Disentangling the cycle: Potential mediators and moderators in the intergenerational transmission of parent-child aggression

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Abstract:

Parents' cognitive schemas about parenting, personal vulnerabilities, and personal resources may affect their risk of engaging in parent-child aggression (PCA). This longitudinal study examined predictors of change in mothers' and fathers' PCA risk across the transition to parenthood, comparing trajectories of parents evidencing high versus low sociodemographic risk. Potential predictors involved parenting-relevant schemas (consistent with Social Information Processing theory, including approval of PCA, negative attributions of child behavior, and knowledge of nonphysical discipline options), personal vulnerabilities (psychopathology, intimate partner violence, substance use issues), and resources (problem-focused coping, emotion regulation, social support, and partner satisfaction). Results indicated that increases in PCA approval, negative child behavior attributions, and symptoms of psychopathology, as well as decreases in problem-focused coping skills, emotion regulation ability, and partner satisfaction, all significantly predicted changes in mothers' and fathers' PCA risk over time—regardless of risk group status. Notably, increases in intimate partner violence victimization and decreases in social support satisfaction predicted mothers' but not fathers' PCA risk change; moreover, increases in knowledge of nonphysical discipline alternatives or in substance use issues did not predict change in PCA risk for either mothers or fathers. Risk groups differed in PCA risk across all predictors with minimal evidence of differential trajectories. Overall, these findings have important implications for child abuse prevention programs involving both universal and secondary abuse prevention efforts.

Keywords: Physical child abuse | Child maltreatment | Physical discipline | Sociodemographic risk | Fathers | Prospective longitudinal

Article:

1. Introduction

In 2016, protective services witnessed a 9.5% increase in cases since 2012, with over 4.1 million allegations (U.S. Department of Health and Human Services [DHHS], 2018). Over 18% of substantiated cases of child maltreatment involved physical abuse (DHHS, 2018), although such estimates substantially underestimate the extent of physical abuse in the U.S. (Sedlak et al., 2010). Physical abuse is significantly more likely to transpire when parents administer physical discipline (Gershoff & Grogan-Kaylor, 2016), particularly as physical discipline escalates and becomes more frequent and intense (Durrant, Trocme, Fallon, Milne, & Black, 2009; Russa & Rodriguez, 2010; Zolotor, Theodore, Chang, Berkoff, & Runyan, 2008). With most U.S. children receiving physical discipline (e.g., Zolotor, Theodore, Runyan, Chang, & Laskey, 2011), the scope of physical discipline and physical abuse is clearly pervasive and harmful. Meta-analyses have demonstrated that physical discipline is associated with adverse outcomes (Gershoff & Grogan-Kaylor, 2016), including internalizing or externalizing behavior problems (e.g., Ma & Grogan-Kaylor, 2017; Rodriguez, 2006). Given the links between physical discipline and physical abuse, parent-child aggression (PCA) has been viewed along a continuum, with milder physical discipline on one endpoint transitioning later on the continuum toward physical abuse at the other (DeGarmo, Reid, & Knutson, 2006; Gershoff, 2010; Rodriguez, 2010a; Straus, 2001; Whipple & Richey, 1997). Child abuse potential estimates the likelihood a parent will escalate and engage in abusive PCA (Milner, 1994). Thus, a parent's *PCA risk* is a reflection of this continuum approach that includes harsh and potentially abusive parenting.

Prevention efforts from a public health standpoint can be applied to avert child abuse and neglect at three levels (O'Donnell, Scott, & Stanley, 2008): a primary prevention approach, with universal applications to the general population; a secondary prevention strategy that targets at-risk populations; and a tertiary prevention approach that seeks to deter recurrences. Although many have advocated for primary prevention approaches to child maltreatment (Eckenrode, 2011), a range of child abuse prevention programs target at-risk pregnant or perinatal mothers (e.g., Chartier et al., 2017; Duggan et al., 2004; Eckenrode et al., 2017; Pajer et al., 2014; Peacock, Konrad, Watson, Nickel, & Muhajarine, 2013), thereby representing a secondary prevention approach. Mothers who are eligible to receive such prevention services are typically perceived to be more "vulnerable" (Barlow et al., 2003, p. 172) based on demographic factors such as mother's age (i.e., teen parenthood), educational level, or socioeconomic status, or based on personal background factors, such as family stress (e.g., Chartier et al., 2017), maternal depression (Green, Tarte, Harrison, Nygren, & Sanders, 2014), or child abuse history (e.g., Shenk et al., 2017). For some programs, primiparous women are eligible for services if they meet even one risk factor, such as age, marital status, or socioeconomic status (e.g., Eckenrode et al., 2017), whereas other programs identify eligibility if mothers evidence two risk factors or depression or substance use concerns (e.g., Green et al., 2014). Other programs are more restrictive, such as one in Canada, where mothers must evidence three or more risk factors and demonstrate high stress scores to be eligible to receive a home visiting program (Chartier et al., 2017). The effectiveness of early intervention efforts appear greater for at-risk than universal populations (Casillas, Fauchier, Derkash, & Garrido, 2016), and for those with more risks (Green et al., 2014). In the context of limited resources, identifying and delivering services to those who are most at risk may be seen as cost-effective.

