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Attachment Security Mediates the Longitudinal Association Between Child-Parent Psychotherapy and Peer Relations for Toddlers of Depressed Mothers

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Abstract

Numerous investigations have demonstrated that Child-Parent Psychotherapy (CPP) promotes secure attachment between mothers and offspring. However, the role of post-intervention attachment security as it relates to long-term child outcomes has never been evaluated. The present study therefore examined post-intervention attachment status as a mediator of the association between CPP for depressed mothers and their offspring and subsequent peer relations among offspring. Depressed mothers and their toddlers were randomized to receive CPP ($n = 45$) or to a control group (DC; $n = 55$). A prior investigation with this sample indicated that offspring who received CPP attained significantly higher rates of secure attachment post-intervention, whereas insecure attachment continued to predominate for offspring in the DC group. The present study examined follow-up data of teachers' reports on participants' competence with classroom peers when they were approximately 9 years old. Findings indicated that children who received CPP were more likely to evidence secure attachments at post-intervention, which in turn was associated with more positive peer relationships at age 9.

The relational bond formed between child and caregiver from infancy through toddlerhood is the base from which children develop an understanding of the self in relation to others (Bowlby, 1973; Bretherton & Munholland, 1999; Cassidy & Shaver, 2008). According to attachment theory, children's early relational experiences with their primary caregiver are internalized in the form of cognitive representations, or internal working models, which guide thoughts, feelings, and behavior in relation to the caregiver (Bowlby, 1973; Bretherton & Munholland, 2008). As children develop, these models become generalized to encompass views of the self, others, and the nature of relationships, thereby impacting children's relationships with peers and their mental health (Groh et al., 2014). In general, children with secure attachments tend to develop working models of the caregiver as available, responsive, and accepting, and of the self as worthy of love, whereas those with insecure attachments develop working models of the caregiver as unavailable and unresponsive, and of the self as

unworthy of love and attention (Bretherton, 1991; Stams, Juffer, & Van IJzendoorn, 2002). Thus, children will process social information differently depending on the quality of the early attachment relationship experienced with the primary caregiver (Dykas & Cassidy 2011; Seuss, Grossman, & Sroufe, 1992).

It has been well documented that insecurely attached children are less socially competent in their peer relationships than their secure counterparts (for meta-analyses, see Groh et al., 2014 and Pallini, Baiocco, Schneider, Madigan, & Atkinson, 2014). This is problematic given that the establishment and maintenance of peer relationships is a stage-salient task that becomes prominent in middle childhood and influences subsequent socioemotional development (Cicchetti, 1991; Parker & Asher, 1987). Relationships with peers provide important opportunities for children to develop interpersonal skills, such as cooperation, gaining support, verbal communication, and dealing with conflict (Milteer, Ginsburg, & Mulligan, 2012; Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006), whereas persistent difficulties in peer relationships can lead to clinically significant behavioral and affective disorders (La Greca & Lai, 2014). In particular, the literature suggests that poor peer adjustment in middle childhood and early adolescence is predictive of higher rates of future substance abuse, school drop-out, criminality, and psychopathology (LaGreca & Lai, 2014; Parker & Asher, 1987; Parker et al., 2006).

Secure parent-child attachment therefore plays an important role in influencing children's internal working models of interpersonal relationships as they develop and begin interacting with peers. Parker and colleagues (2006) discussed three mechanisms by which this is thought to occur: 1) A secure attachment relationship with the primary caregiver promotes positive social expectations; children who have had positive experiences with a parent will also expect rewarding peer interactions; 2) Children who have received responsive and empathic caregiving learn the fundamentals of social reciprocity; and 3) Through a history of responsive care and autonomy support within the attachment relationship, children develop internal working models of the self as worthy and efficacious. This internal outlook is thought to be important to promoting characteristics that other children find attractive in a peer, including curiosity, enthusiasm, and positive affect.

In contrast, children with an insecure attachment to the primary caregiver come to expect less rewarding interactions with peers and tend to have a lower sense of self-worth and efficacy (Parker et al., 2006; Stams et al., 2002). As a result, they tend to experience higher levels of anxiety and/or anger in their interpersonal interactions, which often leads to withdrawal from or aggression towards peers (Parker et al., 2006; Rose-Krasnor, Rubin, Booth, & Coplan, 1996).

Children with insecure attachments in toddlerhood are more likely to experience peer rejection (Cassidy, Kirsh, Scolton, & Parke, 1996; Wood, Emerson, & Cowan, 2004) and victimization (Seibert & Kerns, 2015; Troy & Sroufe, 1987), and are also more likely to become victimizers themselves (Troy & Sroufe, 1987). Similarly, insecurely attached preschoolers tend to engage in social interchanges that are less positive, more aggressive, and contain heightened negative affect (Booth, Rose-Krasnor, & Rubin, 1991; Rose-Krasnor et al., 1996). Cassidy and colleagues (1996) also found that insecurely attached children in

kindergarten and first grade perceived the ambiguous intentions of their peers more negatively, supporting the proposition that negative internal working models of the caregiver are associated with negative representations of future relationships.

