

Predicting maternal and parent–child aggression risk: Longitudinal multimethod investigation using social information processing theory

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Abstract:

Objective: Given the costly outcomes associated with the physical abuse and harsh discipline of children, identifying pathways leading parents to engage in parent–child aggression (PCA) are critical to prevention and intervention efforts. One model that attempts to identify the processes involved in increasing parents' risk is an adaptation of Social Information Processing (SIP) theory. The current study investigated whether elements of SIP theory assessed prenatally can predict later PCA risk in a diverse sample of mothers and fathers. Method: This evaluation controlled for parents' current level of personal vulnerabilities (psychopathology, substance use, domestic violence) or resiliencies (social support, partner satisfaction, coping) to determine the predictive value of the SIP processes in particular. This study used a multimethod approach that included several analog tasks. Dyadic analyses were conducted to contrast 196 mothers and their partners who were enrolled prenatally and then reassessed when their infants were 6 months old. Results: Findings indicate that poor empathy assessed prenatally was associated with greater overreactivity and more negative attributions regarding children's behavior, which in turn predicted later PCA risk. Moreover, attitudes approving the use of PCA predicted later PCA risk largely due to its connection with negative child attributions, less knowledge of nonphysical discipline alternatives, and higher compliance expectations. Conclusions: The results suggest that elements of the SIP theory can be identified prenatally to estimate later risk of PCA, with some differences in profiles between mothers and fathers. Future directions for evaluating the SIP model and its implications for prevention and intervention are discussed.

Keywords: physical child abuse potential | social information processing theory | cognitive risk and resilience | transition to parenting | child abuse risk

Article:

In the United States, physical child abuse—forceful actions that result in physical injury to a child—constituted 17% of the over 700,000 cases of substantiated child maltreatment in 2014 (U.S. Department of Health and Human Services, 2016). But considerably more children are abused than are ever reported to protective services, with estimates of harm from child

maltreatment exceeding 1.25 million annually (Sedlak et al., 2010). The use of noninjurious physical force, intended to incur pain in an effort to manage or amend child behavior, is considered physical discipline (Straus, 2000), with spanking one of the most prevalent forms of physical discipline administered to the majority of U.S. children (Zolotor, Theodore, Runyan, Chang, & Laskey, 2011). Greater use of physical discipline has been observed in parents who adopt an authoritarian parenting style, a parenting approach characterized by high parental demands with limited warmth (Robinson, Mandleco, Olsen, & Hart, 1995). Physical child abuse typically arises during physical discipline episodes (Kadushin & Martin, 1981), and the odds of physical abuse transpiring increases with the escalating intensity and frequency of spanking (Durrant, Trocmé, Fallon, Milne, & Black, 2009; Zolotor, Theodore, Chang, Berkoff, & Runyan, 2008). Therefore, physical child abuse is often conceptualized as part of a parent–child aggression (PCA) continuum (Gershoff, 2010; Rodriguez, 2010a; Straus, 2000; Whipple & Richey, 1997)—physical discipline represents one end of the continuum with more severe PCA approaching the abusive end of the continuum. To avoid the negative sequelae associated with PCA, the current study evaluated the ability of a theoretical model to predict PCA risk for both mothers and fathers longitudinally, which would inform child abuse prevention efforts.

The likelihood a parent will escalate harsh physical discipline, progressing along the PCA continuum toward abuse, is known as child abuse potential (Milner, 1994). Child abuse potential is linked to abusive physical discipline (Rodriguez, 2010a) and harsh, authoritarian parenting (Conners, Whiteside-Mansell, Deere, Ledet, & Edwards, 2006; Margolin, Gordis, Medina, & Oliver, 2003; Rodriguez, Smith, & Silvia, 2016a). To prevent child abuse, we must better identify what contributes to child abuse potential. Notably, we are unlikely to directly witness child abuse in action. Thus, we can only approximate PCA—the harsh parenting behavior and abuse potential henceforth collectively termed *PCA risk*. In the current study, PCA risk was operationalized inclusively as child abuse potential and authoritarian, harsh parenting approaches.

Theoretical Framework

Social information processing (SIP) theory has been adapted to frame the processes that may lead to PCA (Milner, 2000). According to SIP theory, parents carry preexisting schemas (e.g., about the child or parenting) even before a particular discipline situation arises. Then, when confronted with a discipline situation, four stages may occur. First, the parent must accurately perceive the situation (Stage I), wherein processes that interfere with accurate perceptions contribute to increased PCA risk. The parent also develops interpretations and expectations about the child and situation (Stage II), during which they may form biased, negative appraisals. Parents may fail to integrate all relevant information before selecting a discipline response, including their discipline alternatives (Stage III). Parents who then select PCA have difficulty monitoring its implementation to inhibit its progression along the PCA continuum (Stage IV).

SIP preexisting schemas can reflect cognitive belief structures (e.g., about discipline) and affective schemas—emotions accrued from prior social interactions. The SIP model applied to children’s aggressive behavior (Crick & Dodge, 1994) expressly encourages integration of emotion into sociocognitive models. Thus, this study included cognitive and affective preexisting schemas that could link to subsequent stages.

In terms of research supporting factors in this study, preexisting cognitive schemas include attitudes toward PCA. Approval of PCA relates to increased PCA risk (McCarthy, Crouch, Basham, Milner, & Skowronski, 2016; Rodriguez, Russa, & Harmon, 2011) and predicts its use by mothers (Ateah & Durrant, 2005). For preexisting affective schemas, empathy is a positive affective state that could reduce PCA risk (Milner, 2000). Greater empathy promotes happiness and feelings of goodwill (Byrne, 2013), which could color the emotions a parent feels about their child. Indeed, greater empathy is associated with lower child abuse risk (de Paúl, Pérez-Albéniz, Guibert, Asla, & Ormaechea, 2008; Rodriguez, 2013). Stage I can involve processes that interfere with parents' accurate perceptions, which may arise when parents overreact when frustrated; poor frustration tolerance has been associated with greater child abuse potential (Rodriguez, Russa, & Kircher, 2015). Frustration with infant crying is linked with emotional dysregulation (Russell & Lincoln, 2016), and emotion regulation difficulties are associated with elevated child abuse risk (Hien, Cohen, Caldeira, Flom, & Wasserman, 2010). Thus, poor emotion regulation and frustration tolerance could compromise accurate attending during Stage I. For Stage II, negative attributions of children's behavior have been observed in abusive mothers (Hasket, Scott, Willoughby, Ahern, & Nears, 2006) and at-risk samples (Azar, Okado, Stevenson, & Robinson, 2013; Montes, de Paúl, & Milner, 2001), and such negative attributions predict pregnant women's later harsh parenting and maltreatment (Berlin, Dodge, & Reznick, 2013). Some studies further suggest at-risk mothers expect less compliance from their children following discipline (Caselles & Milner, 2000) whereas others suggest at-risk parents expect more compliance (Rodriguez, Smith, & Silvia, 2016b). Collectively, Stage II includes attributions and expectations that may bias a parent's appraisal of a discipline encounter. Stage III entails integrating information before selecting a response, which would include awareness of nonphysical discipline options—a feature in many prevention programs (Lundahl, Nimer, & Parsons, 2006; Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009).

A subset of SIP factors have been considered in predicting mothers' abuse risk, evaluated individually rather than as a whole (Montes et al., 2001), or evaluated simultaneously (e.g., Azar et al., 2013; Rodriguez, 2010b; Rodriguez & Richardson, 2007). More comprehensive evaluations of SIP theory have been applied to estimate maternal and paternal PCA risk cross-sectionally (Rodriguez et al., 2016a, 2016b). Nonetheless, to ascertain whether SIP elements could be suitable prevention program targets, research should consider whether SIP elements can predict PCA risk longitudinally.

But the SIP processes arise against the broader backdrop of the parent's life. In particular, a parent's personal vulnerabilities (e.g., psychopathology)—unrelated to parenting or to the child—may “tax” their ability to engage in and process a given discipline situation appropriately. Such taxes could in turn be offset by parents' personal resiliencies, resources they drawn upon to manage their taxes. The current study evaluated whether SIP processes predict PCA risk *independent* of such personal-level taxes and resources.

A number of personal issues have been implicated as taxes associated with elevated PCA risk, including parents' psychopathology (Pajer et al., 2014; Stith et al., 2009), intimate partner violence (Casanueva & Martin, 2007; Margolin et al., 2003), and substance use (Hien et al., 2010; Pajer et al., 2014). Comparatively less attention has been paid to the resources parents may

access to deal with such taxes (Counts, Buffington, Chang-Rios, Rasmussen, & Preacher, 2010). Social support is among the most well-recognized resiliencies linked to lower PCA risk (Counts et al., 2010; Rodriguez & Tucker, 2015), but such interpersonal support may be drawn from their partner relationship, which can also decrease PCA risk (Rodriguez et al., 2016b). Prior work has been equivocal on the link between personal coping and abuse risk, but more problem focused coping skills appear related to lower PCA risk relative to emotion-focused or avoidant coping (Cantos, Neale, O’Leary, & Gaines, 1997; Rodriguez, 2010b).