To best provide such prevention services, we must identify the factors that may affect change in parents' risk to engage in PCA—either in terms of exacerbating or reducing that risk. The current investigation considered potential factors in three categories: parenting-relevant, personal

vulnerabilities, and personal resources. Parenting beliefs may evolve as individuals enter parenthood, thereby impacting their PCA risk; moreover, parents may experience personal challenges that disrupt their lives, compromising their parenting abilities, whereas parents may access resources, which could also adjust the trajectory of their PCA risk.

One model of parenting beliefs that has been applied to understand what predicts parents' PCA risk involves Social Information Processing theory (SIP; Milner, 2000; Rodriguez, Smith, & Silvia, 2016a, 2016b; Rodriguez, Silvia, & Gaskin, 2017). This model proposes that parents' cognitive schemas influence how parents may escalate physical discipline that could become abusive. Before a discipline situation arises, parents harbor preconceived ideas about parenting and discipline, often predating parenthood. Then, when dealing with a discipline situation, SIP theory suggests parents may misperceive the situation, develop negative evaluations, and fail to incorporate all available information before implementing discipline.

For example, parents' discipline schemas may include approval of PCA as a discipline approach, wherein such approval is associated with increased PCA risk (McCarthy, Crouch, Basham, Milner, & Skowronski, 2016; Rodriguez, Bower-Russa, & Harmon, 2011). Parents who also negatively evaluate children's behavior—ascribing negative intent to their behavior—are more likely to have been identified as abusive (Haskett, Scott, Willoughby, Ahern, & Nears, 2006), to engage in later maltreatment (Berlin, Dodge, & Reznick, 2013), and to evidence greater PCA risk (Azar, Okado, Stevenson, & Robinson, 2013; Montes, de Paúl, & Milner, 2001; Rodriguez, Cook, & Jedrziewski, 2012; Rodriguez & Tucker, 2015). Further, SIP proposes that parents need to incorporate all information in a discipline encounter, including their options for discipline. Many prevention programs incorporate a psychoeducation approach, in which parents are provided information about alternatives to physical discipline (Durrant et al., 2014; Knox, Burkhart, & Cromly, 2013; Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009), and knowledge of nonphysical discipline options does predict lower PCA risk (Rodriguez, Silvia et al., 2017).

But such SIP parenting schemas operate within the broader context of a parent's life, wherein the parent may experience personal vulnerabilities that color those schemas (Milner, 2000), essentially serving to "tax" their ability to parent effectively (Rodriguez et al., 2016b; Rodriguez, Silvia et al., 2017). Taxes indeed increase child abuse potential, such as increased personal stress (Lowell & Renk, 2017; Rodriguez & Tucker, 2015; Stith et al., 2009) and psychopathology (Pajer et al., 2014; Stith et al., 2009), intimate partner violence(Bourassa, 2007; Capaldi, Kim, & Pears, 2009) and substance use (Ammerman, Kolko, Kirisci, Blackson, & Dawes, 1999; Hien, Cohen, Caldeira, Flom, & Wasserman, 2010; Pajer et al., 2014). Alternatively, parents' access to resources may reduce PCA risk (e.g., Counts, Buffington, Chang-Rios, Rasmussen, & Preacher, 2010). Parents' PCA risk may diminish when they implement strong problem-focused coping skills (Cantos, Neale, O'Leary, & Gaines, 1997; Lowell & Renk, 2017; Rodriguez, 2010b) or effective emotion regulation abilities (Hiraoka et al., 2016; Lowell & Renk, 2017; Rodriguez, Baker, Pu & Tucker et al., 2017)—intrapersonal resources that could bolster a parent when encountering parenting challenges. Further, parents may access external resources, drawing from their overall social support system to reduce PCA risk (Counts et al., 2010; Tucker & Rodriguez, 2014), which has been particularly observed among mothers (Schaeffer, Alexander, Bethke, & Kretz, 2005). Other interpersonal resources may derive from satisfaction with their partner (Bryson, 2004; Florsheim et al., 2003; Rodriguez et al., 2016b; Rodriguez, Silvia et al., 2017; Tucker, Rodriguez, & Baker, 2017), which has been demonstrated to lead to reduced PCA risk.

The current study thus considered whether changes in PCA risk across the transition to parenthood reflect changes in SIP parenting-relevant schemas, personal vulnerabilities, and resources. SIP factors considered in this study included approval of PCA use, negative attributions of children's behavior, and knowledge of non-physical discipline alternatives—hypothesizing that increasing PCA approval, greater negative child attributions, and less knowledge of alternatives would predict increases in PCA risk. Parents' personal "taxes" selected for this investigation that may impact change in PCA risk included mental health problems, substance use problems, and intimate partner violence—hypothesizing that increases in these taxes would predict increases in PCA risk. We also considered whether changes in resources (coping skills, emotion regulation, social support satisfaction, and partner satisfaction) were associated with reductions in parents' PCA risk. Given the continued emphasis in the child abuse prevention literature on mothers (Lee, Bellamy, & Guterman, 2009), despite the evidence of substantial abuse perpetration by fathers (Sedlak et al., 2010), we considered change in PCA risk for mothers and fathers independently. Finally, we also examined whether these factors affected change in PCA risk differentially for those with greater sociodemographic risk (i.e., the secondary prevention group that often characterizes the target of most perinatal abuse prevention programs) versus those considered low risk to consider which factors are appropriate for universal programs versus those that are particularly salient for at-risk groups.

