Published in final edited form as:

Attach Hum Dev. 2014 February ; 16(1): 1–21. doi:10.1080/14616734.2013.804328.

Perceived Parental Reactions to Adolescent Distress (PRAD): Development and Validation of a Brief Measure

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Abstract

Although adolescence is a time of individuation with increased reliance on peers, research indicates that, despite a deliberate distancing from parents, adolescents continue to seek the support and console of parental attachment figures in times of distress. The Perceived Parental Reactions to Adolescent Distress (PRAD) is a brief self-report measure developed to examine adolescents' perception of parental response under conditions of distress as measured by four conceptually and empirically distinct parental reactions to distress: *Comfort*, *Self-focus*, *Avoidance* and *Harshness*. Across two studies involving a total of 738 high school students, we developed the PRAD and substantiated its robust psychometric properties, including evidence for reliability as well as internal and criterion validity. Sources of individual differences in the test-scores were also explored. Empirical as well as practical importance of assessing parental reactions to adolescent distress is discussed with regard to both the attachment and adolescent development literature.

Keywords

Adolescent distress; Parenting; Attachment; Parental Sensitivity; Scale development; Scale Validation

Introduction

Attachment, as proposed by Bowlby (1969, 1972, 1980), is a biologically based human tendency to seek proximity—physical or emotional—to specific persons (most often, the parents) who are recognized as a source of comfort and protection, especially in times of real or perceived threat, with the ultimate goal of achieving *felt security* (Hazan & Shaver, 1994; Hilburn Cobb, 1996; Mattanah, Lopez, & Govern, 2011; Sroufe & Waters, 1977). Beginning in infancy, children build internal representations or “working models” of attachment figure response, which will shape the child’s future attachment behaviors and strategies (Bowlby, 1988). Although most of the initial attachment research focused on infancy and early childhood, attachment is a life span phenomenon that continues into adulthood (Allen, 2008; Bowlby, 1969; Kobak & Sceery, 1988).

During adolescence, the parent-child relationship undergoes an enormous reorganization that may lead to the revision of these working models (Brown & Wright, 2001). Indeed, parents and their adolescent children engage in a delicate, and seemingly conflicting, negotiation; the roots formed in early attachment must support, and not constrict, the burgeoning move toward individuation (Allen, Manning, & Meyer, 2010; Pace, San Martini,

& Zavattini, 2011). While the adolescent's rapidly developing autonomy (Allen & Land, 1999) and increased reliance on peers lessens his or her dependence on parental attachment figures (Barbot & Hunter, 2012; Baumrind, 2005), it is also true that most teens still turn to their parents in times of stress (Steinberg, 1990; Weiss, 1982) and continue to rely on them as a *secure base* (Fraley & Davis, 1997). Adolescents who are capable of using their parents as a secure base in both ordinary circumstances and "emergencies" will develop secure representational models of their parents, and will perceive their parents as persons who will suitably respond to their attachment signals (Dykas, Woodhouse, Cassidy, & Waters, 2006).

Reciprocally, adolescents' perceptions of their parents' responsiveness to attachment signals may call upon their *secure base scripts* (i.e., the cognitive "raw material" which underline representational models of attachment; see Bretherton, 1991; Dykas et al., 2006; Waters, Rodrigues, & Ridgeway, 1998); especially under conditions of distress, when a teen is most likely to seek support from his or her parents. Indeed, in spite of considerable developmental transformations during adolescence, it is still in the context of conflict and stress that the attachment system is activated and most saliently observed (Lyons-Ruth & Jacobvitz, 2008; see also Edelstein et al., 2004). Additionally, recent research on adolescents suggests that adolescents do not achieve psychological and emotional maturity until about 25 years of age, and therefore, the role of parents as a secure base in their lives may continue to be important into this period of emerging adulthood (Arnett, 2000; Steinberg, 2008). It follows, then, that in light of the shift in the attachment context occurring in this developmental period (Allen, 2008; Allen & Land, 1999), adolescents' perceptions of their parents' responsiveness to expressed distress may be a critical indicator of adolescents' attachment representations, and an important predictor of their own functioning, including internalizing and externalizing problems (Allen, 2008). Confirming this assumption, previous research suggests that adolescents' perceptions of parents as a secure base are associated with lower internalizing and externalizing symptoms (e.g., Woodhouse, Dykas, & Cassidy, 2009; for a meta-analytic review, see Mattanah et al., 2011).

Parental Reaction to Child Distress

In contrast to the dearth of literature on perceived parental responses to adolescent distress and its relation to attachment and attachment-relevant outcomes (e.g., Dykas et al., 2006), a considerable body of literature on infancy and early childhood has established parental responsiveness and sensitivity—a parent's ability to accurately interpret and respond effectively to an infant's signals and needs—as a central construct of attachment theory (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982; Bowlby, 1988; Mesman, Oster, & Camras, 2012). Parental responsiveness to an infant's signals of distress offers the essential context within which a child forms his attachment security and, by extension, his rules for regulating attachment behavior (Goldberg, Grusec, & Jenkins, 1999; Kobak & Sceery, 1988; McElwain & Booth-LaForce, 2006; Sroufe & Waters, 1977). Researchers investigating early childhood have recognized that negative parental responses to children's emotional distress is related to lower social competencies and increased externalization of negative emotions (Eisenberg et al., 1999; Eisenberg et al., 2003; Roberts & Strayer, 1987), and positive responses have been linked to positive socioemotional adjustment and school-related competence (Morris, Silk, Steinberg, Myers, & Robinson, 2007; Roberts & Strayer, 1987). Moreover, there is evidence that parental response to children's emotional issues is distinct from parenting in other contexts (Gottman, Katz, & Hooven, 1996), especially in its effect on developing emotional skills (Eisenberg et al., 1999).

In parallel with recent studies of parental sensitivity in infancy (Mesman et al., 2012), it is arguable that a panoramic appraisal of adolescent-parent attachment, without attending to the specific context of adolescent distress, may not suffice. Nevertheless, studies of

adolescent attachment explicitly focused on parental response are scarce (e.g., Allen, 2008) and those focusing on parental responding within an attachment-relevant context (e.g., when a child is distressed), even more so (Allen, McElhaney, Kuperminc, & Jodl, 2004; Edelstein et al., 2004).

Insights from the Adult Close Relationship Literature

Several studies in the field of social psychology suggest that patterns of adult attachment are related to working models of parenting and parent-child relationships (Edelstein et al., 2004; Kobak, Ferenz-Gillies, Everhart, & Seabrook, 1994; Rholes, Simpson, Blakely, Lanigan, & Allen, 1997), and they can help to conceptualize (and operationalize for further research) possible perceived parental reaction to adolescent distress. For example, Bartholomew and colleagues (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994) proposed a comprehensive model for studying attachment in close adult relationships, which was largely derived from Bowlby's fundamental work. Constructed as a two-dimensional model of adult attachment based on one's representation of the self and others, Bartholomew suggested a four-category classification of prototypical adult attachment styles: secure, preoccupied, dismissing/avoidant, and fearful.

There is some evidence in the literature indicating that Bartholomew's four-category model—or similar models—of adult attachment style (Bartholomew & Horowitz, 1991; Edelstein et al., 2004; Schindler et al., 2005; van IJzendoorn, 1995) may extend to parental responses to their adolescents when the attachment system is activated in moments of distress or conflict (Edelstein et al., 2004). For example, Rholes and colleagues (1997) indicate that individuals with avoidant and anxious/ambivalent models of close adult relationships harbored more negative models of parenthood and parent-child relationships. Similarly, when stress or threat is high, parents with a self-reported avoidant romantic attachment style expressed less emotionally supportive parental behavior during their child's painful medical procedure than did parents who were identified as securely attached (Edelstein et al., 2004; Goodman, Quas, Batterman-Faunce, Riddlesberger, & Kuhn, 1997). Another study with mothers and their teenage daughters found that mothers with preoccupied attachment strategies were more anxious and intrusive while discussing goals and future plans with their daughters (Kobak et al., 1994).