Current Study

The current study evaluated whether SIP elements assessed prenatally could predict later PCA risk—beyond what is attributable to parents’ current personal taxes (psychopathology, substance use, intimate partner violence) or resources (social support, partner satisfaction, coping). PCA risk was operationalized with indicators across the PCA continuum: greater child abuse potential, harsher expected authoritarian parenting, and punitive reactions to noncompliant and compliant child behavior. We adopted a multiple-indicator research design that incorporated *analog tasks*—more covert assessment approaches that can minimize participant response distortions (Camilo, Garrido, & Calheiros, 2016), which compromise research on PCA constructs. Because child abuse prevention programs typically target pregnant mothers (Bugental et al., 2010; Pajer et al., 2014), we enrolled expectant parents in a prospective longitudinal design. To date, this range of elements is not typically considered in prevention programs. Further, researchers have repeatedly called for more investigation of paternal abuse risk (Lee, Bellamy, & Guterman, 2009; Stith et al., 2009). The nascent literature suggests similarities between mothers and fathers (e.g., Rodriguez et al., 2016a, 2016b; Schaeffer, Alexander, Bethke, & Kretz, 2005; Smith Slep & O’Leary, 2007) with modest distinctions, but explicit longitudinal comparisons between maternal and paternal PCA risk models are critically needed.

The SIP model postulates that preexisting schemas influence each stage, which in turn predicts PCA (Milner, 2000). The present investigation refines this by proposing specific pathways consistent with the sequential approach implied in the model and echoing that of SIP approaches to child aggression (Crick & Dodge, 1994). First, empathy was considered a preexisting positive affective state expected to initiate a pathway of specific stage processes: low empathy was hypothesized to contribute to overreactivity (poor frustration tolerance, emotion dysregulation) that would interfere with attending to the discipline situation accurately (Stage I), and overreactivity would in turn increase PCA risk; poor empathy was also expected to induce negative attributions of child behavior (Stage II), which would also increase PCA risk. Second, a separate pathway pertaining to discipline schemas was proposed, initiated by preexisting cognitive schemas approving of PCA; PCA approval attitudes were expected to be linked directly to PCA risk but also indirectly, through more negative child behavior attributions, higher expectations of child compliance following discipline (Stage II), as well as limited knowledge of nonphysical discipline alternatives (Stage III), each of which would increase parents’ PCA risk. The following research questions (RQs) guided this study:

RQ1: The hypothesized SIP model of factors assessed at Time 1 will predict Time 2 PCA risk for mothers; this model will also predict PCA risk after controlling for taxes and resources.

RQ2: The hypothesized SIP model of factors assessed at Time 1 will predict Time 2 PCA risk for fathers; this model will also predict fathers' PCA risk even when controlling for taxes and resources.

RQ3: A dyadic model will contrast factors predicting mothers' versus fathers' Time 2 PCA risk.

Method

Participants

Participants are families enrolled in a prospective longitudinal study, the "Following First Families" Triple-F Study, in a large urban city in the Southeast. At Time 1, 203 primiparous women and 151 of their male partners (86% of fathers who were available) were recruited in the last trimester of the mother's pregnancy. Mothers were on average 26.11 years old at Time 1 ($SD = 5.87$) whereas fathers were 28.92 years old ($SD = 6.08$). In terms of mothers' racial and ethnic identity: 52.6% Caucasian, 45.1% African American, 1% Asian, and 1% Native American; of these, 3.1% also identified as Hispanic/Latina and 6.1% identified as biracial. For father's racial and ethnic identity: 55.9% Caucasian, 43.4% African American, .7% Asian; of these, 2.8% identified as Hispanic/Latino and 4.1% as biracial. For mothers' educational attainment: 29.6% high school or less; 20.4% some college or vocational training; 21.9% college degree; 28% beyond college degree. For father's educational attainment: 24.8% high school or less; 23.4% some college or vocational training; 28.3% college degree; 23.5% beyond college degree. Nearly 41% of mothers were receiving public assistance and 44.6% of families were within 150% of the federal poverty line, with half of the sample reporting an annual household income under \$40,000.

Families were then assessed when the child was 6 months old (± 2 weeks). We retained 186 mothers and recruited 146 fathers (>92% of available fathers) at Time 2. Triple-F does not exclude fathers who enter a family and/or replace a father figure from Time 1 given this is the reality of family composition for these children. Thus, some fathers were involved at Time 1 but not by Time 2, and some mothers had no partners at Time 1 but did by Time 2—in these two instances, fathers' data in the missing time point are treated as missing. For the present analyses, 196 mothers from Time 1 were included in analyses, excluding 7 families: two children died shortly after childbirth; in five families, the participating father differed in the two time points (to conduct dyadic analyses, all five families' data were removed). With the 7 families excluded, 10 mothers' Time 2 data were estimated and we had 145 fathers contributing data at Time 1 and 141 at Time 2.

Procedure

The Triple-F study aims to monitor how PCA risk unfolds for first-time mothers and their partners. Mothers were recruited with flyers distributed at hospitals' obstetric/gynecological clinics and childbirth classes. Mothers contacted the lab to schedule a 2-2½ hr session at Time 1, and a 3-hr session at Time 2, for themselves, and when available, the father figure. Expectant fathers anticipated being involved in the impending child's upbringing and, by Time 2, had to be engaged in caregiving the child at least one day per week. Mothers completed the protocol in a

separate room from their partner. All measures were delivered electronically on laptop computers equipped with headphones. Mothers and fathers independently provided written informed consent. The university's Institutional Review Board approved all study procedures.

Time 1 Measures

Internal consistencies for individual measures, for mothers and fathers separately, appear in Table 1.

TABLE 1 APPEARS AT THE END OF THIS FORMATTED ARTICLE.

Empathy. The Interpersonal Reactivity Index (IRI; Davis, 1983) is a measure of dispositional empathic ability. Two subscales, empathic concern and perspective taking, were selected assessing the ability to affectively sympathize and adopt the psychological perspective of others, respectively. Seven items comprise each subscale rated from (1) *does not describe me well* to (5) *describes me very well*. Items within subscales are summed to create subscale total scores, with *higher* total scores reflecting *greater* empathy on both scales. The IRI demonstrates convergent validity with comparable measures of empathy (Davis, 1983) and concurrent validity with measures of aggressive behavior (Vachon & Lynam, 2016).

PCA attitudes. The Physical Abuse Vignettes (PAV; Shanalingigwa, 2009) depict a wide range of PCA intensity in eight brief scenes, from hitting a child without bruising to burning with a cigarette. In the vignette development, child protective services professionals viewed many of the scenes as serious child abuse. Participants in this study indicated: (a) if they judged the parental behavior as maltreatment (Yes/No), summed across vignettes for a Definition score; (b) their rating of the severity of the parental behavior on a 4-point Likert scale (1 = *least serious*, 4 = *most serious*), summed across vignettes for a Severity score; and (c) if they would report the behavior to child protective services (Yes/No), summed across vignettes in a Reporting scale. Across scales, scores were oriented such that *higher* scores indicate *less* PCA acceptance.

The Adult Adolescent Parenting Inventory-2 (AAPI; Bavolek & Keene, 2001), Form A (an alternate version than for PCA Risk), includes a Value of Corporal Punishment Scale. Eleven items assess parents' physical discipline approval on a 5-point scale, from (1) *strongly disagree* to (5) *strongly agree*; items are summed for a total score with *higher* scores indicating *greater* support for PCA use. The subscale demonstrates concurrent validity with observed and reported parenting (Conners et al., 2006).

The Parent-Child Aggression Acceptability Movie Task (Parent-CAAM Task; Rodriguez et al., 2011) is an analog task of attitudes toward PCA. Eight 90-s clips from commercially available films depict varying degrees of PCA intensity (5 clips of physical abuse, 3 clips of physical discipline, anonymously categorized by social workers; see Rodriguez et al., 2011 for details on videos). All clips are presented in random order, and participants are instructed to stop the scene if and when they believe the scene has become physically abusive. Time spent considering a socially desirable response would delay response time. Thus, the number of milliseconds until the parent stops the video is recorded, with slower scores indicating *greater* acceptability of PCA. Parent-CAAM scores have demonstrated internal consistency and validity, evidencing

associations with self-report measures of attitudes toward PCA, child abuse potential, and overreactive parenting, as well as an analog task of parenting practices (Rodriguez et al., 2011).

Reactivity. The Frustration Discomfort Scale (FDS; Harrington, 2005) includes seven items assessing perceived tolerance of frustration and discomfort. Participants rate items on a 5-point scale, from (1) *strongly disagree* to (5) *strongly agree*, which are summed across items with *higher* total scores suggesting *poorer* frustration tolerance. The FDS has demonstrated acceptable internal consistency as well as discriminant validity, differentiating clinical from comparison samples (Harrington, 2005).

The Paced Auditory Serial Addition Task (PASAT) is a computerized cognitive task adapted as an analog task of frustration tolerance (Schloss & Haaga, 2011). Participants see a series of numbers presented individually for 3.5s; respondents add each new number to the prior number and select a sum displayed on the monitor. Then they must ignore that sum and add the next number to the previously displayed number. Incorrect or slow responses signal an aversive sound blast. After practice trials, participants receive 172 trials unless they select a large “QUIT” button displayed on the screen to discontinue. Participant scores thus reflect the number of trials completed, with *lower* scores indicative of *poorer* frustration tolerance. PASAT scores are associated with a different behavioral intolerance analog task (Schloss & Haaga, 2011).

The Negative Mood Regulation Scale (NMRS; Catanzaro & Mearns, 1990) presents 30 items asking how well the participant recovers emotional balance in response to distress. Items are rated on a 5-point scale from (1) *strongly agree* to (5) *strongly disagree*, which are summed for a total score. *Higher* scores were oriented to indicate *poorer* emotion regulation ability. The NMRS has demonstrated internal consistency, stability, and concurrent and predictive validity with negative affect (Catanzaro & Mearns, 1990).