2. Methods

2.1. Participants

Mothers and their male partners were recruited for the Following First Families (Triple-F) Study, a prospective longitudinal study tracking the evolution of PCA in a large urban city in the Southeast. During the last trimester of pregnancy (Time 1), 203 primiparous mothers were enrolled with 151 partners (86% of all fathers who were available to participate). Parents were then reassessed (Time 2) when their infant was 6 months old (±2 weeks) and again (Time 3) when their child was 18 months old (±3 weeks).

By Time 2, two families were unenrolled in Triple-F because the baby died shortly after childbirth. We retained 186 of the remaining mothers by Time 2 and 180 by Time 3. For fathers, Triple-F allows "fathers" to differ across the study because mothers acquire new partners and thus the child's father-figure changes (a more realistic cross-section of family life). Thus, although 146 fathers participated at Time 2 and Time 3, we analyzed data only for fathers who are the same across time; thus, for this study, data for fathers involve 143 fathers at Time 2 and 142 fathers at Time 3. The analytic approach (see Analytic Plan) allowed us to retain all cases even when a participant had missing data at one or two time points.

At Time 1, mothers in the full sample were on average 26.04 years old (*SD* = 5.87, range 16–40); fathers were on average 28.87 year old (*SD* = 6.10). Mothers reported racial and ethnic identity as: 50.7% Caucasian, 46.8% African-American, 1% Asian, and 1.5% Native American; of these, 3% also identified as Hispanic/Latina and 5.5% identified as biracial. Fathers reported their racial and ethnic identity as follows: 54% Caucasian, 45.3% African-American, 0.7% Asian; additionally, of these, 4% identified as Hispanic/Latino and 4.7% identified as biracial. For educational level: mothers reported–30.3% high school or less; 20.9% some college or vocational training; 21.4% college degree; and 27.4% beyond college degree; fathers reported–25.3% high school or less; 24.7% some college or vocational training; 27.3% college degree; 22.7% beyond college degree. Over half of the mothers reported a combined annual household

income under $40,000, with 49.3% reporting a household income within 150% of the federal poverty line and more than 42% reporting receipt of public financial assistance.

The full sample was divided into two groups. At Time 1, 53.2% of mothers evidenced sociodemographic risk that would be consistent with eligibility for secondary preventionservices; these mothers met at least one of the following criteria: (a) receipt of public assistance; (b) 150% below the poverty line; (c) high school education or less; (4) age 18 or younger. Of the full sample, 48% met two or more of these risk criteria. Mothers and fathers from these families who met these criteria were assigned to the Risk Group; all other families were assigned to a Low Risk Group for analysis of potential differential trajectories by risk group.

2.2. Measures

2.2.1. PCA risk

The *Child Abuse Potential Inventory* (CAPI; Milner, 1986) is frequently used to estimate physical child abuse risk. Of the 160 Agree/Disagree items, 77 are variably weighted to comprise the Abuse Scale. Higher Abuse Scale scores reflect higher child abuse risk. Prior work has documented predictive validity for the CAPI Abuse Scale, correctly classifying 89.2% of confirmed child abusers and 99% of controls (Milner, 1994).

The *Adult Adolescent Parenting Inventory-2* (AAPI; Bavolek & Keene, 2001) Form B provided another measure of child abuse risk more specific to parenting that has been utilized in protective service settings. The AAPI-2 contains 40 items presented on a 5-point scale from *strongly agree* (1) to *strongly disagree* (5). Items are summed for a total score which was oriented such that higher scores indicate endorsement of parenting beliefs and behaviors considered to characterize abusive parenting. Items for the AAPI-2 were selected to distinguish maltreating from non-maltreating samples (Bavolek & Keene, 2001), with prior work supporting reliability and validity (Conners, Whiteside-Mansell, Deere, Ledet, & Edwards, 2006).

The *Response Analog to Child Compliance Task* (ReACCT; Rodriguez, 2016) was selected to provide an analog assessment of PCA risk, which avoided reliance on solely self-report. The ReACCT presents participants with a realistic scene in which the parent is described as running late to bring their child to preschool before work. Twelve successive scenes depict the parent providing an instruction to the child and the child is either reported to comply or not comply with their request. A total of 20 steps across these scenes occur if the parent is "stuck" until the child appears to comply. After reading the child's response to their request, the parent is provided up to 16 options for how to respond to their child; some responses receive positive weights (e.g., praise) versus others receive negative weights (e.g., physical and psychological aggression). Parents are instructed that they would see a game bonus for each time they attained quick compliance but experience delays when the child was noncompliant. During this task, participants hear and see a ticking clock to evoke time urgency; parents see a game bonus total increment of 50 cents for each time the child complies. ReACCT scores selected for this study involve parents' options for responding to child noncompliance (12 items), wherein higher scores indicate harsher responses. Using different samples, ReACCT scores have been previously related to measures of child abuse potential (e.g., r =.42 −.49 with the AAPI-2) and more abusive physical discipline approaches (e.g., r = .38–.45; Rodriguez, 2016).

