 31 Latino parents (20 mothers and 11 fathers), 20 African American parents (12 mothers and 8 fathers), and 8 parents of a multiethnic background or other ethnicity (5 mothers and 3 fathers).

Procedure

All participants were recruited through state birth records, pediatric offices, and community centers throughout Western Massachusetts as part of a larger study. Children with significant externalizing problems ($n = 199$) and without behavior problems ($n = 59$) were recruited from 1,752 3-year-old children whose parents completed a screening packet containing the Behavior Assessment System for Children–Parent Report Scale (BASC-PRS; Reynolds and Kamphaus 1992) and a questionnaire assessing for exclusion criteria, parental concern about externalizing symptoms, and demographic information. Parents were excluded from study participation if their children demonstrated mental retardation, deafness, blindness, language delay, cerebral palsy, epilepsy, autism, or psychosis. Eligible families were scheduled for two 3-hour home visit assessments scheduled one week apart, and took part in annual home visits until children were 6 years old. Written informed consent was obtained from all parents who participated. The study was conducted in compliance with the authors' Institutional Review Board.

The present study focuses on data collected from a subsample of these children (129 children from the externalizing group and 20 children from the non-problem group) whose parents completed the PFI at the first time point.

Measures

Parental Feelings Inventory (PFI)

The PFI was developed as follows. Three of the authors reviewed the Multiple Affect Adjective Checklist (Zuckerman and Lubin 1965) and the Mood Scale (McNair and Lorr 1964) and identified adjectives that appeared to have relevance for the parenting role. A few additional adjectives were also generated that were thought to be relevant to the parenting role (e.g., frustrated) but were not on these scales. Fifty-six adjectives were selected to represent the five affect states proposed in existing circumplex models: happy, anxious, sad, angry, and calm (Feldman Barrett and Russell 1998). Six adjectives were selected to assess each of the five categories based on the face validity of these adjectives; the adjective "guilty" was also

included because of its apparent relevance for the parenting role, although it was not clear in which domain it would fall. Thus, the final checklist consisted of 31 adjectives. Parents were asked to rate on a 7-point Likert scale (1 = "not at all" to 7 = "extremely") the degree to which they experienced the emotion during the past week in their role as a parent. Note that instructions to parents left the term "role as a parent" open to parents' interpretation, to encourage parents to use the aspect of their role that was most salient to them.

Parental Stress Index-Short Form (PSI-SF)

The PSI-SF (Abidin 1995) is a 36-item scale designed to measure sources of parenting stress across three domains: parents' personal distress, dysfunctional parent–child interactions, and child characteristics. The scale has demonstrated good test–retest reliability (0.84) and internal consistency ($\alpha = 0.91$), and correlates 0.94 with the full length version of the PSI (Abidin 1995). The PSI-SF also demonstrated good concurrent validity in previous research, correlating with scores on the Symptom Checklist 90 Revised and Conflict Tactics Scales, and high predictive validity as scale scores were correlated with later child adjustment (Hasket et al. 2006).

Center for Epidemiologic Studies Depression Scale (CES-D)

The CES-D (Radloff 1977) is a 20-item questionnaire that measures adult depressive symptoms over the previous week. The CES-D has demonstrated validity and utility as a screening tool for detecting depressive symptoms in a psychiatric population (Weissman et al. 1977).

Modified Child Rearing Practices Report (CRPR)

The modified version of the CRPR consists of 40 items taken from a 91-item questionnaire and yields factor scores for nurturance and restrictiveness. The CRPR has demonstrated adequate reliability ($\alpha = 0.80$) in a population of parents and students (Rickel and Biasatti 1982). The nurturance scale was used in the present study.

Parenting Scale

The Parenting Scale (Arnold et al. 1993) is a 30-item self-report scale of parental discipline that has demonstrated good reliability and validity in a preschool sample. The overreactivity and laxness subscales were used in this study. This scale was also administered to 125 mothers and 77 fathers at follow-up assessments when children were 6 years old and was used to assess the PFI's predictive validity.

Behavior Assessment System for Children-Parent Report Scale (BASC-PRS)

The BASC-PRS (Reynolds and Kamphaus 1992) is a comprehensive rating scale that assesses a broad range of psychopathology in children aged 2 years 6 months and older. The BASC-PRS has demonstrated good reliability for 2 to 3-year–old children and excellent reliability and validity for children 4 years and older (Reynolds and Kamphaus 1992). Mothers' and fathers' internalizing and externalizing subscales were used in the present study.

Results

Exploratory Factor Analysis

A principal-components analysis was conducted using Promax rotation for the 31 items on the Parental Feelings Inventory (PFI) using a random selection of 80 parents (50 mothers and 30 fathers). Three-, four-, and five-factor solutions were examined based on theory and inspection of scree plots. These solutions were compared by examining eigenvalues and evaluating the interpretability of the factors. A three-factor structure yielded the most interpretable factors. The three factors were labeled Angry, Happy, and Anxious/Sad. Items that loaded highly (>0.65) on one of these factors and did not load on more than one factor were retained for the next step. This resulted in the following items being dropped: discouraged, energetic, guilty, tense, and worn out.