Negative child attributions. The Plotkin Child Vignettes (PCV; Plotkin, 1983) assesses participants' judgments of the intentionality of child misbehavior in 18 vignettes. Participants indicate how much they consider the child tried to intentionally annoy on a 9-point scale, from (1) *did not mean to annoy me at all* to (9) *the only reason the child did this was to annoy me*. Item scores are summed for a total score wherein *higher* scores indicate *more* negative child behavior attributions. Validity has been demonstrated through associations with an analog assessment of attributions (Rodriguez, Cook, & Jedrziwski, 2012), and abusive mothers attain higher scores relative to comparison parents (Hasket et al., 2006; Plotkin, 1983).

The Video Ratings (VR; Leerkes & Siepak, 2006) included two 1-min videos of babies crying while watching a toy. After each video, 18 questions ask parents to rate why they believe the baby is crying on a 4-point scale, from (1) *strongly disagree* to (4) *strongly agree*. Two subscales were used: Negative/Internal Attributions (6 items/video, where the baby is seen as spoiled or intentional); Minimization (5 items/video, where the baby is believed to cry for other reasons). *Higher* Negative/Internal Attributions subscale scores and *lower* Minimization subscale scores, averaged across both videos, indicate *more* negative crying attributions. For validity, scores on the VR scales are related to self-reported attributions of infant crying (Haltigan et al., 2012) as well as observed maternal sensitivity (Leerkes et al., 2015).

The Infant Crying Questionnaire (ICQ; Haltigan et al., 2012) assesses parental beliefs about infant crying. The 43 items are rated on a 5-point scale from (1) *never* to (5) *always*. This study utilized two subscales: the Minimization scale (9 items viewing crying as the baby's manipulation or nuisance), and the Spoil scale (3 items in which responding to crying is believed to spoil the baby). Both scales are averaged and scored such that *higher* scores indicate *more* negative crying attributions. In terms of validity, the ICQ is associated with similar crying attribution scales (Haltigan et al., 2012; Leerkes et al., 2015).

The Noncompliance Implicit Association Test (N-IAT; Rabbitt, 2013) is an analog task similar to the original IAT (Greenwald, McGhee, & Schwartz, 1998). Participants sort descriptors of child behavior (e.g., "temper tantrum," "follow directions") into good/ bad or obeying/disobeying categories. Seeing a word consistent with one's implicit belief should be sorted more quickly than those inconsistent with one's beliefs. Based on a series of randomized trials, participants receive a difference (*D*) score based on their speed on critical trials—lower *D* scores indicate *more* negative attributions. The N-IAT demonstrates convergent and concurrent validity with self-report measures (Rabbitt, 2013).

Compliance Expectations. The Compliance Expectations measure was designed for the Triple-F study. Consistent with other vignette approaches (e.g., Rodriguez & Sutherland, 1999), vignettes were chosen that vary on two dimensions: child culpability (accidental v. intentional) and physical discipline intensity (none, low, and moderate) for 6 total categories. Based on pilot testing 30 vignettes with 62 adults, six scenes (one/category) were selected nearest the midpoint on the scale of (1) *learned their lesson* to (5) *will do it again*. In Triple-F, parents indicated whether they expected the child in the vignette to repeat similar behavior after the discipline (4 physical responses, 2 nonphysical responses) using the 5-point scale. Item scores are summed for a total score wherein *higher* scores suggest expectations of *less* future compliance.

Knowledge of discipline alternatives. After the last PCV vignette, an open-ended question instructed parents to provide all possible discipline responses to the child in the vignette (similar to coding described by Ateah & Durrant, 2005). Two independent raters categorized parents' separate responses yielding a total number of responses coded into one of three categories: physical (e.g., spanking or hitting with an object), nonphysical (e.g., time-out, removal of privileges), or psychological (yelling, threatening). Counts from the two raters for a given parent were averaged and then scores computed to reflect the *proportion* of nonphysical responses identified (total nonphysical options ÷ total options) by that parent, thus controlling for more verbose participants who provided a larger total number of discipline options. Interrater reliability was strong between raters: ICC = .94, nonphysical, ICC = .94, total discipline options.

Time 2 Measures

PCA risk. The Child Abuse Potential Inventory (CAPI; Milner, 1986) is the most frequently used measure to screen for child abuse risk. The CAPI presents 160 *agree/disagree* items. Only 77 items are scored and variably weighted to contribute to the Abuse Scale score with factors of distress, rigidity, unhappiness, problems with child and self, problems with family, and problems with others (although Abuse Scale items do not inquire about parenting). *Higher* scores indicate

greater abuse risk. Studies indicate CAPI scores demonstrate predictive validity, with a correct classification rate of 89.2% of confirmed child abusers and 99% of controls (Milner, 1994).

The Adult Adolescent Parenting Inventory-2 (AAPI-2; Bavolek & Keene, 2001) Form B served as an additional measure of child abuse risk, measuring parenting beliefs and behaviors considered to characterize abusive parenting. Items were designed to distinguish between maltreating and nonmaltreating samples (Bavolek & Keene, 2001), with support for reliability and validity (Conners et al., 2006). The AAPI-2 presents 40 items rated on a 5-point scale from (1) *strongly disagree* to (5) *strongly agree*, summed across items for a total score that was oriented in this study such that *higher* scores indicated *greater* abuse risk.

The Expected Parental Authority Questionnaire (PAQ) is a measure modified from the original parenting style measure (Buri, 1991) presenting 30 items in future tense on a 5-point Likert scale, from (1) *strongly agree* to (5) *strongly disagree*. Each item asks parents how they expect to raise their child, with 10 items each for three styles—authoritarian, permissive, and authoritative, with Expected Authoritarian parenting chosen for this study as most relevant to PCA risk; the 10-item scale was summed, with *higher* scores suggestive of *more* expected authoritarian parenting. Parents' reports on the PAQ have previously been associated with other measures of parenting style (Reitman, Rhode, Hupp, & Altobello, 2002).

The Response Analog to Child Compliance Task (ReACCT; Rodriguez, 2016) is an analog task presenting a realistic parent–child interaction in which the parent is depicted as running late for preschool. In 12 successive scenes, the parent is portrayed as providing an instruction in which the child is then either compliant or noncompliant. A total of 20 steps are scored in these scenes as the parent can remain “stuck” in a scene if the child is noncompliant. Parents are asked to select from 16 possible responses to the child's behavior, some of which are adaptive (receiving positive weights) versus maladaptive (negative weights)—for example, physical/psychological aggression. Throughout, the participant hears and sees a ticking clock to induce time urgency; each time the parent appears to attain compliance, the parent receives a game bonus of 50 cents. ReACCT scores used in this study include parents' responses for noncompliance (12 items) and compliance (8 items), with *higher* scores indicating *harsher* responses. Across samples of varying risk, ReACCT scores relate to child abuse risk and harsh physical discipline tactics (Rodriguez, 2016).

Taxes. The Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983) items assess mental health symptoms in the past week. Participants report the frequency of 18 symptoms of depression and anxiety on a scale of (0) *not at all* to (4) *extremely*, with symptoms summed for a total score. *Higher* scores suggest *greater* recent experience of symptoms of psychopathology. A comprehensive assessment of various versions of this measure confirms this BSI demonstrates convergent and factorial validity (Prinz et al., 2013).

The Substance Abuse and Mental Illness Scale (SAMISS; Whetten et al., 2005) items that involve alcohol and illicit drug use were administered. Seven items assess current and past-year frequency and extent of problematic substance use, in which *higher* total scores indicate *greater* substance use. The SAMISS was developed as a screening tool, correctly identifying 98.6% of substance use diagnoses (Whetten et al., 2005).

The Revised Conflict Tactics Scale-Short Form (CTS-2S; Straus & Douglas, 2004) estimates the frequency of perpetration and victimization of intimate partner violence in the past year. Of the 20 items, the Victimization scale was selected in this study, with 8 items reflecting personal experience of physical or psychological assault; count scores are weighted as frequency of occurrence increases, with *higher* scores indicating *greater* experience of assault. The authors provide evidence of concurrent validity, demonstrating strong associations between this short version and the longer CTS-2, which has been utilized extensively.

Resources. The Coping Self-Efficacy Scale (CSES; Chesney et al., 2006) measures personal sense of effective coping with 12 depicted situations, each rated on an 11-point scale, from (0) *cannot do at all* to (10) *certain I can do*. Items are summed to create a total score and *higher* total scores indicate a parent's *greater* sense of adequately using problem-focused coping skills. The test authors provide evidence of convergent validity with other measures of problem-focused coping (Chesney et al., 2006).

The Social Support Resources Index (SSRI; Vaux & Harrison, 1985) was used to assess participants' satisfaction with their social support system. Participants indicated on a 5-point scale (1 = *not satisfied*, 5 = *very satisfied*) how satisfied they are with each of their two closest supporters (5 items/supporter). A total score is created by summing items across supporters, with *higher* ratings reflecting *greater* satisfaction with social support. SSRI scores are related to other measures of perceived support (Vaux & Harrison, 1985).

The Couple Satisfaction Index (CSI; Funk & Rogge, 2007) is an inventory that assesses satisfaction with one's partner along several dimensions. Ten items were utilized with a 6-point scale, with items summed to contribute to a total score. Scores are oriented such that *higher* scores reflected current *greater* satisfaction with their partner relationship. CSI scores are correlated with an array of related measures, including dyadic adjustment, global relationship satisfaction, and marital adjustment (Funk & Rogge, 2007).