Insights from the Adult Attachment Interview Literature

Evidence of the link between adult attachment styles, working models of parenting, and parental responding are not only emerging from social psychology models (and corresponding self-report measures), which primarily focus on adults' close personal romantic relationships (e.g., Bartholomew, 1990), but also from attachment studies in the developmental tradition, which focus on adults' childhood attachment experiences as they relate to current state of mind regarding attachment. To measure adult attachment, developmental psychologists chiefly rely on what is widely considered the gold standard of attachment measures, the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). The AAI is a semi-structured interview about an individual's early attachment experiences and the current meaning the individual ascribes to these childhood attachment-related experiences. The original scoring system of the AAI parallel the three infant attachment classifications in Ainsworth's Strange Situations: "autonomous," "dismissing," and "preoccupied" (Ainsworth et al., 1978). In addition to being assigned one of the three main classifications, an individual may be identified as "unresolved" if they are observed as confused or disorganized when discussing attachment-related topics; "unresolved" attachment behavior is typically the result of attachment trauma or abuse (Crowell, Fraley, and Shaver, 2008).

Although the AAI was designed for use with adults, it is also worth noting that several studies have used the AAI and derived measures to investigate patterns of attachment in adolescence (e.g., Allen et al., 2004; Aikins, Howes, & Hamilton, 2009). For example, Ammaniti (2000) used a version of the AAI adapted for adolescents, the Attachment Interview for Childhood and Adolescence (AICA; Ammaniti, 2000), to investigate the organization of attachment from late childhood to early adolescence.

While adult attachments are studied and measured by both social and developmental psychologists, the way in which the two fields operationalize the concept of attachment security differ considerably (for a more in depth discussion see Steele, Steele, & Murphy, 2009). It is, therefore, not surprising that Roisman and colleagues (2007), in their meta-analysis of 10 studies, found little convergence, on both secure and insecure attachment dimensions, between self-reported adult attachment styles and observed attachment classifications as derived from a scored AAI narrative.

Although both approaches conceptually tap into different aspects of adult attachments, the developmental perspective is consistent with the social psychology perspective in studies suggesting that AAI classifications are linked to parental behavior toward children (Crowell, Fraley, & Shaver, 2008). For example, mothers rated as secure-autonomous on the AAI were observed as more responsive and tuned into their infants needs within the two years of life (DeOliveira, Moran, & Pederson, 2005; Macfie, McElwain, Houts, & Cox, 2005). The same was true in studies of the preschool years. In a sample of 30 low SES mother-child dyads, Oyen, Landy, and Hillburn-Cobb (2000) found that mothers classified as securely attached showed the highest sensitivity during videotaped parent-child interactions and mothers classified as preoccupied displayed the lowest. Nevertheless, as of yet, there are no empirical studies of parental AAI classifications and their relation to parental behavior toward adolescent children, this evidence with infants and toddlers points to the significance of the intergenerational transmission of attachment patterns.

Measuring Attachment in Adolescents

Although the social and developmental lines of inquiry both offer a promising perspective for the study of parent-adolescent attachment in relation to children's emotion regulation, there is to date no measure that purposely taps into adolescents' perceptions of their parents' responses to their emotional distress. In fact, a number of basic problems exist in the measurement of attachment in adolescents in general. One issue is that research on attachment in adolescence is frequently conducted with assessments designed for use with adults. Such is the case with narrative measures, namely the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985), the Adult Attachment Q-Sort (Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993), and the Adult Attachment Projective (AAP; George & West, 2001) as well as self-report measures such as the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) and the Experiences in Close Relationships (ECR; Brennan, Clark, & Shaver, 1998). Although these adult attachment measures conceptualize and address different aspects of the construct of attachment, they assess attachment as an individual variable—a general state of mind with regard to attachment. Furthermore, particularly in regard to the self-report questionnaires, they often measure attachment in the context of romantic relationships, when, in adolescence, patterns of attachment in relationships with parents remain critically important and continue to evolve.

A second problem arises from the difficulties in administering a narrative attachment assessment to large groups of teenagers in school settings (e.g., for screening purpose). Although the AAI is undoubtedly the gold standard in adult attachment measurement (Crowell, Fraley, & Shaver, 2008), its use is costly and its administration unsuitable for large study samples (e.g., West, Rose, Spreng, Sheldon-Keller, & Adam, 1998). All

narrative measures pose the same issue; including the AAP (George & West, 2001) and those designed specifically for use with teens, such as the Attachment Behavior Classification Procedure (ABCP) for young adolescents (Hilburn Cobb, 1996), the AICA (Ammaniti, 2000), and the Friends and Family Interview (FFI; Steele & Steele, 2005), a promising narrative-style measure for early adolescents which captures attachment patterns from a multi-dimensional perspective (Kriss, Steele & Steele, 2012).

A number of self-report attachment measures have been developed to address these issues, such as the Adolescent Attachment Questionnaire (AAQ; West et al., 1998), the Adolescent Unresolved Attachment Questionnaire (AUAQ; West, Rose, Spreng, & Adam, 2000), the Inventory of Peer and Parent Attachment (IPPA; Armsden & Greenberg, 1987), the Parental Bonding Instrument (PBI; Parker, 1990), or the Parental Attachment Questionnaire (PAQ; Parker, 1990). While these self-report measures have specific strengths and advantages, they also tend to stray from the construct of attachment representations (Crowell et al., 2008) and do not capture the crucial AAI state of mind concerning past loss or trauma (i.e., unresolved mourning or unresolved/disorganized), which are common in clinical samples of adolescents (Wallis & Steele, 2001; for a more in-depth review of the narrative vs. self-report attachment measures, see Mattanah et al., 2011). In addition, none in this set of self-report measures directly examines the quality and tenor of the adolescent-parent relationship in the specific instances when a teen is most likely to seek support from his or her parents, that is, under conditions of distress. To fill this gap in the literature on parent-adolescent attachment, future research on teenage children's perceptions of their parents' responses to their emotional distress needs an appropriate measure.

The Present Studies

The Perceived Parental Reactions to Adolescent Distress (PRAD) presented here was developed to address this gap. Because the literature on parental reaction to adolescent distress is limited and that best practices in attachment measurement recommend the use of assessment techniques that are relevant to the specific processes under investigation (Crowell et al., 2008), the PRAD was developed using a focus-group technique to gather the most salient categories of perceived reactions to adolescent distress, as observed by professionals of adolescence and adolescents themselves. Therefore, although the PRAD's development was not theory-driven, the constructs that it captures—typical adolescent perceptions of adaptive and maladaptive parental reactions to their distress (i.e., *Comfort*, *Self-Focus*, *Avoidance*, and *Harshness*)—were interpreted in light of the parental response categories drawn from the literature on adult attachment styles and parental sensitivity in infancy (e.g., Bartholomew & Horowitz, 1991; Smith & Pederson, 1988; van IJzendoorn, 1995). Two parallel forms of PRAD were derived in order to address adolescents' perception of parental reaction to distress separately for mother and father, because adolescents appear to have specific scripts about their ability to seek and receive care from each parent at times of stress (Dykas et al., 2006). Across two studies presented here, we developed (Study 1) and evaluated the psychometric properties (Study 2) of the PRAD and its four sub-scales of parental response to adolescents' expressed distress.

Study 1 - Development and Preliminary Validation of the PRAD

The main goal of Study 1 was to develop the content and form of the PRAD through the generation and refinement of an initial item-pool based on focus groups analyses, followed by a preliminary examination of the PRAD's underlying factorial structure.

Initial Item-Pool and Instructions Development

Item development of the PRAD was initiated by consulting school and clinical psychologists embedded in the community as well as members of the target population (i.e., high school students) in focus groups (Vogt, King, & King, 2004; see also Decarlo & Luthar, 2000; Luthar & Goldstein, 2008, for use of this approach in developing related measures of the parent-adolescent relationship). Individuals were asked a general question relating to the target construct (i.e., parental reaction to adolescent distress): *“If you/ teenagers are upset about something or someone, how would your/their parents tend to respond?”*.

In accordance with our preliminary expectations grounded in the adult attachment and parental sensitivity literature (e.g., Bartholomew & Horowitz, 1991), four distinct types of parental reaction emerged and were labeled as follows: (a) *Comfort*, a warm and comforting response, in which the parent expresses empathy and love; (b) *Self-Focus*, a self-involved response, in which the parent makes the interaction about their own discomfort, rather than the child’s (which can include “role-reversal” type of parental response); (c) *Avoidance*, a dismissive response, in which the parent suggests the emotional distress is unimportant; and, (d) *Harshness*, a critical and punitive response, in which the parent conveys disdain.