Studies examining the association between early attachment and peer relations in middle childhood have yielded similar results. Findings from a longitudinal investigation indicated that compared to infants with secure attachments, infants with an insecure attachment to their mother at 12 months of age were less competent at building close friendships by age 10 (Freitag, Belskey, Grossmann, Grossmann, & Scheuerer-Englisch, 1996). A subsequent study of children followed from 15 months to ages 8–9 years indicated that participants who displayed insecure attachment patterns in infancy were less socially active, positive, and popular with peers, and displayed more social anxiety at school age than children with a history of secure attachment (Bohlin, Hagekull, & Rydell, 2000). Stams and colleagues (2002) followed a cohort of internationally adopted children placed before 6 months of age from infancy to age 7. The authors found that even after eliminating the influence of shared genetic factors between parents and children by design, infants with insecure attachments to their adoptive mother at 12 months of age demonstrated lower social competence and peer popularity at age 7.

Maternal Depression and Quality of Attachment in Offspring

Maternal depression impacts numerous aspects of the child-rearing environment. Children of depressed mothers are more vulnerable to a host of maladaptive outcomes, including lower cognitive functioning (Cicchetti, Rogosch, & Toth, 2000; Grace, Evindar, & Stewart, 2003; Sohr-Preston & Scaramella, 2006), hypothalamic-pituitary-adrenal (HPA) axis dysregulation (Dougherty, Tolep, Smith, & Rose, 2013; Laurent et al., 2013), poor socioemotional adaptation (Maughan, Cicchetti, Toth, & Rogosch, 2007; Murray et al., 1999), and psychopathology (Goodman & Gotlib, 1999; Goodman et al., 2011). Depressed mothers are more disengaged with their children (Pelaez, Field, Pickens, & Hart, 2008) and demonstrate decreased warmth, affective attunement, and empathic sensitivity to the child's needs (Goodman & Gotlib, 2002; Hoffman, Crnic, & Baker, 2006; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). As theorized by Bowlby (1979, 1983), this psychological unavailability may prevent children from developing secure internal working models of caregivers.

Not surprisingly, a host of studies have indicated that offspring of depressed mothers are at increased risk for insecure attachment (Campbell et al., 2004; Goodman & Gotlib, 2002; Lyons-Ruth, Connell, Grunebaum, & Botein, 1990; Martins & Gaffan, 2000; Murray, 1992; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985; Teti, Gelfand, Messinger, & Isabella, 1995). However, it is important to note that there has been heterogeneity within this body of research (see Wan & Green, 2009 for a review). Meta-analyses have generally pointed towards modest, rather than strong associations between maternal depressive symptoms and quality of attachment (Atkinson et al., 2000; Van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Variability among findings may be related to sample characteristics. For example, in a meta-analysis of 15 studies, Atkinson et al., 2000 found that effect sizes were stronger in clinical samples ($r = .27$) and weaker in non-clinical

samples ($r = .09$). This may be because mothers in clinical samples experience greater symptom severity and/or duration of symptoms (Campbell et al., 2004).

Alternatively, evidence has suggested that it may be the chronicity of depression, rather than the severity that is most detrimental to attachment security. McMahon, Barnett, Kowalenko, and Tennant (2006) reported that persistent maternal depression, measured when children were 12 months of age, was significantly associated with attachment quality: three quarters of infants were classified as insecurely attached, whereas rates of insecurity in infants of briefly and never depressed mothers were statistically equivalent. Similarly, Campbell and colleagues (2004) found that mothers who experienced intermittent or chronic symptoms of depression *and* who evidenced less sensitivity to their child's needs had offspring at greater risk for insecure attachment. Therefore, while children of depressed mothers are more vulnerable to attachment insecurity, not all will be adversely affected or respond in a similar manner.