Analytic Plan

Analyses were performed with Statistical Package for the Social Sciences (SPSS) 22.0 and Mplus 7.4, using maximum likelihood estimation with robust standard errors. Missing values were accommodated using full-information maximum likelihood methods (Enders, 2010). Path models of SIP predicting Time 2 PCA risk were estimated for mothers and fathers independently, as well as a dyadic model that includes mothers and fathers simultaneously, nesting them within a family (Peugh, DiLillo, & Panuzio, 2013; Wendorf, 2002). Models with SIP Time 1 variables were estimated first, followed by models controlling for Time 2 demographic covariates, and personal taxes and resources. For model fit, whereas χ^2 has well-known limitations, fit can be evaluated with root mean square error of approximation (RMSEA), standardized root-mean-square residual (SRMR), and comparative fit index (CFI; Kline, 2011). For RMSEA, a lower bound of the confidence interval $<.05$ suggests good fit, and an upper bound of its confidence interval $>.10$ suggests poor fit (Kline, 2011); for SRMR, a threshold of values $<.08$ is preferred (Hu & Bentler, 1999; Kline, 2011); and although all incremental fit indices have some notable limitations, for CFI, values closer to $>.95$ are suggested (Kline, 2011).

All reported regression coefficients are standardized; corresponding confidence intervals are presented in square brackets.

Data reduction was achieved by creating composite scores. Each variable was standardized separately for mothers and fathers, and these standardized scores were then averaged to create the composite scores. Confirmatory factor analyses indicated that all selected variables loaded significantly onto their respective factors (loadings $\geq .30$, with one exception—for fathers, SAMISS did not load significantly, although it was retained to provide a more complete picture of fathers' personal vulnerabilities). For the CFA on mothers' data, RMSEA = .078 [90% CI: .070, .086], SRMR = .098, and for fathers', RMSEA = .078 [90% CI: .068, .087], SRMR = .104. Composites consisted of the following scores (except single scores for knowledge of discipline and compliance expectations): Time 1 PCA attitudes (PAV Definition, Reporting, and Severity scores; AAPI Corporal Punishment Scale; Parent- CAAM); Time 1 empathy (IRI Empathic Concern and Perspective Taking); Time 1 reactivity (FDS, PASAT, NMRS); Time 1 attributions (PCV Attribution; VR Negative Attribution and Minimize total; ICQ Minimization and Spoil; N-IAT); Time 2 taxes (BSI, CTS-2S Victimization, SAMISS); Time 2 resources (CSES, SSRI Satisfaction, CSI); Time 2 PCA risk (CAPI Abuse Scale; AAPI-2; ReACCT Noncompliance and ReACCT Compliance; Expected PAQ Authoritarian).

Results

Preliminary Analyses

Sample means and standard deviations appear in Table 1. Obtained sample mean CAPI Abuse Scale and AAPI-2 total scores are within normal limits. With preliminary models, we evaluated a set of possible covariates to use in predicting Time 2 PCA risk (Little, 2013). Age, minority status, and education level were chosen as demographic covariates—they were significantly related to PCA risk for mothers, fathers, or both and did not overlap excessively. For mothers, higher PCA risk was significantly associated with lower age ($\beta = -.23, p < .001$) and education level ($\beta = -.24, p = .004$) and with having racial or ethnic minority status ($\beta = .18, p = .011$). For fathers, higher PCA risk was significantly associated with lower age ($\beta = -.22, p = .004$) and education level ($\beta = -.27, p < .001$) and with having racial or ethnic minority status ($\beta = .18, p = .054$). To evaluate Time 1 SIP factors specifically, Time 2 taxes and resources were also considered as covariates. Taxes did not significantly predict Time 2 PCA risk for mothers ($\beta = .07, p = .267$) or fathers ($\beta = -.02, p = .718$); resources, however, was significant for both mothers ($\beta = -.19, p = .006$) and fathers ($\beta = -.22, p = .005$). All the path models were estimated with and without demographic covariates, taxes, and resources.

Research Question 1: Mothers' PCA Risk

The path model for mothers appears in Figure 1. Lower empathy significantly predicted greater reactivity and negative child attributions, and reactivity in turn predicted negative attributions. PCA approval attitudes significantly predicted less knowledge of discipline alternatives and negative attributions but not child compliance expectations. Higher Time 2 PCA risk, in turn, was significantly predicted by negative attributions, less knowledge of discipline alternatives, higher compliance expectations, and higher reactivity, but only weakly by approval attitudes.

Model fit was modest: $\chi^2(df = 10) = 30.30, p \leq .001$; RMSEA = .102, 90% CI [.061, .144], SRMR = .086, CFI = .90, but the a priori model was retained instead of trimming or adding paths post hoc based on modification indices. The model R^2 was 39.8%; adding the PCA risk covariates increased R^2 to 46.2% but did not alter the paths other than to strengthen the link from PCA approval to Time 2 PCA risk ($\beta = .17, p = .004$); thus, the figure displays the path model without covariates.

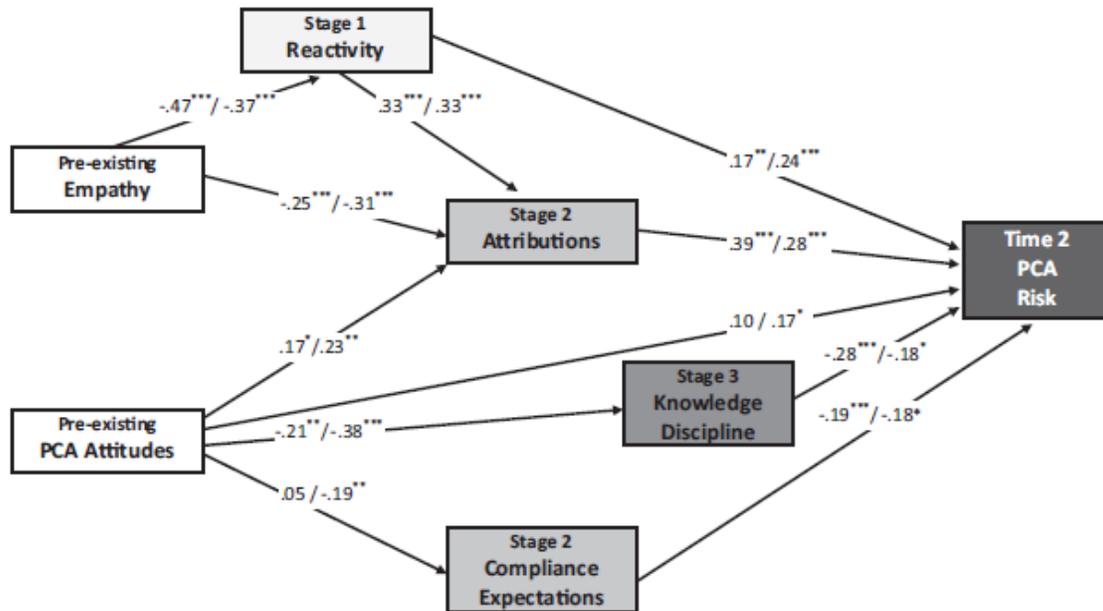


Figure 1. Path models for mothers and fathers individually with standardized coefficients. Path coefficients represent mothers/fathers, respectively. * $p < .05$. ** $p < .01$. *** $p < .001$.

Research Question 2: Father's PCA Risk

The path model for fathers also appears in Figure 1. Lower empathy significantly predicted greater reactivity and negative attributions, and reactivity in turn predicted attributions. PCA approval attitudes significantly predicted less knowledge of discipline alternatives, negative attributions, and higher child compliance expectations. Higher Time 2 PCA risk, in turn, was significantly predicted by negative attributions, less knowledge of discipline alternatives, higher compliance expectations, higher reactivity, and higher PCA approval attitudes. Model fit was strong: $\chi^2(df = 10) = 10.127, p = .429$; RMSEA = .009, 90% CI [.000, .086]; SRMR = .041; CFI = .99. The model R^2 for PCA risk was 36.0%. Adding the covariates increased R^2 to 48.3% but did not alter the pattern; the figure displays the model without covariates.

Research Question 3: Dyadic PCA Risk

Our final model, a dyadic model of PCA risk, included both parents within a family in the model simultaneously. The dyadic path model thus estimates the effects for mothers and fathers in light of their nesting within the same higher-level couple unit (see Figure 2). Model fit was modest: $\chi^2(df = 62) = 121.979, p < .001$; RMSEA = .070, 90% CI [.052, .089]; SRMR = .11; CFI = .85.

For mothers, lower empathy scores significantly predicted greater reactivity and more negative attributions, and reactivity in turn predicted negative attributions. PCA approval attitudes significantly predicted less knowledge of discipline alternatives and more negative attributions but not child compliance expectations. Higher Time 2 PCA risk, in turn, was significantly predicted by more negative attributions, less knowledge of discipline alternatives, higher compliance expectations, higher reactivity, and weakly by PCA approval attitudes.