2.2.2. Taxes

The *Brief Symptom Inventory* (BSI; Derogatis & Melisaratos, 1983) includes 18 symptoms of depression and anxiety on which participants estimate frequency in the past week from *Not at all* (0) to *Extremely* (4). Symptoms are summed for a total score on which higher scores suggest more psychopathology symptoms. This popular measure has been investigated comprehensively and evidences good convergent and factorial validity (Prinz et al., 2013).

The *Substance Abuse* and Mental Illness Scale (SAMISS; Whetten et al., 2005) includes items that estimate the frequency and extent of problematic substance use. Seven items assess current and past-year frequency of alcohol and illicit drug use, with higher total scores indicating more substance use issues. Developed as a diagnostic screener, the SAMISS correctly identified 98.6% of substance use diagnoses (Whetten et al., 2005).

The *Revised Conflict Tactics Scale-Short Form* (CTS-2S; Straus & Douglas, 2004) asks participants to estimate the frequency of perpetration and victimization of intimate partner violence in the past year. From the 20 items in this measure, the eight items involving physical or psychological victimization were selected for this study. Count scores are weighted as the frequency of occurrence increases, with higher total counts indicative of more frequent experience of IPV victimization. Concurrent validity has been reported as well as strong associations with the longer versions of this measure (Straus & Douglas, 2004).

2.2.3. Resources

The *Coping Self-Efficacy Scale* (CSES; Chesney, Neilands, Chambers, Taylor, & Folkman, 2006) assesses personal sense of effective problem-solving coping with 12 items. Each item is rated on an 11-point scale from *Cannot do at all* (0) to *Certain I can do* (10). A total score is generated by summing across items, with higher scores suggestive of greater sense of effective coping skills. Evidence of convergent validity with other problem-focused coping measures has been provided (Chesney et al., 2006).

The *Negative Mood Regulation Scale* (NMRS; Catanzaro & Mearns, 1990) involves 30 items on which participants indicate how they regulate negative emotions and restore balance when encountering distress. Each item is rated on a 5-point scale from *strongly agree* (1) to *strongly disagree* (5). Items are summed for a total score in which higher scores indicate weaker emotion regulation ability. The NMRS demonstrates internal consistency, stability, concurrent and predictive validity with negative affect (Catanzaro & Mearns, 1990), as well as convergent validity with similar emotion regulation measures (Bardeen, Fergus, Hannan, & Orcutt, 2016).

The *Social Support* Resources Index (SSRI; Vaux & Harrison, 1985) estimates respondents' perceived satisfaction with their social support. Participants were asked to rate their level of satisfaction with their two closest supporters (5 items per supporter) on a 5-point scale, from *Not satisfied* (1) to *Very satisfied* (5). A total score is generated by summing across supporters, with higher total scores indicating greater satisfaction. Total scores demonstrate validity, correlating with other measures of perceived support (Vaux & Harrison, 1985).

The *Couple Satisfaction Index* (CSI; Funk & Rogge, 2007) estimates perceived partner satisfaction across several dimensions. For this study, 10 items were selected on which participants use a 6-point scale; items are summed to contribute to a total score on which higher scores suggest greater partner satisfaction. Scores on the CSI are related to a variety of couple

relationship measures such as dyadic adjustment, global relationship satisfaction, and marital adjustment (Funk & Rogge, 2007).

2.2.4. PCA attitudes

The Value of Corporal Punishment subscale from the *Adult Adolescent Parenting Inventory-2* (AAPI; Bavolek & Keene, 2001), Form A (an alternate version than used for PCA Risk) was used to measure parents' approval of physical discipline. Participants respond to 11 items with a 5-point scale, from *strongly agree* (1) to *strongly disagree* (5). Items are summed to contribute to a Total score that indicates greater approval of physical discipline. This subscale demonstrates internal consistency and concurrent validity with observed and reported parenting (Conners et al., 2006).

2.2.5. Negative child attributions

The *Plotkin Child Vignettes* (PCV; Plotkin, 1983) present 18 scenes in which participants are asked to judge whether the child in the scene intentionally misbehaved. For each item, the participant indicates on a 9-point scale whether they believe the child's behavior was intentional, from *did not mean to annoy me at all* (1) to *the only reason the child did this was to annoy me* (9). A total score sums responses across the 18 scenes, with higher scores indicative of more negative child attributions. Abusive parents obtain higher total PCV Attribution scores than their non-abusive peers (Haskett et al., 2006; Plotkin, 1983) and PCV scores are associated with implicit measures of parent attributions (Rodriguez et al., 2012).