Child-Parent Psychotherapy for the Promotion of Offspring Attachment Security

Given the risk that maternal depression poses for offspring attachment security and subsequent social competence, interventions that target the early child-parent relationship may be useful for preventing maladaptive developmental trajectories. Relational interventions are of particular importance given that research has indicated that treating maternal depressive symptoms alone is not sufficient for preventing negative sequelae in offspring (Milgrom & Holt, 2014; Nysten, Moran, Franklin, & O'Hara, 2006; Tsivos, Calam, Sanders, & Wittkowski, 2015). Evidence has supported the use of attachment-based interventions for improving outcomes among high-risk infants and children (for reviews, see Berlin, Zeanah, & Lieberman, 2008; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2014; Steele et al., 2014; Zeanah, Berlin, & Boris, 2011). Child-Parent Psychotherapy (CPP) was the first evidenced-based treatment shown to increase rates of secure attachment specifically in offspring of depressed mothers (Cicchetti, Toth, & Rogosch, 1999; Toth, Rogosch, Manly, & Cicchetti, 2006). Subsequently, a home-visiting video feedback program for depressed mothers and their infants has also been successful in promoting attachment security in offspring (van Doesum, Riksen-Walraven, Hosman, & Hoefnagels, 2008). To our knowledge, there are no other dyadic interventions to date that have led to improved attachment security in the young offspring of depressed mothers (Barlow, Bennett, Midgley, Larkin, & Wei, 2015; Tsivos et al., 2015).

CPP is an attachment theory-informed preventive intervention intended to optimize the quality of the parent-child relationship and foster secure attachment (Lieberman & Van Horn, 2004). The intervention was derived from Fraiberg, Adelson, and Shapiro's (1975) "psychotherapy in the kitchen" model, which targeted mothers with histories of abuse and neglect. Through weekly sessions in a family's home, therapists strove to help mothers recognize how the "ghosts" from their own pasts were impacting their current relationships with their young children. Lieberman and Van Horn later built upon this model and it's

theoretical underpinnings to develop CPP (Lieberman, 1992; Lieberman & Van Horn, 2004, 2008).

Cicchetti and colleagues (1999) were the first to evaluate the efficacy of CPP for improving attachment security in children of depressed mothers. A preliminary sample of mothers with major depressive disorder and their toddlers ($M_{\text{age}} = 20.40$ months) were randomly assigned to CPP ($n = 27$) or to a no treatment group (DC; $n = 36$) and compared to a control group (NC; $n = 45$) of women with no history of mental disorder. Toddler attachment was rated using the Attachment Q-set (AQS), which was completed by mothers. At baseline, offspring of depressed mothers evidenced significantly higher rates of insecure attachment than offspring of non-depressed mothers. However, post-intervention follow-up assessments indicated that toddlers in the CPP condition had attained rates of secure attachment comparable to those of toddlers in the NC condition. In contrast, offspring in the DC condition continued to evidence higher rates of insecure attachment. Toth and colleagues (2006) later reported on the efficacy of CPP in a larger sample of participants (CPP, $n = 46$; DC, $n = 54$; NC, $n = 63$), which included those from the previous investigation. Procedures remained the same, except that the Strange Situation procedure (Ainsworth et al., 1978), rather than the AQS, was utilized to assess toddler attachment. Findings replicated and extended those reported by Cicchetti et al. (1999), indicating that when using the gold-standard for assessing attachment CPP remains effective for promoting secure attachment in offspring of depressed mothers.

The Current Investigation

Although it has been demonstrated that CPP is associated with numerous positive child outcomes immediately post-intervention (Cicchetti, Rogosch, & Toth, 2006; Lieberman, Van Horn, & Gosh Ippen, 2005; Lieberman, Weston, & Pawl, 1991; Toth et al., 2006; Toth, Maughan, Manly, Spagnola, & Cicchetti, 2002), as well as at 6- (Lieberman, Ghosh Ippen, & Van Horn, 2006) and 12-months post-intervention (Stronach, Toth, Rogosch, & Cicchetti, 2013), no studies to date have examined the effects of CPP beyond 12 months following treatment completion. Furthermore, there have been no studies addressing the efficacy of an attachment-based intervention for promoting subsequent positive peer relations in children of depressed mothers. As a result of the paucity of research in these areas, the present investigation aims to evaluate the long-term efficacy of CPP for toddlers of depressed mothers for promoting positive peer relationships in middle childhood.

Hypotheses

The present investigation is guided by the hypothesis that post-intervention attachment security a) will predict more positive peer relationships at age 9, and b) mediates the relationship between intervention status (CPP vs. DC) and peer outcomes among offspring of depressed mothers.

Method

Participants

Approval for the conduct of this research was obtained from the University of Rochester Institutional Review Board. After expressing interest in participating in the investigation, all mothers were approached individually by a research assistant and given the informed consent document to read and, if agreeable, to sign. Participants included a subset of mothers and their children ($n = 87$) who participated in a follow-up assessment of a randomized controlled trial evaluating the efficacy of CPP for toddlers of depressed mothers (see Cicchetti et al., 1999; Toth et al., 2006). Initial recruitment targeted mothers with a history of major depressive disorder (MDD) since giving birth to their child ($n = 130$). Maternal psychopathology was assessed via the Diagnostic Interview Schedule, Version III, Revised (DIS-III-R; Robins, Helzer, Cottler, & Goldring, 1988). Mothers who met criteria for bipolar disorder were excluded from participation; however, those with other comorbid Axis I disorders were retained. To minimize co-occurring risk factors that often accompany maternal depression, families were required to have at least a high-school level education and could not be reliant on public assistance.