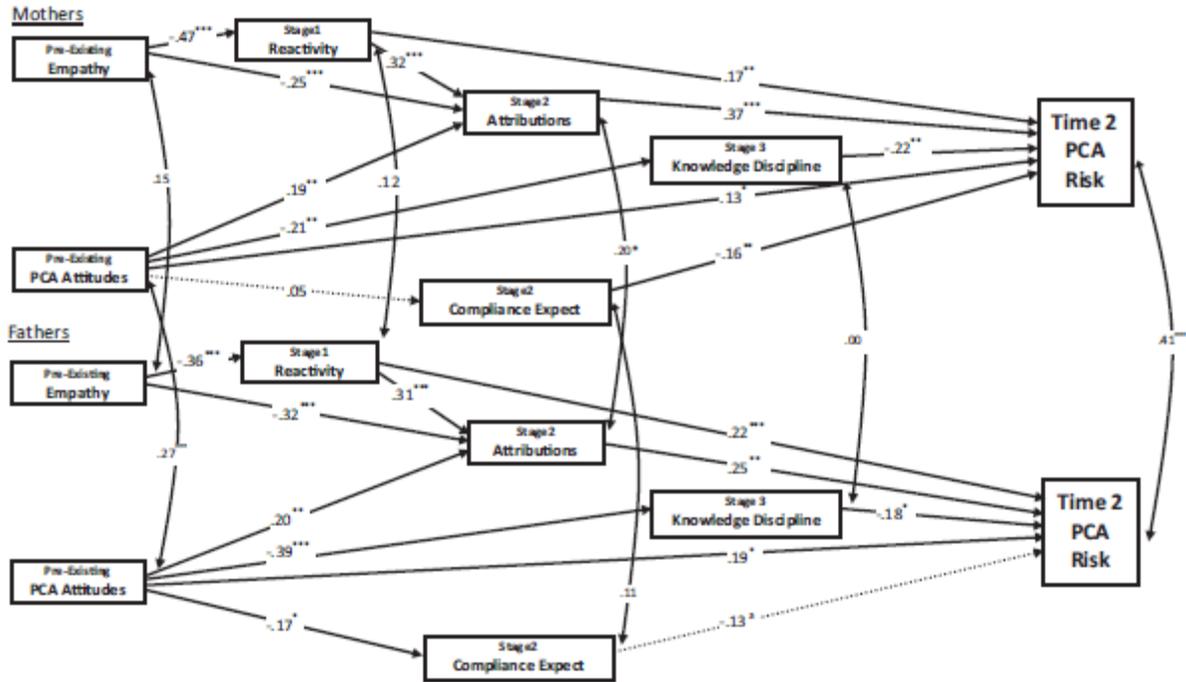


Figure 2. Dyadic path model of Time 1 SIP factors predicting Time 2 PCA risk with standardized coefficients. Dashed lines indicate non-significant paths. * $p < .05$. ** $p < .01$. *** $p < .001$. ^a marginal.

For fathers, lower empathy scores significantly predicted greater reactivity and more negative attributions, and reactivity in turn predicted negative attributions. Higher PCA approval attitudes significantly predicted less knowledge of discipline alternatives, more negative attributions, and higher child compliance expectations. Higher Time 2 PCA risk was significantly predicted by more negative attributions, knowledge of discipline alternatives, marginally higher compliance expectations, higher reactivity, and PCA approval attitudes.

The dyadic model found essentially similar effects as the individual models for mothers and fathers with minor differences (with regard to mothers' Time 1 PCA attitudes weakly predicting Time 2 PCA risk and fathers' Time 1 compliance expectations no longer predicting Time 2 PCA risk). In terms of differences between mothers and fathers: the path for mothers' empathy with overreactivity was significantly stronger for mothers ($\beta = -.47 [-.57, -.37]$) compared with fathers ($\beta = -.36 [-.47, -.23]$); the path from PCA approval attitudes to compliance expectations was nonsignificant for mothers ($\beta = .05 [-.07, .15]$) and statistically different from fathers ($\beta = -.17 [-.04, -.30]$); the path between PCA approval attitudes and knowledge of discipline

alternatives was significantly stronger for fathers ($\beta = -.39 [-.26, -.51]$) compared with mothers ($\beta = -.21 [-.34, -.09]$); the path between Time 1 negative attributions to Time 2 PCA risk was marginally stronger for mothers ($\beta = .37 [.24, .49]$) compared with fathers ($\beta = .25 [.11, .39]$). The dyadic model R^2 for PCA risk was 33.9% for mothers, 30.4% for fathers. Adding covariates increased R^2 to 37.4% for mothers and 39.3% for fathers and decreased significance between fathers' Time 2 PCA risk with compliance expectations ($\beta = -.11, p = .11$) and negative attributions ($\beta = .18, p = .10$) but did not alter the patterns for mothers.

Indirect Effects

Indirect effects in the path models were evaluated using bias-corrected bootstrapping, which has higher power than older methods of evaluating the significance of indirect effects (Fritz & MacKinnon, 2007). The indirect effects were estimated in Mplus 7.4, using maximum likelihood estimation and 1,000 bootstrap samples with 95% confidence intervals around indirect effects. The confidence intervals are not necessarily symmetric, and the mediation effect is significant if the intervals exclude zero. We computed the effects for the models with only mothers and only fathers as well as the dyadic model, using models that included demographic covariates (see Table 2). The pattern of these indirect effects is consistent with the theoretical model except for the previously noted weak or nonsignificant paths (e.g., with regard to weaker links between empathy and attributions among fathers and PCA attitudes' link to PCA risk for mothers).

TABLE 2 APPEARS AT THE END OF THIS FORMATTED ARTICLE.

Discussion

Findings from the present investigation address how SIP elements may operate within pathways leading to PCA risk for mothers and fathers independent of their current personal vulnerabilities or resiliencies. The present findings indicate that SIP factors assessed prenatally can predict PCA risk for parents of 6-month-olds, with stronger support for the model for fathers (RQ2) relative to mothers (RQ1). Specifically, prenatally assessed poor empathy was associated with greater overreactivity and more negative child behavior attributions, which both in turn predicted later increased PCA risk. Additionally, prenatal attitudes that view the use of PCA favorably predicted later PCA risk directly and indirectly, through more negative child behavior attributions, less knowledge of discipline alternatives (and for fathers, higher compliance expectations), which in turn predicted subsequent PCA risk. With regard to our third research question, overall patterns were most apparent for fathers, with mothers demonstrating some differences.

Low empathy in the present study was conceptualized as a quality characterizing a positive affective state, an SIP preexisting affective schema (Milner, 2000). Overreactivity, operationalized as poor emotion regulation and frustration tolerance, was viewed to interfere with the attention and accurate perceptions needed for SIP Stage I, and negative attributions of children's behavior were considered appraisals involved in SIP Stage II. As expected in this pathway, lower empathy was linked to greater overreactivity (particularly in mothers) as well as more negative child attributions for both mothers and fathers. Prior research has observed lower empathy in abuse-risk parents (de Paúl et al., 2008; Rodriguez, 2013), and the current findings suggest that this connection may be through parents' tendency to overreact and, for mothers, to

potentially adopt more negative appraisals of children's behavior. Negative child attributions have also been previously identified as a risk factor for abuse (e.g., Berlin et al., 2013; Hasket et al., 2006). The path from empathy may operate differently for mothers versus fathers wherein poor empathy may play a stronger role for mothers in both overreactivity and negative attributions. In addition, the effect of negative attributions on later PCA risk was weaker for fathers than mothers and disappeared when covariates were entered. Given the model was considerably stronger in predicting fathers' PCA risk, continued direct comparisons between mothers and fathers are needed to clarify potential differences in either empathy or attributions. Because so few investigations have considered negative child attributions in fathers (particularly longitudinally), the current results raise questions about attributions that require additional scrutiny. Nonetheless, these findings suggest that improving empathy could impact overreactivity and attributions, which may decrease PCA risk, although it remains unclear if these operate through different mechanisms for mothers versus fathers.

For the pathway involving discipline-specific schemas, attitudes endorsing PCA use were considered cognitive preexisting SIP schemas in this study. Collectively, the findings suggest that most of the effect of PCA approval attitudes on later PCA risk was attributable to its connection to negative attributions and limited knowledge of nonphysical discipline alternatives. This pathway was particularly the case for fathers, where PCA attitudes were also related to expectations of greater compliance in children following discipline. Favorable attitudes toward PCA have been linked to increased child abuse risk in prior research (e.g., McCarthy et al., 2016; Rodriguez et al., 2011). The current findings suggest such paths may be a result of decreasing parents' knowledge of what options they have to manage discipline and through biasing their explanations for children's behaviors. For fathers, such approval attitudes also appear related to expecting compliance from children—a different Stage II negative appraisal also evident in mothers' PCA risk but did not appear to relate to their PCA approval attitudes. Clearly, attitudes endorsing PCA attitudes play a central role in parents' likelihood to engage in PCA (e.g., Ateah & Durrant, 2005), consistent with the current findings, which can influence whether a parent progresses along the PCA continuum to become abusive.

Notably, despite the literature suggesting parents' vulnerabilities amplify PCA risk (see Stith et al., 2009 for review), current taxes (combined psychopathology, substance use, and intimate partner violence) were not a significant covariate for either mothers or fathers when considered in concert with demographic characteristics and resiliencies. In contrast, current resiliency (combined social support, coping, and partner satisfaction) was a significant covariate for PCA risk for both mothers and fathers. Minimal research has evaluated the potential benefits of promoting such resources to reduce maltreatment (Counts et al., 2010), yet these appear to be a valuable avenue to pursue in mitigating PCA risk. Future research could add other taxes and resources that could impact use of PCA, considered in conjunction with demographic variables.

Limitations

Despite considerable diversity in this sample, parents of Hispanic/ Latino origin were underrepresented in the sample. In addition, because we assessed PCA risk rather than aggressive acts, future research should consider how PCA risk translates into documented

aggression. Finally, because of the model's complexity, the sample size constrained us to use composite scores rather than latent variables.