2.2.6. Knowledge of discipline alternatives

Expanding on a coding strategy described in Ateah and Durrant (2005), after the last PCV vignette, parents were asked to imagine they needed to discipline the child in that scene. In an open-ended question, parents provide all the possible discipline responses they could generate for the depicted child's misbehavior. Two raters independently categorized each response provided by the parent into a category: physical (e.g., spanking or hitting with an object), non-physical (e.g., time-out, removal of privileges); or psychological (yelling, threatening; additional scoring details available upon request). The total number of responses provided in each category as well as the total across categories was tallied for each parent. The two counts from the raters were averaged and a proportion score was computed to convey the proportion of all responses provided by the parent that reflect non-physical discipline options (total nonphysical options ÷ total options); this approach thus controlled for parents who provided a larger total number of options. Interrater reliability was strong between raters: ICC = .94 for non-physical and total number of discipline options.

2.3. Procedures

Triple-F families were recruited via flyers distributed at community health centers and clinics in local hospitals' obstetric/gynecological offices. To be eligible for the Triple-F study, mothers were required to be primiparous and in the last trimester of their pregnancy. Mothers who were interested in enrolling contacted the lab to arrange a two hour session for themselves and, where available, their male partner. For Time 2 and Time 3, families were re-contacted for 3-hour sessions. Mothers and fathers independently provided consent and, in separate private areas, entered all individual responses on laptop computers. Mothers and fathers were also individually

compensated for their time after each time point. The Triple-F longitudinal study was approved by the university's Institutional Review Board.

Table 1. Means, Standard Deviations, and Internal Consistencies for Mothers and Fathers by Time Point.

	Mothers				**Fathers**			
		Time 1	**Time 2**	**Time 3**		**Time 1**	**Time 2**	**Time 3**
	***α* (T1–T3)[a]**				***α* (T1–T3)**			
SIP Factors								
AAPI-2 Value Corporal	.82–.84	31.87 (8.30)	30.33 (9.11)	29.58 (9.02)	.80-.84	32.14 (8.93)	30.44 (8.29)	30.35 (8.86)
Know Disc Alternatives		.83 (.23)	.86 (.22)	.83 (.25)		.79 (.27)	.83 (.24)	.78 (.30)
PCV-Attributions	.82–.89	39.96 (16.30)	36.03 (13.67)	35.50 (16.93)	.83-.88	38.53 (17.37)	34.28 (14.05)	34.94 (12.40)
Taxes								
BSI	.88–.91	9.81 (8.93)	6.40 (8.48)	5.62 (6.75)	.89-.93	5.05 (6.74)	3.64 (5.56)	3.95 (6.04)
SAMISS	.67–.70	1.68 (2.33)	2.61 (2.53)	2.83 (2.74)	.70-.82	4.71 (3.59)	4.26 (3.24)	4.20 (3.72)
CTS-2S Victimization		6.67 (11.79)	5.67 (9.76)	6.89 (13.86)		4.71 (7.61)	5.20 (7.81)	5.23 (8.86)
Resources								
Coping Self Efficacy Scale	.92–.94	97.64 (21.95)	98.60 (22.78)	96.55 (25.67)	.90-.95	104.39 (20.28)	105.10 (22.98)	102.75 (22.96)
NMRS	.90–.92	64.67 (16.67)	65.24 (18.24)	65.49 (18.38)	.90-.91	63.36 (17.07)	66.14 (15.79)	66.34 (17.17)
Couple Satisfaction Index	.97–.98	50.40 (12.66)	48.32 (11.95)	47.59 (12.96)	.95-.97	53.01 (8.60)	51.91 (9.63)	49.11 (11.61)
SSRI-Social Satisfaction	.90–.94	41.66 (7.30)	41.74 (7.03)	40.27 (8.13)	.92–.94	41.01 (7.56)	40.63 (8.20)	39.23 (8.91)
PCA Risk								
CAPI		95.54 (75.15)	85.42 (70.43)	90.53 (76.85)		86.31 (58.16)	71.48 (58.55)	77.15 (65.06)
AAPI-2	.87–.91	101.97 (18.66)	99.87 (22.22)	98.76 (22.20)	.89-.90	107.33 (19.76)	103.27 (19.73)	102.14 (19.72)
ReACCT Noncompliance	.76–.83	.24 (12.87)	1.40 (13.80)	1.10 (12.84)	.76-79	.05 (12.87)	.86 (12.28)	1.69 (13.19)

Note. AAPI-2 = Adult-Adolescent Parenting Inventory-2; PCV = Plotkin Child Vignettes; BSI = Brief Symptom Inventory; SAMISS = Substance Abuse and Mental Illness Scale; CTS-2S = Conflict Tactics Scale-2 Short Form; NMRS = Negative Mood Regulation Scale; SSRI = Social Support Resources Index; CAPI = Child Abuse Potential Inventory; ReACCT = Response Analog to Child Compliance Task.