Confirmatory Factor Analysis (CFA)

A CFA was then conducted with MPLUS6 on the 26 retained items using the remaining 176 parents (99 mothers and 77 fathers). A three factor model was fit with an Angry factor (anger, annoyed, frustrated, grouchy, impatient, and irritated), Happy factor (calm, cheerful, contented, excited, happy, loving, patient, peaceful, pleased, relaxed, and satisfied), and Anxious/Sad factor (afraid, frightened, hopeless, miserable, nervous, sad, scared, unhappy, and worried). Although the Chi-square test was significant, $\chi^2(263) = 570.77$, $p < .001$, the normed Chi-square, $\chi^2/df = 2.17$, suggested adequate fit (Hair et al. 2010). Other model fit indices also provided support for this three factor model, RMSEA = 0.08, CFI = 0.92, SRMR = 0.08. Table 1 presents these 26 items and their loadings on their respective factors. The Anxious/Sad latent factor was significantly correlated with the Angry latent factor (0.65, $p < .001$), and was significantly negatively correlated with the Happy factor (−0.28, $p < 0.001$). The Angry factor was significantly negatively correlated with the Happy factor (−0.21,

Table 1 CFA standardized factor loadings for each item of the parental feelings inventory for parents ($n = 176$)

Individual scale items	Anxious/Sad	Happy	Angry
Afraid	0.82		
Frightened	0.83		
Hopeless	0.77		
Miserable	0.73		
Nervous	0.78		
Sad	0.74		
Scared	0.86		
Unhappy	0.75		
Worried	0.80		
Calm		0.81	
Cheerful		0.81	
Contented		0.67	
Excited		0.52	
Happy		0.75	
Loving		0.58	
Patient		0.52	
Peaceful		0.69	
Pleased		0.83	
Relaxed		0.86	
Satisfied		0.81	
Angry			0.79
Annoyed			0.82
Frustrated			0.87
Grouchy			0.88
Impatient			0.74
Irritated			0.90
Cronbach's alpha			
Mothers	0.93	0.93	0.94
Fathers	0.93	0.90	0.93

$p = .008$). Using multigroup modeling, we examined whether factor loadings were significantly different for mothers versus fathers and they were not.

Internal Consistency

Internal consistency for the total scale (26 items) was good for both mothers (Cronbach's $\alpha = 0.85$) and fathers ($\alpha = 0.87$). Moreover, Cronbach's αs for individual factors were all above 0.90 (see Table 1), suggesting highly internally consistent factors.

Concurrent Validity

Concurrent validity of the scale was assessed by correlating PFI factor scores with the PSI-SF, CES-D, CRPR, BASC-PRS, and Parenting Scale. Results supported the concurrent validity of the PFI for both mothers and fathers (see Table 2). Because correlations could be inflated by method variance, cross parent correlations were also examined between parents' PFI scores and their spouses' reports on the BASC-PRS. Relations were not significant for the Happy or Angry factors, but generally remained significant for the Anxious/Sad factors (see Table 2).

Predictive Validity

The predictive validity of the scale was assessed by examining whether the PFI factor scores predicted parenting practices 3 years later. The Angry, Happy, and Anxious/Sad factors were predictive of later overreactivity for both mothers and fathers (see bottom of Table 2). Mothers' and fathers' Happy factor scores also predicted less laxness 3 years later, and mothers' Anxious/Sad factor scores predicted greater laxness 3 years later.

Incremental Validity

To explore whether assessing emotions specifically in the parenting role would predict later parenting practices above and beyond a more global measure of mood, a series of hierarchical multiple regressions were conducted separately for mothers and fathers in which the CESD variable was entered in the first block and the three PFI factor scores were entered in the second block with follow-up overreactivity and laxness scores as outcome variables (Table 3). Results supported the PFI's incremental validity in predicting later parenting practices with the exception of paternal laxness for which none of the predictors reached significance. The Angry and Happy factors were both significant predictors of future overreactivity for mothers and fathers, controlling for parent depression. The Anxious/Sad factor predicted later maternal laxness controlling for maternal depression. When PFI factors scores were entered in the models, CESD scores were no longer significant predictors of later parenting.