Research Implications

In general, our findings mirror some of the similarities between mothers and fathers noted in earlier studies (Schaeffer et al., 2005; Smith Slep & O'Leary, 2007). Given that fathers perpetrate nearly half of all physical abuse (Sedlak et al., 2010), understanding which processes are involved in their PCA risk remains a key prevention and intervention goal. As indicated earlier, the current results suggest that fathers may differ with regard to negative attributions compared with the extant research on mothers (Berlin et al., 2013; Hasket et al., 2006), as well as how preexisting schemas of empathy and PCA attitudes may initiate paths leading to PCA risk—underscoring the need for continued work directly contrasting mothers and fathers' PCA risk.

The comprehensive assessment of SIP theory undertaken could be further supplemented by other SIP elements, such as preexisting negative affect states (e.g., stress or anger), other Stage I distractors (e.g., inattention or impulsivity), and other Stage III elements (e.g., information that may mitigate a child's perceived responsibility). A larger sample size would facilitate greater statistical complexity to enable consideration of moderator effects. Furthermore, continued tracking of these families across time will permit consideration of trajectories to ascertain the stability of these patterns. Finally, the SIP model for mothers was weak relative to fathers, suggesting additional model refinement is needed to predict maternal PCA risk.

Clinical and Policy Implications

In sum, our findings provide preliminary guidance for programs aiming to avert PCA, emphasizing the value of assessing factors inclusively. With comprehensive approaches, specific areas of concerns for a family will be less likely to be overlooked and can be more accurately targeted. For example, if preexisting positive affective schemas are detected as problematic for a parent, empathic skills could be enriched (cf. Wiehe, 1997), which might then alter attributions. Other parents may be identified as primarily holding adverse child attributions, which can be addressed directly (cf. Bugental et al., 2010). Other parents may need to focus on improved emotion regulation skills and frustration tolerance to more accurately attend to discipline situations. Altering approval of PCA could be accomplished individually with families but also through a more public health, universal prevention strategy via media campaigns (e.g., Barlow & Calam, 2011). Parents with such favorable attitudes may then need explicit guidance on nonphysical discipline approaches (e.g., Lundahl et al., 2006; Prinz et al., 2009) and on reasonable expectations for children's compliance. Therefore, this study suggests comprehensive theoretical models could illustrate pathways that culminate in PCA risk across time, which could be addressed as parents transition into parenthood.

References

Ateah, C. A., & Durrant, J. E. (2005). Maternal use of physical punishment in response to child misbehavior: Implications for child abuse prevention. *Child Abuse & Neglect, 29*, 169–185. <http://dx.doi.org/10.1016/j.chiabu.2004.10.010>

Azar, S. T., Okado, Y., Stevenson, M. T., & Robinson, L. R. (2013). A preliminary test of social information processing model of parenting risk in adolescent males at risk for later physical child abuse in adulthood. *Child Abuse Review, 22*, 268–286. <http://dx.doi.org/10.1002/car.2244>

Barlow, J., & Calam, R. (2011). A public health approach to safeguarding in the 21st century. *Child Abuse Review, 20*, 238–255. <http://dx.doi.org/10.1002/car.1194>

Bavolek, S. J., & Keene, R. G. (2001). *Adult-Adolescent Parenting Inventory (AAPI-2): Administration and development handbook*. Park City, UT: Family Development Resources.

Berlin, L. J., Dodge, K. A., & Reznick, J. S. (2013). Examining pregnant women's hostile attributions about infants as a predictor of offspring maltreatment. *Journal of the American Medical Association Pediatrics, 167*, 549–553. <http://dx.doi.org/10.1001/jamapediatrics.2013.1212>

Bugental, D. B., Ellerson, P. C., Lin, E. K., Rainey, B., Kokotovic, A., & O'Hara, N. (2010). A cognitive approach to child abuse prevention. *Psychology of Violence, 1*, 84–106. <http://dx.doi.org/10.1037/2152-0828.1.S.84>

Buri, J. R. (1991). Parental authority questionnaire. *Journal of Personality Assessment, 57*, 110–119. http://dx.doi.org/10.1207/s15327752jpa5701_13

Byrne, C. (2013). Happiness: An ongoing and social process. *The Journal of Positive Psychology, 8*, 177–179. <http://dx.doi.org/10.1080/17439760.2013.775323>

Camilo, C., Garrido, M. V., & Calheiros, M. M. (2016). Implicit measures of child abuse and neglect: A systematic review. *Aggression and Violent Behavior, 29*, 43–54. <http://dx.doi.org/10.1016/j.avb.2016.06.002>

Cantos, A. L., Neale, J. M., O'Leary, K. D., & Gaines, R. W. (1997). Assessment of coping strategies of child abusing mothers. *Child Abuse & Neglect, 21*, 631–636. [http://dx.doi.org/10.1016/S0145-2134\(97\)00022-7](http://dx.doi.org/10.1016/S0145-2134(97)00022-7)

Casanueva, C. E., & Martin, S. L. (2007). Intimate partner violence during pregnancy and mothers' child abuse potential. *Journal of Interpersonal Violence, 22*, 603–622.

Caselles, C. E., & Milner, J. S. (2000). Evaluations of child transgressions, disciplinary choices, and expected child compliance in a no-cry and a crying infant condition in physically abusive and comparison mothers. *Child Abuse & Neglect, 24*, 477–491. [http://dx.doi.org/10.1016/S0145-2134\(00\)00115-0](http://dx.doi.org/10.1016/S0145-2134(00)00115-0)

Catanzaro, S. J., & Mearns, J. (1990). Measuring generalized expectancies for negative mood regulation: Initial scale development and implications. *Journal of Personality Assessment, 54*, 546–563. <http://dx.doi.org/10.1080/00223891.1990.9674019>

- Chesney, M. A., Neilands, T. B., Chambers, D. B., Taylor, J. M., & Folkman, S. (2006). A validity and reliability study of the coping self-efficacy scale. *British Journal of Health Psychology, 11*, 421–437. <http://dx.doi.org/10.1348/135910705X53155>
- Conners, N. A., Whiteside-Mansell, L., Deere, D., Ledet, T., & Edwards, M. C. (2006). Measuring the potential for child maltreatment: The reliability and validity of the Adult Adolescent Parenting Inventory—2. *Child Abuse & Neglect, 30*, 39–53. <http://dx.doi.org/10.1016/j.chiabu.2005.08.011>
- Counts, J. M., Buffington, E. S., Chang-Rios, K., Rasmussen, H. N., & Preacher, K. J. (2010). The development and validation of the protective factors survey: A self-report measure of protective factors against child maltreatment. *Child Abuse & Neglect, 34*, 762–772. <http://dx.doi.org/10.1016/j.chiabu.2010.03.003>
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74–101. <http://dx.doi.org/10.1037/0033-2909.115.1.74>
- Davis, M. H. (1983). The effects of dispositional empathy on emotional reactions and helping: A multidimensional approach. *Journal of Personality, 51*, 167–184. <http://dx.doi.org/10.1111/j.1467-6494.1983.tb00860.x>
- de Paúl, J., Pérez-Albéniz, A., Guibert, M., Asla, N., & Ormaechea, A. (2008). Dispositional empathy in neglectful mothers and mothers at high risk for child physical abuse. *Journal of Interpersonal Violence, 23*, 670–684. <http://dx.doi.org/10.1177/0886260507313532>
- Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine, 13*, 595–605. <http://dx.doi.org/10.1017/S0033291700048017>
- Durrant, J. E., Trocmé, N., Fallon, B., Milne, C., & Black, T. (2009). Protection of children from physical maltreatment in Canada: An evaluation of the Supreme Court's definition. *Journal of Aggression, Maltreatment & Trauma, 18*, 64 – 87. <http://dx.doi.org/10.1080/10926770802610640>
- Enders, C. K. (2010). *Applied missing data analysis*. New York, NY: Guilford Press.
- Fritz, M. S., & Mackinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*, 233–239. <http://dx.doi.org/10.1111/j.1467-9280.2007.01882.x>
- Funk, J. L., & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the Couples Satisfaction Index. *Journal of Family Psychology, 21*, 572–583. <http://dx.doi.org/10.1037/0893-3200.21.4.572>
- Gershoff, E. T. (2010). More harm than good: A summary of the scientific research on the intended and unintended effects of corporal punishment on children. *Law and Contemporary Problems, 73*, 31–56.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, *74*, 1464–1480. <http://dx.doi.org/10.1037/0022-3514.74.6.1464>

Haltigan, J. D., Leerkes, E. M., Burney, R. V., O'Brien, M., Supple, A. J., & Calkins, S. D. (2012). The Infant Crying Questionnaire: Initial factor structure and validation. *Infant Behavior & Development*, *35*, 876–883. <http://dx.doi.org/10.1016/j.infbeh.2012.06.001>

Harrington, N. (2005). The Frustration Discomfort Scale: Development and psychometric properties. *Clinical Psychology & Psychotherapy*, *12*, 374–387. <http://dx.doi.org/10.1002/cpp.465>

Hasket, M. E., Scott, S. S., Willoughby, M., Ahern, L., & Nears, K. (2006). The Parent Opinion Questionnaire and child vignettes for use with abusive parents: Assessment of psychometric properties. *Journal of Family Violence*, *21*, 137–151. <http://dx.doi.org/10.1007/s10896-005-9010-2>

Hien, D., Cohen, L. R., Caldeira, N. A., Flom, P., & Wasserman, G. (2010). Depression and anger as risk factors underlying the relationship between maternal substance involvement and child abuse potential. *Child Abuse & Neglect*, *34*, 105–113. <http://dx.doi.org/10.1016/j.chiabu.2009.05.006>

Hu, L., & Bentler, P. M. (1999). Cut-off criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55. <http://dx.doi.org/10.1080/10705519909540118>

Kadushin, A., & Martin, J. A. (1981). Interview study of abuse-event interaction. In A. Kadushin (Ed.), *Child abuse: An interactional event* (pp. 141–224). New York, NY: Columbia University Press.