[a] Alpha ranges across time points by parent; alpha not computed for: CTS-2S involves low frequency count data; Knowledge of Discipline is a proportion score; CAPI items are variably weighted.

2.4. Analytic plan

We used multilevel models to accommodate the nested structure of the data and the unequal observations per participant due to occasional missing data. All models were estimated with Mplus 8. PCA Risk was treated as a latent variable indicated by the CAPI Abuse Scale, AAPI-2, and ReACCT Noncompliance Total scores. Factor loadings for each indicator were constrained to be identical across the levels, thus ensuring the variable has the same meaning (see Heck & Thomas, 2009). Bayesian estimation was used because it affords estimates of standardized effects for multilevel models with random effects and latent variables. Models were estimated using Gibbs sampling with 10,000 Marcov Chain Monte Carlo iterations. The effects are interpreted essentially the same as in maximum likelihood models except that (1) confidence intervals (known as credible intervals in Bayesian models) may be asymmetric around the

estimate, and (2) *p*-values for inferential tests are one-tailed (see Lee, 2007; Lynch, 2007). Findings are presented for the effects of changes in the predictor on changes in PCA Risk across time (the within-person main effects); the overall differences between the Risk Group and the Low Risk Group (the between-person main effects); and potential differences in slopes between the risk groups, which tests whether changes in the predictor predict PCA Risk changes differently for those in the Risk Group versus those in the Low Risk Group (cross-level interaction effects).

3. Results

Means, standard deviations, and internal consistencies for measures for the full sample appear in Table 1, by time point, for mothers and fathers individually. CAPI Abuse Scale, AAPI-2 Total, and ReACCT Noncompliance scores were significantly intercorrelated within each time point for mothers (r = .27–.54, all $p <$ .05) and fathers (r = .27–.51, all $p <$ .05). Consequently, the three estimators of PCA Risk also all significantly loaded on the latent PCA Risk variable in all Bayesian models.

Table 2. Standardized Coefficients for Change in PCA Risk.

	Mothers						**Fathers**					
Construct	**Within Person *β* [CI][a]**	***P*[b]**	**Between Person *β* [CI]**	***p***	**Interaction *β* [CI]**	***P***	**Within Person *β* [CI]**	***p***	**Between Person *β* [CI]**	***p***	**Interaction *β* [CI]**	***p***
PCA Approval Attitudes	**.519**[.428, .629]	.000	**.235**[.072, .396]	.007	.061 [−.089, .215]	.254	**.385**[.288, .552]	.000	**.514**[.349, .678]	.000	**−.290**[−.596, −.065]	.016
Know Discipline Alternatives	−.061 [−.150, .030]	.086	**.390**[.302, .475]	.000	−.003 [−.269,.262]	.494	−.038 [−.127, .041]	.199	**.490**[.390, .589]	.000	.041 [−.348, .362]	.418
Negative Attributions	**.395**[.244, .557]	.000	**.403**[.279, .512]	.000	**−.285**[−.450, −.103]	.003	**.239**[.147, .384]	.000	**.498**[.322, .704]	.000	−.100 [−.509, .186]	.289
Psychopathology Symptoms	**.472**[.332, .687]	.000	**.431**[.342, .520]	.000	−.042 [-.322, .225]	.399	**.252**[.139, .416]	.000	**.549**[.447, .647]	.000	*.239* [.019, .447]	.038
Substance Use Issues	.005 [−.125, .115]	.466	**.405**[.315, .492]	.000	.189 [−.122, .453]	.149	.038 [−.059, .158]	.210	**.503**[.400, .600]	.000	.176 [−.085, .419]	.132
IPV Victimization	**.201**[.069, .363]	.001	**.418**[.327, .504]	.000	.053 [−.277, .346]	.397	.001 [−.086, 109]	.491	**.477**[.381, .572]	.000	−.068 [−.357, .201]	.345
Problem-Focused Coping	**−.340**[-.478, −.221]	.000	**.244**[.059, .421]	.018	.056 [−.137, .270]	.323	**−.223**[−.393, −.092]	.000	**.264**[.071, .553]	.012	.054 [−.219, .317]	.361
Emotion Regulation	**.409**[.227, .696]	.000	**.371** [. 215, .526]	.000	−.156 [−.372, .055]	.106	**.232**[.151, .328]	.000	**.336**[.173, .502]	.001	−.100 [−.339, .135]	.226
Couple Satisfaction	**−.179**[−.010, −.508]	.022	**.404**[.315, .486]	.000	−.068 [−.325, .217]	.337	**−.108**[−.224, −.012]	.016	**.501**[.403, .596]	.000	*−.284*[−.552, −.001]	.049
Social Support Satisfaction	**−.167**[−.299, −.038]	.008	**.406**[.314, .491]	.000	−.008 [−.279, .283]	.480	.051 [−.065, .184]	.180	**.491**[.389, .585]	.000	−.013 [−.245, .224]	.464

Note: Bolded values signify statistical significance; italicized values indicate marginal significance.
[a] CI = standardized credibility interval.
[b] One-tailed *p* value.