Focus group’ answers pertaining to these four conceptual definitions of parental responses were used to draft a series of candidate items for the PRAD. Following best practices for scale development, all items were designed to be similar in length and format (i.e., concise, addressed a single type of parental response, used simple and clear language, and were positively worded; see Hinkin, 1998). Items were worded as self-report affirmations and designed to complete the following situational prompt: *“If I am upset and my mother/father knows it, s/he tends to....”* Ultimately, 25 initial items (approximately six per domain) were selected to form the original version of the PRAD. Following the structure of the IPPA (Armsden & Greenberg, 1987) to address the construct of parental response to adolescent distress separately for each parent, these items were duplicated into a maternal (PRAD-M) and a paternal (PRAD-F) form; that is, each of the 25 PRAD items had two parallel versions that were identical with the exception of their reference to the parent (i.e., mother or father). As in the IPPA, the resulting 50 items were interlayered in the PRAD so that participants would answer sequentially to an item of the form M followed by an item of the form F. A five-point response scale (ranging from “1 = strongly disagree” to “5 = strongly agree”) was used to promote adequate variability of response options.

Participants and Procedure

Two hundred and fifty-one senior high school students (48% female, $M_{\text{age}} = 18$ years, $SD = .41$, range 16.7–19.9) participated in this preliminary evaluation of the PRAD. Students in this sample were predominantly Caucasian from moderate to high socio-economic status (SES) families. The PRAD was given to the students in a classroom setting as part of the New England Study of Suburban Youth (NESSY), a longitudinal study of suburban youth followed annually since the 6th grade (e.g., Luthar & Latendresse, 2005; Luthar & Barkin, 2012).

Analyses

After examination of the distributional features of the PRAD candidate items, exploratory factor analysis (EFA) was conducted for each set of items (PRAD-M and PRAD-F), using principal axis factoring and oblique (Promax) rotation. Decision rules to determine the optimal number of factors was based on the following four criteria: (a) the scree plot, (b) the parallel analysis, (c) the Kaiser criteria, and (d) the interpretability of the resulting factor solution.

Results and Discussion

After three items were excluded (in both forms M and P) due to extreme skewness, the data indicated acceptable item-distribution with skewness values ranging from $-.54$ to 1.21 ($M = .26$) and kurtosis values ranging from $-.91$ to -1.16 ($M = -.06$). Correlation matrices obtained with PRAD-M and PRAD-F were examined respectively to ensure their suitability for planned factor analyses. Results indicated that correlation matrices were not identity matrices (Bartlett's test of sphericity for PRAD-M = 2964.7 , $df = 231$, $p < .001$; for PRAD-F = 2576.4 , $df = 231$, $p < .001$), and that global measures of sampling adequacy (MSA) were excellent (.90 for PRAD-M and .89 for PRAD-F).

The EFAs, therefore, were conducted and all decision rules clearly suggested four-factor structures with highly similar loadings patterns across PRAD forms (Tucker-Burt-Wrigley-Neuhaus congruence coefficient = .98, .75, .97 and .70 for Factors 1, 2, 3 and 4 respectively). Based on a consensus factor structure summarizing both forms, height items with low factor loadings ($< .40$) or unclear loadings (loadings $> .40$ on multiple factors) were eliminated. Additionally, two other items were removed to avoid redundancy in the scale content and to standardize the number of items pertaining to each factors (three items per scale).

The resulting 12-items pools per PRAD form were reanalyzed in EFAs yielding clear four-factor structures (with three major loadings in each factor), interpreted in accordance with the theoretical expectation: "*Comfort*," "*Self-Focus*," "*Avoidance*," and "*Harshness*." These four categories may map into both aspects of the secure (*Comfort*) and insecure (*Self-Focus*, *Avoidance*, *Harshness*) attachment split, although the factor structure emphasizes three different facets of insecure attachment, rather than a single factor underlying the three facets. These four factors solutions accounted for 71.7% and 71.5% of the total variance explained for the PRAD-M and PRAD-F forms, respectively. Estimated scale score reliability on this pilot sample was high, with an average Cronbach's alpha of .78 for both PRAD-M and PRAD-F scales. At this stage, the PRAD was thought to present robust content and face validity, as well as promising psychometric properties for further evaluation. Therefore, the PRAD was stabilized in this 12-items version per form (PRAD-M and PRAD-F), as presented in appendix.

Study 2 - PRAD Validation

The goal of study 2 was to evaluate the PRAD's main psychometric properties among a new sample of youth, including; (a) internal validity, (b) test score variability, internal consistency and long-term stability, and (c), PRAD's convergent and divergent validity with instruments measuring constructs and outcomes conceptually related with PRAD: parent-child attachment as well as internalizing and externalizing symptoms. A final goal was to explore Gender, Age and Ethnicity-related differences in PRAD scores and psychometric properties, in order to confirm its robustness among various sub-populations of youth and develop norms accounting for these potential sources of variation.

Method

Participants—A sample of 487 high-school students (48% male, mean age = 16.3 years, $SD = .98$, range 14.2–19) was recruited from two communities in the North East coast of the United States, representing adolescents from both urban and suburban environments. Students were from diverse socioeconomic backgrounds and the sample was also ethnically diverse, with ethnic-racial groups including Caucasian (54.9%), Hispanic (13%), African-American (12.2%), Asian (9.1%) and others or biracial (9.3%). A sub sample of 108

students (22.2% of the main sample), comprising of 64% female (mean age = 16 years, $SD = .43$) was involved in a 1-year lagged retest procedure.

Instruments—In addition to the PRAD, we used:

The *Inventory of Parent and Peer Attachment* (IPPA; Armsden & Greenberg, 1987), is a measure of adolescents' perceptions of the positive and negative feelings toward significant attachment figures. We used a 50-items version rated on a 6-points scale, equally divided into two forms, which measure the subsequent three dimensions for each parent: *trust* (parental understanding, respect, and mutual trust), *communication* (extent and quality of verbal communication with parents) and *alienation* (feelings of alienation and isolation). The IPPA is a widely used instrument that proved strong psychometric properties across many samples and cultures (e.g., Gullone & Robinson, 2005; Pace et al., 2011). IPPA scores were highly internally consistent in our sample (average Cronbach's alpha coefficient = .88).

The *Youth Self Report* (YSR; Achenbach, 1991) is a well-established child-report measure, which assesses competence and problem behaviors (within the past 6-month period). The YSR's problem checklist consists of 112 three-point Likert style questions (0 = absent, 1 = occurs sometimes, 2 = occurs often), which are categorized into 8 core symptom scales: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. By construction, the instrument's sub-scales cluster into two broadband scales—Internalizing (sum of Withdrawn, Somatic Complaints, and Anxious/Depressed scales) and Externalizing (sum of Delinquent and Aggressive Behavior scales)—that we principally made use of in this study. Decades of research with YSR has demonstrated its strong reliability and validity worldwide (e.g., Ivanova et al., 2007).

Procedure—This research was part of school-based initiatives on positive youth development involving voluntary participation and de-identified data-collection. School administrators informed the participants' parents of the study objectives, after which, questionnaires were group-administered in school settings. Using the same procedure, the retest study sub-sample completed the PRAD one year after the initial data collection.

Analyses—Internal structure of each PRAD form was examined by testing the hypothesized four-factor structure ("Initial models") using Confirmatory Factor Analyses (CFA) in a structural equation modeling framework. Initial models were first tested, and then improved according to the modification indices, and based on both theoretical and statistical decisions. Accordingly, parameters were fixed or set free in an iterative process, which resulted in an "adjusted" model with better fit (as estimated with the Delta chi-square test). The fit of all models was assessed based on the most widely used indexes of model fit (e.g., Kline, 2010): the Chi-square tests of fit, the normed fit index (NFI), the comparative fit index (CFI), the root mean square residual (RMR), and the root mean square error of approximation (RMSEA) with its 90% confidence interval. After scores were computed for each PRAD scale, distributional features and internal consistency of the scores were examined. Test score stability was then explored using the data from the participants who were followed up over one year. Thereupon, concurrent validity was gauged using the IPPA and YSR. Lastly, background factors explaining individual differences in PRAD scores were explored using a Multivariate Analysis of Variance (MANOVA), and possible differences in perceptions of mothers versus fathers with PRAD were explored (as a function of respondent gender) using a MANOVA including a within-subject variable (PRAD form).