Kline, R. B. (2011). *Principles and practice of structural equation modeling*. New York, NY: Guilford Press.

Lee, S. J., Bellamy, J. L., & Guterman, N. B. (2009). Fathers, physical child abuse, and neglect: Advancing the knowledge base. *Child Maltreatment*, *14*, 227–231. <http://dx.doi.org/10.1177/1077559509339388>

Leerkes, E. M., & Siepak, K. J. (2006). Attachment linked predictors of women's emotional and cognitive responses to infant distress. *Attachment & Human Development*, *8*, 11–32. <http://dx.doi.org/10.1080/14616730600594450>

Leerkes, E. M., Supple, A. J., O'Brien, M., Calkins, S. D., Haltigan, J. D., Wong, M. S., & Fortuna, K. (2015). Antecedents of maternal sensitivity during distressing tasks: Integrating attachment, social information processing, and psychobiological perspectives. *Child Development*, *86*, 94–111. <http://dx.doi.org/10.1111/cdev.12288>

Little, T. D. (2013). *Longitudinal structural equation modeling*. New York, NY: Guilford Press.

Lundahl, B. W., Nimer, J., & Parsons, B. (2006). Preventing child abuse: A meta-analysis of parent training programs. *Research on Social Work Practice, 16*, 251–262.
<http://dx.doi.org/10.1177/1049731505284391>

Margolin, G., Gordis, E. B., Medina, A. M., & Oliver, P. H. (2003). The co-occurrence of husband-to-wife aggression, family-of-origin aggression, and child abuse potential in a community sample. *Journal of Interpersonal Violence, 18*, 413–440.
<http://dx.doi.org/10.1177/0886260502250835>

McCarthy, R. J., Crouch, J. L., Basham, A. R., Milner, J. S., & Skowronski, J. J. (2016). Validating the voodoo doll task as a proxy for aggressive parenting behavior. *Psychology of Violence, 6*, 135–144. <http://dx.doi.org/10.1037/a0038456>

Milner, J. S. (1986). *The Child Abuse Potential Inventory: Manual* (2nd ed.). Webster, NC: Psyctec.

Milner, J. S. (1994). Assessing physical child abuse risk: The Child Abuse Potential Inventory. *Clinical Psychology Review, 14*, 547–583. [http://dx.doi.org/10.1016/0272-7358\(94\)90017-5](http://dx.doi.org/10.1016/0272-7358(94)90017-5)

Milner, J. S. (2000). Social information processing and child physical abuse: Theory and research. In D. J. Hansen (Ed.), *Nebraska Symposium on Motivation, Vo. 46, 1998: Motivation and child maltreatment* (pp. 39–84). Lincoln, Nebraska: University of Nebraska Press.

Montes, M. P., de Paúl, J., & Milner, J. S. (2001). Evaluations, attributions, affect, and disciplinary choices in mothers at high and low risk for child physical abuse. *Child Abuse & Neglect, 25*, 1015–1036. [http://dx.doi.org/10.1016/S0145-2134\(01\)00254-X](http://dx.doi.org/10.1016/S0145-2134(01)00254-X)

Pajer, K. A., Gardner, W., Lourie, A., Chang, C. N., Wang, W., & Currie, L. (2014). Physical child abuse potential in adolescent girls: Associations with psychopathology, maltreatment, and attitudes toward childbearing. *The Canadian Journal of Psychiatry/La Revue canadienne de psychiatrie, 59*, 98–106.

Peugh, J. L., DiLillo, D., & Panuzio, J. (2013). Analyzing mixed-dyadic data using structural equation models. *Structural Equation Modeling, 20*, 314–337.
<http://dx.doi.org/10.1080/10705511.2013.769395>

Plotkin, R. (1983). *Cognitive mediation in disciplinary actions among mothers who have abused or neglected their children: Dispositional and environmental factors* (Unpublished doctoral dissertation). University of Rochester, Rochester, NY.

Prinz, R. J., Sanders, M. R., Shapiro, C. J., Whitaker, D. J., & Lutzker, J. R. (2009). Population-based prevention of child maltreatment: The U.S. triple p system population trial. *Prevention Science, 10*, 1–12. <http://dx.doi.org/10.1007/s11121-009-0123-3>

- Prinz, U., Nutzinger, D. O., Schulz, H., Petermann, F., Braukhaus, C., & Andreas, S. (2013). Comparative psychometric analyses of the SCL-90-R and its short versions in patients with affective disorders. *BMC Psychiatry, 13*, 104. <http://dx.doi.org/10.1186/1471-244X-13-104>
- Rabbitt, S. M. (2013). *The role of stress in parental perceptions of child noncompliance* (Unpublished doctoral dissertation). Yale University, New Haven, CT.
- Reitman, D., Rhode, P. C., Hupp, S. D. A., & Altobello, C. (2002). Development and validation of the Parental Authority Questionnaire—Revised. *Journal of Psychopathology and Behavioral Assessment, 24*, 119–127. <http://dx.doi.org/10.1023/A:1015344909518>
- Robinson, C. C., Mandleco, B., Olsen, S. F., & Hart, C. H. (1995). Authoritative, authoritarian, and permissive parenting practices: Development of a new measure. *Psychological Reports, 77*, 819–830. <http://dx.doi.org/10.2466/pr0.1995.77.3.819>
- Rodriguez, C. M. (2010a). Parent-child aggression: Association with child abuse potential and parenting styles. *Violence and Victims, 25*, 728–741. <http://dx.doi.org/10.1891/0886-6708.25.6.728>
- Rodriguez, C. M. (2010b). Personal contextual characteristics and cognitions: Predicting child abuse potential and disciplinary style. *Journal of Interpersonal Violence, 25*, 315–335. <http://dx.doi.org/10.1177/0886260509334391>
- Rodriguez, C. M. (2013). Analog of parental empathy: Association with physical child abuse risk and punishment intentions. *Child Abuse & Neglect, 37*, 493–499. <http://dx.doi.org/10.1016/j.chiabu.2012.10.004>
- Rodriguez, C. M. (2016). Parental discipline reactions to child noncompliance and compliance: Association with parent-child aggression indicators. *Journal of Child and Family Studies, 25*, 1363–1374. <http://dx.doi.org/10.1007/s10826-015-0308-2>
- Rodriguez, C. M., Cook, A. E., & Jedrzewski, C. T. (2012). Reading between the lines: Implicit assessment of the association of parental attributions and empathy with abuse risk. *Child Abuse & Neglect, 36*, 564–571. <http://dx.doi.org/10.1016/j.chiabu.2012.05.004>
- Rodriguez, C. M., & Richardson, M. J. (2007). Stress and anger as contextual factors and preexisting cognitive schemas: Predicting parental child maltreatment risk. *Child Maltreatment, 12*, 325–337. <http://dx.doi.org/10.1177/1077559507305993>
- Rodriguez, C. M., Russa, M. B., & Harmon, N. (2011). Assessing abuse risk beyond self-report: Analog task of acceptability of parent-child aggression. *Child Abuse & Neglect, 35*, 199–209. <http://dx.doi.org/10.1016/j.chiabu.2010.12.004>

Rodriguez, C. M., Russa, M. B., & Kircher, J. C. (2015). Analog assessment of frustration tolerance: Association with self-reported child abuse risk and physiological reactivity. *Child Abuse & Neglect*, *46*, 121–131. <http://dx.doi.org/10.1016/j.chiabu.2015.02.017>

Rodriguez, C. M., Smith, T. L., & Silvia, P. J. (2016a). Multimethod prediction of physical parent-child aggression risk in expectant mothers and fathers with Social Information Processing theory. *Child Abuse & Neglect*, *51*, 106–119. <http://dx.doi.org/10.1016/j.chiabu.2015.10.028>

Rodriguez, C. M., Smith, T. L., & Silvia, P. J. (2016b). Parent-child aggression risk in expectant mothers and fathers: A multimethod theoretical approach. *Journal of Child and Family Studies*, *25*, 3220–3235. <http://dx.doi.org/10.1007/s10826-016-0481-y>

Rodriguez, C. M., & Sutherland, D. (1999). Predictors of parents' physical disciplinary practices. *Child Abuse & Neglect*, *23*, 651–657. [http://dx.doi.org/10.1016/S0145-2134\(99\)00043-5](http://dx.doi.org/10.1016/S0145-2134(99)00043-5)

Rodriguez, C. M., & Tucker, M. C. (2015). Predicting physical child abuse risk beyond mental distress and social support: Additive role of cognitive processes. *Journal of Child and Family Studies*, *24*, 1780–1790. <http://dx.doi.org/10.1007/s10826-014-9981-9>

Russell, B. S., & Lincoln, C. R. (2016). Distress tolerance and emotion regulation: Promoting maternal well-being across the transition to parenthood. *Parenting: Science and Practice*, *16*, 22–35. <http://dx.doi.org/10.1080/15295192.2016.1116893>

Schaeffer, C. M., Alexander, P. C., Bethke, K., & Kretz, L. S. (2005). Predictors of child abuse potential among military parents: Comparing mothers and fathers. *Journal of Family Violence*, *20*, 123–129. <http://dx.doi.org/10.1007/s10896-005-3175-6>

Schloss, H. M., & Haaga, D. A. F. (2011). Interrelating behavioral measures of distress tolerance with self-reported experiential avoidance. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *29*, 53–63. <http://dx.doi.org/10.1007/s10942-011-0127-3>

Sedlak, A. J., Mettenburg, J., Basena, M., Petta, I., McPherson, K., Greene, A., & Li, S. (2010). *Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress, executive summary*. Washington, DC: U.S. Department of Health and Human Services.