Results of the primary analyses appear in Table 2. For mothers, change in PCA Risk, regardless of risk group status, was significantly predicted by: increases in PCA approval (AAPI-2 Corporal Punishment); increases in negative child behavior attributions (PCV Attributions); increases in symptoms of psychopathology (BSI); increases in intimate partner violence victimization (CTS-

2S Victimization); decreases in problem-focused coping (CSES); decreases in emotion regulation ability (NMRS); decreases in partner relationship satisfaction (CSI), and decreases in social support satisfaction (SSRI). Notably, increases in knowledge of nonphysical discipline alternatives and increases in substance use issues did not predict change in PCA Risk. But all of the predictors significantly differed between risk groups (see third column, Table 2). Only one interaction effect was statistically significant. For mothers' negative attributions, the effect of change in negative child attributions on change in PCA Risk was weaker for mothers in the Risk Group than for those in the Low Risk Group ($\beta = -.285$, [−.450, −.103], $p = .003$).

For fathers, regardless of risk group status, change in PCA Risk was significantly predicted by increases in PCA approval; increases in negative child behavior attributions; increases in psychopathology symptoms; decreases in problem focused coping; decreases in emotion regulation ability; and decreases in partner satisfaction. However, unlike mothers, social support satisfaction and IPV victimization did not predict change in PCA Risk. Comparable to mothers, between risk group differences were observed across all predictors. In terms of interaction effects, the effects of PCA approval attitudes on PCA Risk change significantly differed between risk groups; the effect of greater PCA approval on changes in PCA Risk was weaker for fathers in the Risk Group than for those in the Low Risk Group ($\beta = -.290$, [−.596, −.065], $p = .016$). Two marginal interaction effects were also observed: the effects of greater psychopathology on increases in PCA Risk were marginally stronger for fathers in the Risk Group than those in the Low Risk Group ($\beta = -.239$, [.019, .447], $p = .038$); and the effects of greater partner satisfaction on reductions in PCA Risk were marginally stronger for fathers in the Risk Group than those in the Low Risk Group ($\beta = -.284$, [−.552, −.001], $p = .049$).

4. Discussion

The current investigation evaluated mothers' and fathers' SIP parenting-relevant schemas, personal vulnerabilities, and personal resources in relation to changes in their PCA risk across the transition to parenthood. Results partially supported the hypotheses, demonstrating that most of the proposed factors were significant predictors of changes in PCA risk over time, with the important exceptions of increases in knowledge of nonphysical discipline alternatives and increases in substance use issues. In addition, risk groups differed across all predictors. Two significant interactive effects were also observed between predictors of PCA risk change and sociodemographic risk group status, specifically in mothers' negative child attributions and fathers' greater PCA approval.

As hypothesized, increases in PCA approval, negative child behavior attributions, and psychopathology symptoms, as well as decreases in problem focused coping, emotion regulation ability, and partner satisfaction, each significantly predicted changes in PCA risk over time for both mothers and fathers. These findings are consistent with previous research demonstrating links between increased child abuse potential with these SIP parenting-relevant factors (PCA approval: McCarthy et al., 2016; Rodriguez et al., 2011; negative child attributions: Azar et al., 2013; Montes et al., 2001), personal taxes like mental health problems (Pajer et al., 2014; Stith et al., 2009), and personal resources like problem-focused coping (Cantos et al., 1997; Lowell & Renk, 2017; Rodriguez, 2010b), better emotion regulation abilities (Hiraoka et al., 2016; Lowell & Renk, 2017; Rodriguez, Baker et al., 2017), and higher partner satisfaction (Florsheim et al., 2003; Rodriguez et al., 2016b; Rodriguez, Silvia et al., 2017; Tucker et al., 2017). Many of these risk factors may develop from childhood experiences that influence adults' parenting beliefs

(e.g., Dixon, Hamilton-Giachritsis, & Browne, 2005a), mental health (e.g., Dixon, Hamilton-Giachritsis, & Browne, 2005b), and resources (e.g., Herrenkohl, Klika, Brown, Herrenkohl, & Leeb, 2013); however, whether these risk factors influence the pathways between a personal history of PCA and later PCA risk are not consistently observed (Rodriguez, Silvia, Gonzalez, & Christl, 2018).

As expected, changes in PCA risk were also significantly predicted by increases in intimate partner violence victimization and decreases in social support satisfaction for mothers. These findings support existing findings of associations between increased intimate partner violence (Bourassa, 2007; Capaldi et al., 2009; Margolin, Gordis, Medina, & Oliver, 2003) and decreased social support (Counts et al., 2010; Tucker & Rodriguez, 2014) with increased PCA risk. However, these two factors did not predict changes in fathers' PCA risk. Although the current findings were not anticipated for fathers, prior literature has suggested that social support may be more protective against PCA risk for mothers than for fathers (cf. Schaeffer et al., 2005). Additionally, research indicates that the burden of intimate partner violence generally falls on women in the U.S. and globally (Smith et al., 2017). Thus, mothers' parenting behaviors may be more impacted by experiences of intimate partner violence in comparison to fathers. Such findings suggest that further inquiry is needed to better understand gender differences particularly in the development of PCA risk as men enter fatherhood.