Results

Confirmatory Factor Analyses—As in study 1, preliminary analyses indicated adherence to common statistical guidelines and assumptions for planned analyses. Correlation matrices obtained with PRAD-M and PRAD-F data were not identity matrices (Bartlett's test of sphericity for PRAD-M = 2672.7, $df = 66$, $p < .001$; for PRAD-F = 2171.8, $df = 66$, $p < .001$) and global MSAs were very good (.86 for PRAD-M and .82 for PRAD-F). Model fit of the CFA of PRAD-M and PRAD-F are presented in Table 1. As indicated, both forms yielded an adequate fit of the data to the hypothesized four-factor model (overall better for the PRAD-M form), as suggested by common benchmarks in the model fit index in the literature (e.g., RMSEA $< .08$, CFI $> .95$; Kline, 2010). Based on the modification indices suggested by the model, one modest loading was added in both PRAD-M and PRAD-F forms, (i.e., item 11, conceptually related to the *self-focus* factor was modestly loaded to the *Avoidance* factor, which was consistent with theoretical assumptions). This modest change (referred to as the “adjusted” PRAD models) slightly improved the model fit for both the PRAD-M form ($\Delta\chi^2_{[df]} = 4.5$ [1], $p = .033$), with a more pronounced improvement for the PRAD-F form ($\Delta\chi^2_{[df]} = 12.0$ [1], $p < .001$). Factor loadings patterns and factor intercorrelation were highly similar across forms, as reflected in Figure 1.

PRAD Scores Internal Consistency and Variability—Given the strong support for the theoretical organization of the PRAD items, scales scores were computed by averaging the three items pertaining to each scale (*Comfort*, *Self-Focus*, *Avoidance*, *Harshness*) within each PRAD form. Table 2 presents the internal consistency coefficients and descriptive statistics of all PRAD scores, indicating acceptable to high internal consistency (mean Cronbach's Alpha = .80). Although the *Avoidance* scales (M and P forms) and the *Self-Focus* scale (form F) were slightly skewed, the PRAD scores showed that distributional features were overall close to normal, with score ranges and standard deviations large enough to indicate an adequate degree of variability to detect individual difference in the construct measured.

PRAD Scores One Year-Stability—Following recommendation in the literature (Cicchetti, 1994; Elbin, Schatz, & Covassin, 2011), two-ways mixed intra-class correlation coefficients (ICC) were computed in order to estimate the stability of the test scores over one year. Table 2 displays the test-retest ICC obtained for each PRAD scale. As shown, stability coefficients vary dramatically, ranging from weak stability (*Self-Focus* form F) to high stability (*Comfort* scale form M). Interestingly, Mother scales yield higher levels of stability than Father scales (form F), with average ICCs of .67 and .38 for form M and form F, respectively.

PRAD scores inter-correlations—As indicated by the inter-scale correlation matrix (Table 3), relations between PRAD scales within each form conformed to those observed in Study 1 and to those estimated in the CFAs, with coefficients ranging from $-.56$ (between “*Comfort*” and “*Avoidance*”) to $.45$ (between “*Harshness*” and “*Avoidance*”) for the PRAD-M, and from $-.60$ (between “*Comfort*” and “*Avoidance*”) to $.38$ (between “*Harshness*” and “*Avoidance*”) for PRAD-F. A coherent pattern of association between PRAD-M and PRAD-F scores was also observed, with higher inter-correlation obtained within construct (coefficients ranging from $.59$ to $.72$) and lower inter-correlation between constructs (ranging from $-.40$ to $.30$).

Concurrent Validity—Convergent and discriminant validity of the PRAD were evaluated in light of theoretical expectations, on the basis of inter-correlations of the PRAD scores with related constructs (measured by IPPA and YSR). For example, we hypothesized that a *Comfort*-type perceived parental response to adolescent distress (as measured by PRAD)

would demonstrate positive relatedness between parents and their adolescent children. Therefore, it was expected that PRAD's *Comfort* would translate into feelings of *Trust*, positive *Communication*, and low alienation (IPPA) toward the targeted parent. Conversely, *Avoidance*-type of parental response in situation of distress (PRAD) was anticipated to overlap with feelings of alienation and isolation, captured with the IPPA *Alienation* scale. In accordance, strong evidence for both convergent and discriminant validity of the PRAD scores can be drawn from the pattern of PRAD-IPPA inter-correlation (Table 4). Additionally, some degree of convergent and discriminant validity with regard to the targeted parent can be inferred from the higher correlations between PRAD-M scores and the IPPA "mother" scores (30% of shared variance in average) than the PRAD-M correlations with the IPPA "father" scores (15% of shared variance). Similarly, PRAD-F scores are mostly associated with IPPA "father" scores (26% of shared variance vs. 13% with IPPA "mother" scores).

Regarding adolescent psychological functioning, the pattern of inter-correlation between PRAD and YSR provide strong evidence for both convergent and divergent validity (Table 4). PRAD's *Comfort* scales were negatively related to both Internalizing and Externalizing symptoms. Conversely, *Self-focus*, *Avoidance*, and *Harshness* were all modestly, but significantly, positively related to both Internalizing and Externalizing symptoms.

Gender, Age, and Ethnicity Differences Across PRAD Forms—We explored whether the PRAD displayed the same psychometric features—internal consistency and concurrent validity—as a function of Gender and Ethnicity. For the purposes of this analysis, Ethnicity groups were recoded into two classes: "Ethnic Minority" (44% of the sample including African American, Hispanic, Asian, and Bi-racial), and "Majority-Caucasian" (54% of the sample). Confirming PRAD's robustness across various youth sub-populations, results indicated that reliability coefficients and patterns of inter-correlation with the IPPA were highly similar among these groups.

Mean level differences between Gender and Ethnicity group were also explored using a Multivariate Analysis of Variance with Covariate (MANCOVA) on the PRAD scores, including two between-subject factors (Gender and Ethnicity) and one covariate (Age, used as a continuous variable). This analysis indicated only one main effect of the Ethnicity factor ($F [8, 421] = 6.9, p < .001, \eta^2 = .12$) suggesting that Ethnic Minority adolescents perceived their parents as responding more negatively to their distress (higher *Self-focus*, *Avoidance*, and *Harshness*, lower *Comfort*) than their Caucasian counterparts. Complementary, correlations between PRAD scores and age were performed, yielding effect size close to zero (correlation coefficients ranging from $-.06$ to $.13$, with a mean of $.02$), which suggests only limited effect of students' age in the perception of parental reaction to their distress (at least during the developmental period under investigation).

In a final set of analyses, a MANOVA on the PRAD scores with Gender and Ethnicity as between subject-factor and PRAD form (Mother vs. Father) as within-subject factors was conducted to explore differences in perceptions of mothers versus fathers, as a function of respondent gender and ethnicity. This analysis suggested a main effect of PRAD form ($F [4, 434] = 42.2, p < .001, \eta^2 = .28$), and a minor interaction between PRAD form and Ethnicity ($F [4, 434] = 2.97, p < .05, \eta^2 = .03$). As a general trend, Fathers were perceived more negatively than mothers, regardless of respondent Gender and Ethnicity: *Self-focus*, *Avoidance*, and *Harshness* scores for fathers (PRAD-F) were significantly higher, and *Comfort* scores significantly lower than for Mothers (PRAD-M; See also descriptive statistics on Table 2). This general effect is even more marked for Minority students.

Discussion

This validation study demonstrated the PRAD's strong psychometric properties, including; (a) internal validity (as confirmed through CFA), (b) acceptable scale scores variability and good internal consistency, (c) relative long-term test-scores stability, and (d) excellent convergent and discriminant validity with relevant external criteria (IPPA and YSR). Sources of individual differences in the PRAD scores were also examined and indicated a limited contribution of the Ethnicity factor only, which was addressed accordingly with the development of specific norms relative to adolescent ethnic background. However, contrary to many self-report attachment measures (e.g., IPPA, AAQ), the PRAD scales suggested no gender biases. Adhering to all psychometric standards, the PRAD proves therefore to be a promising measure, which however should be complemented by future research to further examine some psychometric features, particularly, its test-retest reliability and criterion validity.

Regarding test-retest reliability, given the rather long delay between measurement administration in our test-retest procedure, low stability coefficient in some PRAD scales (e.g., *Self-Focus*) may not reflect a poor reproducibility of the test scores, but that the construct measured may be more situational and sensitive to change, while scales with high stability coefficients (e.g., *Comfort*) may be more enduring or trait-like. Similarly, given the lower stability of PRAD-F scores, "father" scales may be more contingent on the situation than are mother scales or, perhaps, fathers are perceived as less consistent in their reactions. Regardless of whether PRAD reflects situational vs. trait-like perception of parental reaction, some degree of instability in PRAD scores was expected given the substantial changes in the teen-parent relational dynamic that occur in adolescence, which may lead to the rapid revision of internal working models of attachment (Brown & Wright, 2001). Further studies are needed to examine the extent to which PRAD's scores are reproducible over shorter time periods (test-retest reliability), to better disentangle this essential psychometric features from the study of stability (versus change) of the constructs measured with PRAD.