Retrieved from

http://www.acf.hhs.gov/sites/default/files/opre/nis4_report_congress_full_pdf_jan2010.pdf

Shanalingigwa, O. A. (2009). *Understanding social and cultural differences in perceiving child maltreatment* (Doctoral dissertation, University of Minnesota). Retrieved from Dissertation Abstracts International

https://www.google.com/url?sa_t&rct_j&q_&esrc_s&source_web&cd_1&ved_0ahUKEwjGzN35u9vSAhUGNiYKHS3xCkkQFggcMAA&url_http%3A%2F%2Fciteseerx.ist.psu.edu%2Fviewdoc%2Fdownload%3Fdoi%3D10.1.1.827.7572%26rep%3Drep1%26type%3Dpdf&usg_AFQjCNFlbKLqJoOem1N_UzSKb8PNREH9GQ&sig2_HM4bHWFvVWzav7j6OcNYA&cad_rja

Smith Slep, A. M., & O'Leary, S. G. (2007). Multivariate models of mothers' and fathers' aggression toward their children. *Journal of Consulting and Clinical Psychology, 75*, 739–751. <http://dx.doi.org/10.1037/0022-006X.75.5.739>

Stith, S. M., Liu, T., Davies, C., Boykin, E. L., Alder, M. C., Harris, J. M., . . . Dees, J. E. M. E. G. (2009). Risk factors in child maltreatment: A meta-analytic review of the literature. *Aggression and Violent Behavior, 14*, 13–29. <http://dx.doi.org/10.1016/j.avb.2006.03.006>

Straus, M. A. (2000). Corporal punishment and primary prevention of physical abuse. *Child Abuse & Neglect, 24*, 1109–1114. [http://dx.doi.org/10.1016/S0145-2134\(00\)00180-0](http://dx.doi.org/10.1016/S0145-2134(00)00180-0)

Straus, M. A., & Douglas, E. M. (2004). A short form of the Revised Conflict Tactics Scales, and typologies for severity and mutuality. *Violence and Victims, 19*, 507–520. <http://dx.doi.org/10.1891/vivi.19.5.507.63686>

U.S. Department of Health and Human Services. (2016). *Child maltreatment, 2014*. Retrieved from <http://www.acf.hhs.gov/programs/cb/research-data-technology/statistics-research/child-maltreatment>

Vachon, D. D., & Lynam, D. R. (2016). Fixing the problem with empathy: Development and validation of the affective and cognitive measure of empathy. *Assessment, 23*, 135–149. <http://dx.doi.org/10.1177/1073191114567941>

Vaux, A., & Harrison, D. (1985). Support network characteristics associated with support satisfaction and perceived support. *American Journal of Community Psychology, 13*, 245–265. <http://dx.doi.org/10.1007/BF00914932>

Wendorf, C. A. (2002). Comparisons of structural equation modeling and hierarchical linear modeling approaches to couples' data. *Structural Equation Modeling, 9*, 126–140. http://dx.doi.org/10.1207/S15328007SEM0901_7

Whetten, K., Reif, S., Swartz, M., Stevens, R., Ostermann, J., Hanisch, L., & Eron, J. J., Jr. (2005). A brief mental health and substance abuse screener for persons with HIV. *AIDS Patient Care and STDs, 19*, 89–99. <http://dx.doi.org/10.1089/apc.2005.19.89>

Whipple, E. E., & Richey, C. A. (1997). Crossing the line from physical discipline to child abuse: How much is too much? *Child Abuse & Neglect, 21*, 431–444. [http://dx.doi.org/10.1016/S0145-2134\(97\)00004-5](http://dx.doi.org/10.1016/S0145-2134(97)00004-5)

Wiehe, V. R. (1997). Approaching child abuse treatment from the perspective of empathy. *Child Abuse & Neglect, 21*, 1191–1204. [http://dx.doi.org/10.1016/S0145-2134\(97\)00094-X](http://dx.doi.org/10.1016/S0145-2134(97)00094-X)

Zolotor, A. J., Theodore, A. D., Chang, J. J., Berkoff, M. C., & Runyan, D. K. (2008). Speak softly—And forget the stick. Corporal punishment and child physical abuse. *American Journal of Preventive Medicine, 35*, 364–369. <http://dx.doi.org/10.1016/j.amepre.2008.06.031>

Zolotor, A. J., Theodore, A. D., Runyan, D. K., Chang, J. J., & Laskey, A. L. (2011). Corporal punishment and physical abuse: Population-based trends for three-to-11-year-old children in the United States. *Child Abuse Review, 20*, 57–66. <http://dx.doi.org/10.1002/car.1128>

Table 1. Means, *SDs*, and Sample Internal Consistencies for Measures for Mothers and Fathers

	Mothers			Fathers		
	Mean	<i>SD</i>	α	Mean	<i>SD</i>	α
Time 1						
Empathy						
IRI Empathetic Concern	29.16	4.31	.71	26.88	4.60	.71
IRI Perspective Taking	26.56	4.76	.76	26.22	4.58	.73
PCA attitudes						
Physical Abuse Vignettes Definition	5.56	1.55	.57	5.42	1.57	.62
Physical Abuse Vignettes Severity	24.13	3.55	.64	23.08	4.19	.74
Physical Abuse Vignettes Reporting	4.77	1.49	.56	4.52	1.68	.67
AAPI Corporal Punishment attitudes	31.81	8.34	.82	32.08	9.02	.83
Parent-CAAM task	18.80	11.45	.80	18.62	12.23	.83
Reactivity						
Frustration Discomfort Scale	17.89	5.30	.82	17.68	5.72	.85
Paced Auditory Serial Addition Task ^a	84.34	68.57		91.83	71.03	
Negative Mood Regulation Scale	64.59	16.69	.90	63.20	17.04	.91
Attributions						
Plotkin Child Vignettes Attribution total	39.49	15.79	.84	38.28	17.31	.88
Video Rating Negative Attribution	3.59	.42	.83	3.55	.42	.80
Video Rating Minimize total	3.06	.77	.93	3.11	.70	.89
Infant Cry Questionnaire Minimization total	2.33	.63	.75	2.40	.70	.82
Infant Cry Questionnaire Spoil total	2.48	.84	.76	2.55	.87	.79
Noncompliance IAT D-score ^a	1.05	.41		1.02	.48	
Expectations						
Compliance Expectations	17.38	3.72	.70	17.97	3.50	.71
Knowledge						
Knowledge discipline alternatives ^a	.83	.22		.79	.26	
Time 2						
Taxes						
Brief Symptom Index	6.36	8.47	.91	3.67	5.55	.88
SAMISS substance use	2.62	2.55	.67	4.28	3.23	.69
Conflict Tactics Scale-2S Victimization ^a	5.67	9.76		5.17	7.80	
Resources						
Coping Self Efficacy Scale	98.69	22.91	.94	105.28	22.99	.94
Social Support Resources Index: Satisfaction	41.77	6.98	.90	40.65	8.17	.93
Couple Satisfaction Index	49.56	11.77	.97	51.89	9.59	.96
PCA Risk						
Child Abuse Potential Inventory ^a	84.18	70.04		71.29	58.37	
Adult Adolescent Parenting Inventory-2	99.63	22.40	.91	103.29	19.66	.89
PAQ Expected Authoritarian parenting	33.61	6.51	.81	33.51	7.26	.86
ReACCT Noncompliance	.06	14.50	.83	.09	13.04	.78
ReACCT Compliance	-7.86	9.00	.81	-9.03	9.23	.81

Note. IRI = Interpersonal Reactivity Index; AAPI = Adult-Adolescent Parenting Inventory; Parent-CAAM = Parent-Child Aggression Acceptability Movie Task; SAMISS = Substance Abuse and Mental Illness Scale; PAQ = Parental Authority Questionnaire; ReACCT = Response Analog to Child Compliance Task.

^a Alpha not computed: PASAT and IAT are single values, knowledge of discipline is a proportion score, CTS-2S involves low frequency count data, the Child Abuse Potential Inventory items are variably weighted.

Table 2. Summary of Indirect Effects in the Path Models

Indirect effect	Mother model	Father model	Mother dyadic model	Father dyadic model
Empathy → Reactivity → PCA risk	-.069* [-.144, -.010]	-.058* [-.149, -.001]	-.063* [-.140, -.004]	-.057* [-.156, -.003]
Empathy → Attribution → PCA risk	-.053* [-.116, -.013]	-.057 [-.139, .004]	-.053* [-.119, -.014]	-.057 [-.138, .005]
Empathy → Reactivity → Attribution → PCA risk	-.034* [-.075, -.012]	-.023* [-.063, .000]	-.033* [-.078, -.011]	-.020 [-.061, .002]
Attitudes → Attribution → PCA risk	.038* [.008, .090]	.044* [.001, .119]	.043* [.010, .104]	.037 [-.001, .110]
Attitudes → Compliance expectations → PCA risk	-.008 [-.049, .009]	.024* [.000, .079]	-.007 [-.047, .010]	.019 [-.001, .069]
Attitudes → Knowledge discipline → PCA risk	.050* [.016, .103]	.083* [.018, .153]	.044* [.012, .101]	.081* [.016, .161]

Note. The coefficients are standardized indirect effects. The bracketed confidence intervals are bias-corrected bootstrapped values (based on 1,000 bootstrap samples), which are not necessarily symmetrical around the coefficients. Indirect effects with confidence intervals excluding zero are flagged.