Discussion

The current study presents the PFI, a new rating scale designed to assess parental emotions within the parenting role. This study investigated the factor analytic structure and concurrent validity of this scale in a sample of parents with preschool-aged children. The results yielded a three-factor structure, which included angry, happy, and anxious/sad factors. Concurrent, predictive, and incremental validity of the scale were supported. The PFI correlated with measures of parenting stress, depression, parenting style, and child behavior. Moreover, PFI scores predicted parenting practices at 3-year follow-up. In addition, the

Table 2 Correlations between parental feelings inventory factors and variables of interest for mothers and fathers

	Mothers			Fathers		
Measures Mean (SD)	Angry 4.05 (1.34) *r*	Happy 5.41 (0.94) *r*	Anxious/Sad 2.31 (1.15) *r*	Angry 3.34 (1.43) *r*	Happy 5.50 (0.93) *r*	Anxious/Sad 1.99 (1.11) *r*
Parenting Stress Index						
Overall Stress	0.35***	−0.34***	0.40***	0.33**	−0.43***	0.33**
Parental Distress	0.35***	−0.39***	0.44***	0.31**	−0.47***	0.41***
Parent–child dysfunctional interaction	0.14	−0.30***	0.31**	0.26**	−0.21*	0.26**
Difficult child	0.26**	−0.18*	0.22**	0.21*	−0.29**	0.12
CES-D	0.16	−0.25***	0.47***	0.07	−0.54***	0.32**
Child Rearing Practices Report Nurturance Scale	−0.20*	0.45***	−0.04	−0.23*	0.37***	−0.15
Parenting Scale-Overeactivity	0.40***	−0.36***	0.21*	0.42***	−0.40***	0.23*
Parenting Scale–Laxness	0.00	−0.23**	0.17*	−0.02	−0.33**	0.17
BASC-PRS						
Internalizing mother report	0.28***	−0.11	0.29***	0.11	−0.13	0.28**
Externalizing mother report	0.19*	−0.17*	0.22**	0.03	−0.10	0.19
Internalizing father report	0.11	−0.10	0.36***	0.26**	−0.14	0.37***
Externalizing father report	0.12	−0.15	0.27**	0.34***	−0.13	0.23*
Parenting Scale–Overeactivity at follow up (age 6)	0.32***	−0.42***	0.20*	0.48***	−0.40***	0.30**
Parenting Scale–Laxness at follow up (age 6)	0.08	−0.21*	0.28**	0.05	−0.29*	0.20

BASC-PRS Behavior assessment system for children–parent report scale, *CES-D* Center for Epidemiological Studies Depression Scale
*$p < .05$; **$p < .01$; ***$p < .001$

Table 3 Hierarchical linear regression analyses examining incremental validity of PFI in predicting parenting practices 3 years later

	Mothers								Fathers							
	Overreactivity				Laxness				Overreactivity				Laxness			
	B	*SEB*	*β*	*p*	*B*	*SEB*	*β*	*p*	*B*	*SEB*	*β*	*p*	*B*	*SEB*	*β*	*p*
Block 1																
CES-D	0.41	0.18	0.20	0.02	0.61	0.20	0.26	.003	0.83	0.28	0.32	0.004	0.72	0.25	0.32	0.005
R^2		0.03		0.02		0.06		.003		0.09		0.004		0.09		0.005
Block 2																
CES-D	0.14	0.18	0.07	0.44	0.29	0.23	0.12	.20	0.43	0.28	0.17	0.12	0.50	0.27	0.22	0.07
Angry	0.15	0.06	0.25	0.01	−0.08	0.07	−0.11	.27	0.24	0.07	0.42	0.001	−0.06	0.07	−0.13	0.35
Happy	−0.30	0.07	−0.36	<0.001	−0.16	0.09	−0.17	.06	−0.27	0.11	−0.26	0.02	−0.17	0.11	−0.19	0.12
Anxious/Sad	0.00	0.07	0.01	0.96	0.21	0.09	0.27	.02	−0.04	0.09	−0.05	0.68	0.11	0.09	0.16	0.24
R^2		0.22		<0.001		0.10		.002		0.31		<0.001		0.10		0.02

CES-D Center for Epidemiological Studies Depression scale. $n = 125$ for mothers and $n = 77$ for fathers

factor structure is consistent with conceptual models of general emotion, as anger, happiness, anxiety, and sadness are basic emotions that appear on most dimensional approaches to emotion (Power and Dalgleish 1997).

These results should be interpreted in the context of the study's limitations. First, this study did not collect test–retest data so the only measure of reliability is internal consistency; information about the stability of this measure would be helpful. Second, it is unclear to what extent this scale represents feelings specific to the parenting role versus a more global rating of emotions, though there is evidence that this scale provides unique information beyond global ratings of depression. Third, this scale was intentionally designed to let parents use their own interpretation of "role as a parent" when completing the PFI. Although doing so has the advantage of encouraging parents to use the aspect of their role that is most salient to them, there may have been variability in parents'

interpretations. Finally, all measures were self-report questionnaires, and therefore intercorrelations may have been inflated by method variance.

Nonetheless, these results provide support for the scale's utility for measuring parental feelings and provide evidence for the validity of the PFI for parents of preschool-aged children. This study adds to the literature by introducing a comprehensive measure of affective experiences in the parenting role. By measuring emotions specifically in the parenting role, researchers and clinicians will be better able to assess the influence of parental emotions on parent–child interactions and child development.

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