Given the ethnic differences observed in the PRAD scores, future studies should also investigate the source of these differences and consider several lines of interpretation. For example, research has shown cultural differences in response attitudes, particularly a tendency for minority students to report more negative affect and to be more sensitive to social desirability than non-minority students (Bardwell & Dimsdale, 2001; Consedine, Magai, Horton, & Brown, 2012). This result may also be explained by culture-specific approaches to attachment, including family network, availability of support, immigration, and minority experiences that are thought to play a role in an individual's style of relating to others (i.e., attachment style) as well as how one balances positive and negative affect (Magai et al., 2001; Merz & Consedine, 2012). Lastly, actual ethnic-group differences in parenting styles (García Coll & Pachter, 2002) may account, to some degree, for the ethnic-group differences observed in the PRAD scores. In order to more fully explain observed ethnic group differences, these lines of interpretation along with an investigation of possible confounding correlates of ethnicity (such as socio-economic status or level of education) should be explored in future research.

Although PRAD presents excellent convergent and discriminant validity with the IPPA in its ability to discriminate between mother and father constructs, the pattern of inter-correlation between PRAD-M and PRAD-F deserves further investigations. Indeed, although it is possible to measure the four parental constructs separately for mothers and fathers, a "general perception" of parental response may intervene in adolescent's ratings, explaining the rather high degree of shared variance between PRAD-M and PRAD-F scores. This finding is consistent with research that emphasized high concordance between attachments

to mother and to father due to a well-established concordance in parental caregiving in adolescence (Hilburn Cobb, 1996), or the development of a single general model of attachment relationships during adolescence (Kerns, 2008). Future studies using a parent-informant version of the PRAD or using new scoring approach to partition the test-score variance (e.g., Barbot et al., 2012) may help to further disentangle the source of variation in PRAD scores. Such an exploration may help uncover the extent to which perceived parental reactions to adolescent distress are actually concordant between parents or whether an underlying process explains the co-variation in test responses (e.g., a generalized model of attachment).

With regard to PRAD's criterion validity, it is also to be noted that the pattern of relation between PRAD and IPPA scores support the secure-insecure split suggested in Study 1, with the *Comfort* scale capturing secure attachment, as opposed to the three other scales representing insecure attachment (as measured by IPPA). Consistently, the relations between PRAD and YSR are in accordance with studies suggesting lower internalizing and externalizing symptoms in adolescents perceiving their parents as a secure base (Mattanah et al., 2011; Woodhouse et al., 2009). However, our reliance on the IPPA as sole criterion tapping into attachment presents several limitations (the YSR being more of an "outcome" measure in the context of the study presented here). First, several limitations of the IPPA have been noted in the attachment literature, including questions regarding its conceptual validity as it fails to capture unconscious processes central to attachment representation and behavior (Maier, Bernier, Pekrun, Zimmermann, & Grossmann, 2004; Mattanah et al., 2011; West et al., 1998). Similarly, although limited by a small sample size, a structural analyses of the IPPA has yield two dimensions rather than three (Johnson, Ketring, & Abshire, 2003), questioning its internal validity and, in particular, the relevance of the communication scale. These criticisms of the IPPA not only highlight the need for alternative measures of attachment in adolescence, but also suggest the need for other external criteria to support evidence for PRAD's criterion validity.

Accordingly, future validation studies of the PRAD should include other well-validated assessment in attachment research including the AAQ (West, Rose, Spreng, Sheldon-Keller, & Adam, 1998), the AUAQ (West et al., 2000), and most importantly, the AAI (George et al., 1985). Such investigation will not only extend PRAD's criterion validity but also inform the extent to which specific patterns of attachments (in particular, the unresolved pattern associated with overwhelming experiences of loss/trauma) are associated with PRAD's "profiles" of adolescent's perceived parental reaction to distress.

Additionally, measures of adult romantic attachment style such as the RQ (Bartholomew & Horowitz, 1991) or the ECR (Brennan et al., 1998) may provide complementary insights on the validity of the PRAD, as it measures dimensions of attachment conceptually and empirically distinct (to some extent) from the AAI (Roisman et al., 2007; Shaver, Belsky, & Brenann, 2000) but also inform the ability to depend on attachment figure. Together, such studies would not only increase PRAD's criterion validity in view of a more accurate interpretation of its outlined constructs, but it would also advance our understanding of attachment development in adolescence in relation to perceived parental reaction to adolescent distress. Given the undefined limit of late adolescence/emerging adulthood (Arnett, 2000; Steinberg, 2008), such investigation would also benefit from complementary measures helping to address at what point, in times of distress, the adolescent begins to turns to friends with more regularity than parents, and develops an understanding as to why the parent may not be the most suitable person to advise on an emotionally challenging issue. To this regard, the FFI (Steele & Steele, 2005) is a relevant measure allowing to investigate the adolescent's ability to show an understanding of the

diverse feelings (both negative and positive) present in significant relationships, including caregivers, siblings, peers, teachers, and self.

Conclusion

According to Bowlby (1988), a “secure” attachment is designated—irrespective of age—to an attachment in which an individual trusts the emotional availability and responsiveness of a supportive figure *when called upon*. As children reach adolescence and strive to form their own adult identity, they call upon their parents not so much in the midst of prosaic day-to-day concerns, but rather in times of emotional upheaval (Steinberg, 1990). Understanding how the adolescent perceives his or her parent’s response in these moments of distress is essential in order to untangle the complex—even, at times, contradictory—parent-child dynamic that defines this developmental period (Allen & Land, 1999). Previous research suggests that teenagers, despite their deliberate struggle for autonomy, are likely to want the caring ministrations of a parental attachment figure in times of stress.

The Parental Reactions to Adolescent Distress (PRAD) is the first assessment tool that purposely examines an adolescent’s perception of the parent-child relationship within the context of his or her own emotional distress, assessing four conceptually and empirically distinct categories of perceived parental reactions to adolescent distress: *Comfort*, *Self-focused*, *Avoidance* and *Harshness*. Although more research is necessary to extend the psychometric evaluation of the PRAD, in particular its test retest reliability and criterion validity, this instrument holds great promise—theoretically and practically—for future studies of adolescent-parent relationships and a better understanding of attachment development in adolescence. In particular, the PRAD could offer a more context-specific perspective to researchers working in the field of adolescent attachment, and encourage more studies of parental sensitive responding to extend into adolescence. Its two-form design (PRAD-M and PRAD-F) invites researchers to examine the formation of a generalized model of attachment in a developmental perspective, and address the extent to which perceived maternal versus paternal reactions to distress affect adolescent adjustment. In addition to the PRADs potential use in studies of parental sensitivity in adolescence, the PRAD may also be of interest to researchers in the field of emotional socialization. Surprisingly little is known regarding how parents socialize emotions in adolescence (Klimes-Dougan et al., 2007; Laible, 2007) and the PRAD may be a particularly beneficial assessment tool for such studies.

Acknowledgments

Preparation of this article was supported by funds from the Spencer Foundation to the first Author (Grant#201200103) and from the National Institutes of Health (R01DA014385-06, R13 MH082592, and R01 DA010726-12) to the third author. We thank Howard Steele and two anonymous reviewers for insightful comments on a preliminary version of this article.

References

- Achenbach, TM. Manual for the youth self-report and 1991 profile. Burlington, VT: University of Vermont, Department of Psychiatry; 1991.
- Ainsworth, MDS.; Blehar, MC.; Waters, E.; Wall, S. Patterns of attachment: Assessed in the strange situation and at home. Hillsdale, NJ: Erlbaum; 1978.
- Aikins JW, Howes C, Hamilton C. Attachment stability and the emergence of unresolved representations during adolescence. *Attachment & Human Development*. 2009; 11(5):491–512.10.1080/14616730903017019 [PubMed: 19946807]