The current investigation also observed that *changes* in knowledge of nonphysical discipline alternatives did not significantly predict reductions in PCA risk for mothers or fathers. This finding is surprising given that previous work has identified that greater knowledge of nonphysical discipline options predicts lower PCA risk (Rodriguez, Silvia et al., 2017). Indeed, this principle of expanding parents' understanding of discipline choices serves as the foundation for numerous child maltreatment prevention programs that use psychoeducation as one of their chief tools for change (e.g., Durrant et al., 2014; Knox et al., 2013; Prinz et al., 2009). Consequently, our results have important implications for the future development of child maltreatment prevention programs. Specifically, the current findings imply that, although knowledge of nonphysical discipline options may predict PCA risk, enhancing parents' knowledge of such options through psychoeducation may be insufficient in decreasing parents' PCA risk. In other words, merely gaining knowledge about alternative discipline strategies may not necessarily translate into changing one's discipline behavior. One caveat to this finding is that the current sample was recruited from the community—although over half represent mothers who are typically offered such prevention services. Nonetheless, our new parent sample did not involve parents who had been substantiated for physical child abuse. Perhaps among parents substantiated for child maltreatment, changes in knowledge of nonphysical discipline options would be more significantly related to changes in PCA risk, as presumed by many prevention programs. Additional research needs to investigate what are the best strategies to promote parents' actual implementation of nonphysical discipline options as well as what obstacles prevent that implementation.

Another unexpected finding was that increases in substance use issues did not significantly predict PCA risk changes over time for mothers or fathers. This finding contrasts with prior evidence linking substance use issues with increased child abuse potential (Ammerman et al., 1999; Hien et al., 2010; Pajer et al., 2014). This result also diverges with the perspective of prevention or intervention services that use substance use concerns as one of their criteria for eligibility (e.g., Green et al., 2014). Again, sampling may be relevant in this case, given that the

current sample does not derive from parents with documented substance use issues. Moreover, participants self-reported on their substance use issues, which would be subject to social desirability concerns that may underestimate their substance use and substance abuse difficulties.

In addition, the effects of only two predictors on changes in PCA risk differed significantly between the risk groups. For mothers, the effect of negative child attributions on change in PCA risk was weaker for mothers in the Risk Group than for those in the Low Risk Group. For fathers, the effect of greater PCA approval on changes in PCA risk was weaker for fathers in the Risk Group than for those in the Low Risk Group. Note that these two effects are weaker for the Risk Group but they do not disappear. The effects of psychopathology on PCA risk were marginally worse for fathers in the Risk Group but they were also marginally more responsive to partner satisfaction in reducing PCA risk. All other group interactions were not statistically significant. Indeed, mothers and fathers in the Risk Group significantly differed from those in the Low Risk Group on every factor. Thus parents in the Risk Group—who exemplify those likely to be eligible for secondary prevention services—are indeed at higher risk and thereby demonstrate greater change from prevention efforts that address the significant predictors of change in PCA risk. But collectively, these findings also underscore that SIP parenting schemas of PCA approval and negative child attributions, psychopathology, and resources remain critical targets for low risk parents in universal prevention programs as well—not solely applicable for at-risk new parents.

Strengths of the present study include its use of a longitudinal design, inclusion of fathers, and the diversity of the current sample in regards to racial/ethnic background and socioeconomic status. However, greater consideration of factors relevant for those who identify as Hispanic/Latino is recommended given their limited representation in the current study. Because the present sample was drawn from new parents in the community, consideration of these factors among parents ranging in PCA risk, including those with substantiated child maltreatment or documented mental health or substance use challenges, would be worthwhile to determine whether findings apply to such families. Continuing to track families into preschool years would permit considerations of early predictors of later PCA risk. Moreover, future longitudinal studies should evaluate whether change in other factors (parenting-relevant or other taxes and resources) not included in this investigation may be important predictors of change in PCA risk for both mothers and fathers. Finally, this investigation focused on physical PCA but future work should consider how the risk factors studied in this investigation may also predict other discipline approaches, for example, those that rely on psychological aggression and control.

Overall, this study examined mothers' and fathers' parenting-related schemas, personal vulnerabilities, and personal resources in relation to their PCA risk, considering whether these would be appropriate targets for universal as well as secondary prevention groups. The significant factors identified each represent worthwhile targets for prevention services for all new parents, regardless of risk status. The present findings also suggest that parenting-related factors, such as simply increasing knowledge of nonphysical discipline alternatives, in the hopes they will be adopted, may be insufficient targets despite their inclusion in psychoeducation approaches. Instead, targeting cognitive factors, like PCA attitudes and child attributions, could be contextualized within parents' lives as a whole, recognizing that parents' own challenges such as psychopathology may interfere with their ability to parent successfully while promoting the benefits of parents' interpersonal and intrapersonal resources. Such comprehensive and

theoretically grounded approaches can inform the components that should be assessed and incorporated into prevention programs seeking to avert child abuse.

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