- Allen, JP. The attachment system in adolescence. In: Cassidy, J.; Shaver, PR., editors. *Handbook of attachment: Theory, research, and clinical applications*. 2. New York, NY, US: Guilford Press; 2008. p. 419-435.
- Allen, JP.; Land, D. Attachment in adolescence. In: Cassidy, J.; Shaver, PR., editors. *Handbook of attachment: Theory, research, and clinical applications*. New York: Guilford Press; 1999. p. 319-335.
- Allen JP, Manning N, Meyer J. Tightly linked systems: Reciprocal relations between maternal depressive symptoms and maternal reports of adolescent externalizing behavior. *Journal of Abnormal Psychology*. 2010; 119(4):825–835.10.1037/a0021081 [PubMed: 21090880]
- Allen JP, McElhaney KB, Kuperminc GP, Jodl KM. Stability and change in attachment security across adolescence. *Child Development*. 2004; 75(6):1792–1805.10.1111/j.1467-8624.2004.00817.x [PubMed: 15566380]
- Ammaniti M, Van Ijzendoorn MH, Speranza AM, Tambelli R. Internal working models of attachment during late childhood and early adolescence: An exploration of stability and change. *Attachment & Human Development*. 2000; 2(3):328–346.10.1080/14616730010001587 [PubMed: 11708222]
- Armsden G, Greenberg M. The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*. 1987; 16(5):427–454.10.1007/BF02202939 [PubMed: 24277469]
- Arnett JJ. Emerging Adulthood: A theory of development from the late teens through the twenties. *American Psychologist*. 2000; 55:5, 469–480. [PubMed: 11392865]
- Barbot, B.; Hunter, SR. Developmental changes in adolescence and risks for delinquency. In: Grigorenko, EL., editor. *Handbook of juvenile forensic psychology and psychiatry*. New York, New York: Springer; 2012. p. 11-34.
- Barbot B, Haefel GJ, Macomber D, Hart L, Chapman J, Grigorenko EL. Development and validation of the delinquency reduction outcome profile (DROP) in a sample of incarcerated juveniles: A multiconstruct/multisituational scoring approach. *Psychological Assessment*. 2012; 24(4):901–912.10.1037/a0028193 [PubMed: 22545698]
- Bardwell WA, Dimsdale JE. The impact of ethnicity and response bias on the self-report of negative Affect1. *Journal of Applied Biobehavioral Research*. 2001; 6(1):27–38.10.1111/j.1751-9861.2001.tb00105.x
- Bartholomew K. Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships*. 1990; 7(2):147–178.
- Bartholomew K, Horowitz LM. Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*. 1991; 61(2):226–244.10.1037/0022-3514.61.2.226 [PubMed: 1920064]
- Baumrind D. Patterns of parental authority and adolescent autonomy. *New Directions for Child and Adolescent Development*. 2005; 2005(108):61–69.10.1002/cd.128 [PubMed: 16121897]
- Bowlby, J. *Attachment and loss, vol. I: Attachment*. New York: Basic Books; 1969.
- Bowlby, J. *Attachment and loss, vol. 2: Separation*. New York: Basic Books; 1972.
- Bowlby, J. *Attachment and loss, vol. 3: Loss, sadness and depression*. New York: Basic Books; 1980.
- Bowlby J. Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry*. 1982; 52(4):664–678. [PubMed: 7148988]
- Bowlby, J. *A secure base: Clinical applications of attachment theory*. New York: Psychology Press; 1988.
- Brennan, KA.; Clark, CL.; Shaver, PR. Self-report measurement of adult attachment. In: Simpson, JA.; Rholes, WS., editors. *Attachment theory and close relationships*. New York, NY: Guilford Press; 1998. p. 46-76.
- Bretherton, I. Pouring new wine into old bottles: The social self as internal working model. In: Gunnar, MR.; Sroufe, L.A., editors. *Self processes and development. The Minnesota symposia on child psychology*. Vol. 23. Hillsdale, NJ: Lawrence Erlbaum Associates; 1991. p. 1-41.
- Brown LS, Wright J. Attachment theory in adolescence and its relevance to developmental psychopathology. *Clinical Psychology & Psychotherapy*. 2001; 8(1):15–32.10.1002/cpp.274
- Cicchetti DV. Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*. 1994; 6(4):284–290.

- Consedine NS, Magai C, Horton D, Brown WM. The affective paradox: An emotion regulatory account of ethnic differences in self-reported anger. *Journal of Cross-Cultural Psychology*. 2012; 43(5):723–741.10.1177/0022022111405659
- Crowell, JA.; Fraley, RC.; Shaver, PR. Measurement of individual differences in adolescent and adult attachment. In: Cassidy, J.; Shaver, PR., editors. *Handbook of attachment: Theory, research, and clinical applications*. 2. New York, NY, US: Guilford Press; 2008. p. 635
- Decarlo LT, Luthar SS. Analysis and class validation of a measure of parental values perceived by early adolescents: An application of a latent class model for rankings. *Educational and Psychological Measurement*. 2000; 60(4):578–591.10.1177/00131640021970736 [PubMed: 23293379]
- DeOliveira CA, Moran G, Pederson DR. Understanding the link between maternal adult attachment classifications and thoughts and feelings about emotions. *Attachment & Human Development*. 2005; 7(2):153–170. [PubMed: 16096191]
- Dykas MJ, Woodhouse SS, Cassidy J, Waters HS. Narrative assessment of attachment representations: Links between secure base scripts and adolescent attachment. *Attachment & Human Development*. 2006; 8(3):221–240.10.1080/14616730600856099 [PubMed: 16938705]
- Edelstein RS, Alexander KW, Shaver PR, Schaaf JM, Quas JA, Lovas GS, Goodman GS. Adult attachment style and parental responsiveness during a stressful event. *Attachment & Human Development*. 2004; 6(1):31–52.10.1080/146167303100001659584 [PubMed: 14982678]
- Eisenberg N, Fabes RA, Shepard SA, Guthrie IK, Murphy BC, Reiser M. Parental reactions to children's negative emotions: Longitudinal relations to quality of children's social functioning. *Child Development*. 1999; 70(2):513–534.10.1111/1467-8624.00037 [PubMed: 10218267]
- Eisenberg N, Valiente C, Morris AS, Fabes RA, Cumberland A, Reiser M, Losoya S. Longitudinal relations among parental emotional expressivity, children's regulation, and quality of socioemotional functioning. *Developmental Psychology*. 2003; 39(1):3–19.10.1037/0012-1649.39.1.3 [PubMed: 12518805]
- Elbin RJ, Schatz P, Covassin T. One-year test-retest reliability of the online version of ImPACT in high school athletes. *The American Journal of Sports Medicine*. 2011; 39(11):2319–2324.10.1177/0363546511417173 [PubMed: 21841066]
- Fraley RC, Davis KE. Attachment formation and transfer in young adults' close friendships and romantic relationships. *Personal Relationships*. 1997; 4(2):131–144.
- García Coll, CG.; Pachter, LM. Ethnic and minority parenting. In: Bornstein, MH., editor. *Handbook of parenting volume 4: Social conditions and applied parenting*. Mahwah, NJ: Erlbaum; 2002. p. 1-20.
- George, C.; Kaplan, N.; Main, M. Adult attachment interview (AAI). University of California; Berkeley, CA: 1985. unpublished manuscript
- George C, West M. The development and preliminary validation of a new measure of adult attachment: The adult attachment projective. *Attachment & Human Development*. 2001; 3(1):30–61.10.1080/14616730010024771 [PubMed: 11708383]
- Goldberg S, Grusec JE, Jenkins JM. Confidence in protection: Arguments for a narrow definition of attachment. *Journal of Family Psychology*. 1999; 13(4):475–483.10.1037/0893-3200.13.4.475
- Goodman GS, Quas JA, Batterman-Faunce JM, Riddlesberger M, Kuhn J. Children's reactions to and memory for a stressful event: Influences of age, anatomical dolls, knowledge, and parental attachment. *Applied Developmental Science*. 1997; 1(2):54–75.
- Gottman JM, Katz LF, Hooven C. Parental meta-emotion philosophy and the emotional life of families: Theoretical models and preliminary data. *Journal of Family Psychology*. 1996; 10(3):243–268.10.1037/0893-3200.10.3.243
- Griffin DW, Bartholomew K. Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology*. 1994; 67(3):430.
- Gullone E, Robinson K. The inventory of parent and peer attachment revised (IPPA-R) for children: A psychometric investigation. *Clinical Psychology & Psychotherapy*. 2005; 12(1):67–79.10.1002/cpp.433
- Hazan C, Shaver PR. Attachment as an organizational framework for research on close relationships. *Psychological Inquiry*. 1994; 5(1):1–22.10.1207/s15327965pli0501_1

- Hilburn Cobb CL. Adolescent-parent attachments family problem-solving styles. *Family Process*. 1996; 35(1):57–82.10.1111/j.1545-5300.1996.00057.x [PubMed: 8804967]
- Hinkin TR. A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*. 1998; 1(1):104–121.
- Ivanova MY, Achenbach TM, Rescorla LA, Dumenci L, Almqvist F, Bilenberg N, Verhulst FC. The generalizability of the youth self-report syndrome structure in 23 societies. *Journal of Consulting and Clinical Psychology*. 2007; 75(5):729–738.10.1037/0022-006X.75.5.729 [PubMed: 17907855]
- Johnson LN, Ketring SA, Abshire C. The revised inventory of parent attachment: Measuring attachment in families. *Contemporary Family Therapy*. 2003; 25(3):333–349.
- Kerns, KA. Attachment in middle childhood. In: Cassidy, J.; Shaver, P., editors. *handbook of attachment: Theory, research and clinical applications*. New York: Guilford Press; 2008. p. 366–382.
- Klimes-Dougan B, Brand AE, Zahn-Waxler C, Usher B, Hastings PD, Kendziora K, Garside RB. Parental emotion socialization in adolescence: Differences in sex, age and problem status. *Social Development*. 2007; 16(2):326–342.10.1111/j.1467-9507.2007.00387.x
- Kline, RB. *Principles and practice of structural equation modeling*. 3. New York, NY: The Guilford Press; 2010.
- Kobak RR, Sceery A. Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development*. 1988; 59:135–146. [PubMed: 3342708]
- Kobak RR, Cole HE, Ferenz-Gillies R, Fleming WS, Gamble W. Attachment and emotion regulation during mother-teen problem solving: A control theory analysis. *Child Development*. 1993; 64(1): 231–245. [PubMed: 8436031]
- Kobak RR, Ferenz-Gillies R, Everhart E, Seabrook L. Maternal attachment strategies and emotion regulation with adolescent offspring. *Journal of Research on Adolescence*. 1994; 4(4):553–566.10.1207/s15327795jra0404_7
- Kriss A, Steele H, Steele M. Measuring attachment and reflective functioning in early adolescence: An introduction to the friends and family interview. *Research in Psychotherapy: Psychopathology, Process and Outcome*. 2012; 15(2):87–95.
- Laible D. Attachment with parents and peers in late adolescence: Links with emotional competence and social behavior. *Personality and Individual Differences*. 2007; 43(5):1185–1197.10.1016/j.paid.2007.03.010
- Luthar SS, Barkin SH. Are affluent youth truly “at risk”? vulnerability and resilience across three diverse samples. *Development and Psychopathology*. 2012; 24(2):429–449.10.1017/S0954579412000089 [PubMed: 22559123]
- Luthar SS, Latendresse SJ. Comparable “risks” at the socioeconomic status extremes: Preadolescents’ perceptions of parenting. *Development and Psychopathology*. 2005; 17(1):207–230. [PubMed: 15971767]
- Luthar SS, Goldstein AS. Substance use and related behaviors among suburban late adolescents: The importance of perceived parent containment. *Development and Psychopathology*. 2008; 20(02): 591–614.10.1017/S0954579408000291 [PubMed: 18423096]
- Lyons-Ruth, K.; Jacobvitz, D. Attachment disorganization: Genetic factors, parenting contexts, and developmental transformation from infancy to adulthood. In: Cassidy, J.; Shaver, PR., editors. *Handbook of attachment: Theory, research, and clinical applications*. 2nd. New York, NY: Guilford Press; 2008. p. 666–697.
- Macfie J, McElwain NL, Houts RM, Cox MJ. Intergenerational transmission of role reversal between parent and child: Dyadic and family systems internal working models. *Attachment & Human Development*. 2005; 7(1):51–65. [PubMed: 15984085]
- Magai C, Cohen C, Milburn N, Thorpe B, McPherson R, Peralta D. Attachment styles in older european american and african american adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2001; 56(1):S28–S35.
- Maier M, Bernier A, Pekrun R, Zimmermann P, Grossmann K. Attachment working models as unconscious structures: An experimental test. *International Journal of Behavioral Development*. 2004; 28(2):180–189.10.1080/01650250344000398

- Mattanah JF, Lopez FG, Govern JM. The contributions of parental attachment bonds to college student development and adjustment: A meta-analytic review. *Journal of Counseling Psychology*. 2011; 58(4):565. [PubMed: 21823789]
- McElwain NL, Booth-LaForce C. Maternal sensitivity to infant distress and nondistress as predictors of infant-mother attachment security. *Journal of Family Psychology*. 2006; 20(2):247–255.10.1037/0893-3200.20.2.247 [PubMed: 16756400]
- Merz E, Consedine NS. Ethnic group moderates the association between attachment and well-being in later life. *Cultural Diversity and Ethnic Minority Psychology*. 2012; 18(4):404–415.10.1037/a0029595 [PubMed: 22866692]
- Mesman J, Oster H, Camras L. Parental sensitivity to infant distress: What do discrete negative emotions have to do with it? *Attachment & Human Development*. 2012; 14(4):337–348.10.1080/14616734.2012.691649 [PubMed: 22697468]
- Morris AS, Silk JS, Steinberg L, Myers SS, Robinson LR. The role of the family context in the development of emotion regulation. *Social Development*. 2007; 16(2):361–388.10.1111/j.1467-9507.2007.00389.x [PubMed: 19756175]
- Oyen A, Landy S, Hilburn-Cobb C. Maternal attachment and sensitivity in an at-risk sample. *Attachment & Human Development*. 2000; 2(2):203–217.10.1080/14616730050085563 [PubMed: 11707911]
- Pace CS, San Martini P, Zavattini GC. The factor structure of the inventory of parent and peer attachment (IPPA): A survey of italian adolescents. *Personality and Individual Differences*. 2011; 51(2):83–88.10.1016/j.paid.2011.03.006
- Parker G. The parental bonding instrument. *Social Psychiatry and Psychiatric Epidemiology*. 1990; 25(6):281–282. [PubMed: 2291129]
- Rholes WR, Simpson JA, Blakely BS, Lanigan L, Allen EA. Adult attachment styles, the desire to have children, and working models of parenthood. *Journal of Personality*. 1997; 65(2):357–385.10.1111/j.1467-6494.1997.tb00958.x [PubMed: 9226942]
- Roberts WL, Strayer J. Parents' responses to the emotional distress of their children: Relations with children's competence. *Developmental Psychology*. 1987; 23(3):415–422.10.1037/0012-1649.23.3.415
- Roisman GI, Holland A, Fortuna K, Fraley RC, Clausell E, Clarke A. The adult attachment interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology*. 2007; 92(4):678–697.10.1037/0022-3514.92.4.678 [PubMed: 17469952]
- Schindler A, Thomasius R, Sack P, Gemeinhardt B, KÜstner U, Eckert J. Attachment and substance use disorders: A review of the literature and a study in drug dependent adolescents. *Attachment & Human Development*. 2005; 7(3):207–228.10.1080/14616730500173918 [PubMed: 16210236]
- Shaver PR, Belsky J, Brenann KA. The adult attachment interview and self-reports of romantic attachment: Associations across domains and methods. *Personal Relationships*. 2000; 7(1):25–43.10.1111/j.1475-6811.2000.tb00002.x
- Smith PB, Pederson DR. Maternal sensitivity and patterns of infant-mother attachment. *Child Development*. 1988; 59(4):1097–1101. [PubMed: 3168617]
- Sroufe LA, Waters E. Attachment as an organizational construct. *Child Development*. 1977; 48(4):1184–1199.
- Steele, H.; Steele, M. The construct of coherence as an indicator of attachment security in middle childhood: The friends and family interview. In: Kerns, K.; Richardson, R., editors. *Attachment in middle childhood*. New York: Guilford Press; 2005. p. 137-160.
- Steele H, Steele M, Murphy A. Use of the adult attachment interview to measure process and change in psychotherapy. *Psychotherapy Research*. 2009; 19(6):633–643.10.1080/10503300802609698 [PubMed: 19544185]
- Steinberg, L. Autonomy, conflict, and harmony in the family relationship. In: Feldman, S.; Elliott, GR., editors. *At the threshold: The developing adolescent*. Cambridge, MA, US: Harvard University Press; 1990. p. 255-276.
- Steinberg L. A social neuroscience perspective on adolescent risk-taking. *Developmental Review*. 2008; 28(1):78–106. [PubMed: 18509515]

- van IJzendoorn M. Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the adult attachment interview. *Psychological Bulletin*. 1995; 117(3):387–403.10.1037/0033-2909.117.3.387 [PubMed: 7777645]
- Vogt DS, King DW, King LA. Focus groups in psychological assessment: Enhancing content validity by consulting members of the target population. *Psychological Assessment*. 2004; 16(3):231–243.10.1037/1040-3590.16.3.231 [PubMed: 15456379]
- Wallis P, Steele H. Attachment representations in adolescence: Further evidence from psychiatric residential settings. *Attachment & Human Development*. 2001; 3(3):259–268. [PubMed: 11885813]
- Waters HS, Rodrigues LM, Ridgeway D. Cognitive underpinnings of narrative attachment assessment. *Journal of Experimental Child Psychology*. 1998; 71(3):211–234. [PubMed: 9878106]
- Weiss, RS. Attachment in adult life. In: Parkes, CM.; Stevenson-Hinde, J., editors. *The place of attachment in human behavior*. New York: Basic Books; 1982. p. 3-30.
- West M, Rose MS, Spreng S, Sheldon-Keller A, Adam K. Adolescent attachment questionnaire: A brief assessment of attachment in adolescence. *Journal of Youth and Adolescence*. 1998; 27(5): 661–673.
- West M, Rose S, Spreng S, Adam K. The adolescent unresolved attachment questionnaire: The assessment of perceptions of parental abdication of caregiving behavior. *The Journal of Genetic Psychology*. 2000; 161(4):493–503. [PubMed: 11117104]
- West M, Rose MS, Spreng S, Sheldon-Keller A, Adam K. Adolescent attachment questionnaire: A brief assessment of attachment in adolescence. *Journal of Youth and Adolescence*. 1998; 27(5): 661–673.
- Woodhouse SS, Dykas MJ, Cassidy J. Perceptions of secure base provision within the family. *Attachment & Human Development*. 2009; 11(1):47–67.10.1080/14616730802500792 [PubMed: 19197703]

Appendix. Parental Reactions to Adolescent Distress (PRAD)

Directions: *This set of questions is about how your mother and father react when you are upset. Please answer the following items on a five-point scale, where “1” is low agreement with the given statement, “5” is high agreement with the given statement, and “N/A” is statement not applicable. Please circle the number that most accurately applies to your experience.*

<i>If I am upset and my mother/father knows it, she/he tends to ...</i>	Not at all True	Not Very True	Somewhat True	True	Very True	NA
1M. put her own needs aside and truly listen to me-- Mother	1	2	3	4	5	
1P. put his own needs aside and truly listen to me-- Father	1	2	3	4	5	
2M. worry to a point where I have to console her-- Mother	1	2	3	4	5	
2P. worry to a point where I have to console him-- Father	1	2	3	4	5	
3M. ignore it-- Mother	1	2	3	4	5	
3P. ignore it-- Father	1	2	3	4	5	
4M. get judgmental of my role in the problem-- Mother	1	2	3	4	5	
4P. get judgmental of my role in the problem-- Father	1	2	3	4	5	

<i>If I am upset and my mother/father knows it, she/he tends to ...</i>	Not at all True	Not Very True	Somewhat True	True	Very True	NA
5M. listen compassionately-- Mother	1	2	3	4	5	
5P. listen compassionately-- Father	1	2	3	4	5	
6M. need reassurance from me that things will get better-- Mother	1	2	3	4	5	
6P. need reassurance from me that things will get better-- Father	1	2	3	4	5	
7M. avoid or gloss over it-- Mother	1	2	3	4	5	
7P. avoid or gloss over it-- Father	1	2	3	4	5	
8M. be critical of what I did to create the problem-- Mother	1	2	3	4	5	
8P. be critical of what I did to create the problem-- Father	1	2	3	4	5	
9M. be there for me in just the ways that I need her to be-- Mother	1	2	3	4	5	
9P. be there for me in just the ways that I need him to be-- Father	1	2	3	4	5	
10M. dwell on it until I have to comfort her-- Mother	1	2	3	4	5	
10P. dwell on it until I have to comfort him-- Father	1	2	3	4	5	
11M. tell me to go talk to someone else-- Mother	1	2	3	4	5	
11P. tell me to go talk to someone else-- Father	1	2	3	4	5	
12M. blame me for my part in the problem-- Mother	1	2	3	4	5	
12P. blame me for my part in the problem-- Father	1	2	3	4	5

Figure 1.

Measurement model of the PRAD. Single values for loadings indicates identical estimate across PRAD-M and PRAD-F form, double values indicates estimates for PRAD-M (left) and PRAD-F (right) forms, respectively; ** = $p < .01$, *** = $p < .001$

Table 1

Fit statistics of the PRAD Confirmatory Factor Analyses (CFA) and Multi-Group CFA.

Model	χ^2	df	χ^2/df	p	$\Delta\chi^2$	NFI	CFI	RMSEA [90% CI]
PRAD-M Initial	83.1	48	1.73	.001	–	.970	.987	.039 [.024 – .053]
PRAD-M Adjusted	78.6	47	1.67	.003	.033	.972	.988	.037 [.022 – .051]
PRAD-F Initial	119.1	48	2.48	.001	–	.949	.969	.055 [.043 – .068]
PRAD-F Adjusted	107.1	47	2.28	.001	.001	.954	.973	.051 [.038 – .064]

Note. χ^2 = chi-square; *df* = degrees of freedom; *p* = *p* value of the chi-square test; $\Delta\chi^2$ = *p* value of the chi-square difference test; NFI = Bentler-Bonett normed fit index; CFI = normed noncentrality fit index; RMSEA = root mean square error of approximation; CI = 90% confidence interval of RMSEA value.

Table 2
Descriptive Statistics, Internal Consistency Coefficient and One-year Test-retest Stability Coefficients of the PRAD scores

Scale	Alpha	Range	Mean	SD	Skew. [SE = .11]	Kurt. [SE = .23]	Two-way ICC
Comfort (M)	.90	(1 – 5)	3.66	1.14	-.66	-.50	.79***
Comfort (F)	.90	(1 – 5)	3.31	1.21	-.44	-.86	.39**
Self-Focus (M)	.76	(1 – 5)	2.03	.93	.90	.32	.56***
Self-Focus (F)	.70	(1 – 5)	1.64	.71	1.47	2.78	.21
Avoidance (M)	.77	(1 – 5)	1.48	.69	1.71	2.90	.62***
Avoidance (F)	.75	(1 – 5)	1.63	.85	1.63	2.38	.46***
Harshness (M)	.85	(1 – 5)	2.44	1.09	.61	-.47	.72***
Harshness (F)	.80	(1 – 5)	2.32	1.00	.68	-.06	.46***

Note. M = PRAD Mother form; F = PRAD Father form; Skew. = Skewness; Kurt. = Kurtosis; SD = Standard deviation; SE = Standard Error; ICC = one year Test retest Intra-class correlation coefficient ($n = 108$);

$p < .01$,

$p < .001$

Table 3

Inter-Correlation between PRAD scales.

	1	2	3	4	5	6	7	8
1. Comfort (M)	–							
2. Self-Focus (M)	–.20***	–						
3. Avoidance (M)	–.56***	.16***	–					
4. Harshness (M)	–.54***	.39***	.45***	–				
5. Comfort (F)	.65***	–.23***	–.40***	–.40***	–			
6. Self-Focus (F)	–.13*	.59***	.15**	.26***	–.05	–		
7. Avoidance (F)	–.36***	.24***	.61***	.34***	–.60***	.09	–	
8. Harshness (F)	–.34***	.30***	.27***	.72***	–.41***	.29***	.38***	–

Note. M = Mother; F = Father;

* $p < .05$

** $p < .01$,

*** $p < .001$

Table 4

Correlation Coefficient between the PRAD, IPPA, and YSR

PRAD	IPPA				YSR		
	Trust (M)	Comm. (M)	Alien. (M)	Trust (F)	Comm. (F)	Alien. (F)	Ext. Int.
Comfort (M)	.79***	.79***	-.64***	.48***	.50***	-.39***	-.27***
Self-Focus (M)	-.25***	-.21***	.31***	-.30***	-.24***	.34***	.26***
Avoidance (M)	-.53***	-.50***	.48***	-.37***	-.33***	.36***	.32***
Harshness (M)	-.62***	-.52***	.57***	-.43***	-.38***	.43***	.30***
Comfort (F)	.51***	.50***	-.43***	.79***	.78***	-.62***	-.24***
Self-Focus (F)	-.20***	-.16***	.23***	-.12**	-.06*	.21***	.16***
Avoidance (F)	-.37***	-.34***	.35***	-.60***	-.53***	.51***	.23***
Harshness (F)	-.37***	-.33***	.34***	-.46***	-.35***	.41***	.12**

Note. M = Mother ; F = Father ; Comm = IPPA Communication scale; Alien. = IPPA Alienation scale; Int. = YSR Internalizing scale; Ext = YSR externalizing scale;

*
p < .05

**
p < .01,

p < .001