At baseline (T1), depressed mothers ($M_{\text{age}} = 31.68$ years, $SD = 4.68$) and toddlers ($M_{\text{age}} = 20.34$ months, $SD = 2.50$) were randomized to either a depressed intervention condition (CPP; $n = 66$), in which dyads received CPP, or a depressed control condition in which no intervention was provided (DC; $n = 64$). Because CPP was not a treatment for maternal depression, all depressed mothers were permitted to seek services for their depression in the community if desired. With respect to the recency of MDD, 34.8% (CPP) and 43.8% (DC) of mothers met criteria for MDD within the past month, while 71.2% (CPP) and 78.1% (DC) met criteria within the past 6 months. Additionally, for the majority of mothers the onset of MDD was prior to their child's birth (CPP = 69.7%, DC = 71.9%). T1 assessments also revealed that comorbid Axis I disorders within the past year were common, with 59.1% of mothers in the CPP condition and 71.9% of mothers in the DC condition having at least one comorbid disorder. Across both groups, anxiety disorders (53.8%), bulimia (11.5%), and alcohol-related disorders (9.2%) were among the most prevalent comorbid diagnoses. Group contrasts on all of the aforementioned diagnostic variables were non-significant. Please see Toth et al. (2006) for a more in-depth comparison of diagnostic variables between groups.

Procedure

T1 assessments were conducted over a series of home- and laboratory-based sessions. During an initial home-based session, mothers were administered a demographics interview and maternal mental health was assessed using the DIS-III-R and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). In a subsequent laboratory-based session, mothers and toddlers participated in the Strange Situation paradigm (Ainsworth et al., 1978) as a measure of toddler attachment security. Follow-up assessments were conducted when toddlers reached 36 months of age (T2), and participants in the CPP condition had completed the preventive intervention. Mothers were again administered the DIS-III-R and BDI, as well as a demographics update; and during a laboratory-based session mother-toddler dyads completed the Strange Situation.

A final follow-up took place when children were between 8–11 years old ($M_{\text{age}} = 9.77$ years, $SD = .65$). During a home-based session, mothers were administered the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), an updated version of the previously used BDI. In the present investigation, data from the BDI-II were used for the purpose of controlling for potential group differences in maternal depressive symptoms at T3, and also for performing group contrasts during participant retention analyses. At this time point, mothers also completed an updated demographics interview. Lastly, children's teachers were delivered copies of the Teacher Checklist of Peer Relations (Coie & Dodge, 1988; Dodge & Somberg, 1987), which they were asked to complete and return by mail.

Participant retention

From the original sample of 130 mother-child dyads, some participant attrition occurred by the time children reached 36 months of age. As a result of failing to complete all T2 assessments or moving out of area, 8 dyads attrited from the CPP group and 8 from the DC group. Additionally, 12 mothers assigned to the CPP condition either declined to participate in CPP or discontinued their participation early. Finally, the T2 Strange Situations could not be coded for 2 of the DC dyads due to equipment malfunction. As a result, group sizes for the cases who completed T2 assessments were as follows: CPP, $n = 46$; DC, $n = 54$. To assess for the possibility of differential attrition, group contrasts were performed using analyses of variance (ANOVAs) and chi-square testing. No significant differences between completers ($n = 100$) and noncompleters ($n = 30$) due to completion status were found for baseline maternal depression scores ($t(128) = 1.54, p = .13, d = .33$), or for demographic characteristics, including maternal age ($t(128) = -.20, p = .84, d = .04$), race ($\chi^2(4) = 5.09, p = .28$, Cramer's $V = .20$), educational level ($t(128) = -.82, p = .42, d = .17$), marital status ($\chi^2(3) = 2.76, p = .43$, Cramer's $V = .15$), or annual family income ($t(128) = -.94, p = .35, d = .20$).

87 mothers completed T3 follow-up assessments when children were approximately 9 years of age. Participant attrition was primarily due to families moving out of area. Again, group contrasts using ANOVA and chi-square testing revealed no differences between completers ($n = 87$) and non-completers ($n = 13$) with respect to group assignment ($\chi^2(1) = .34, p = .56$, Cramer's $V = .06$), baseline maternal depression scores ($t = .01, p = .93, d = .03$), or baseline maternal demographic characteristics, including age ($t = .26, p = .61, d = .16$), race ($\chi^2(3) = 1.11, p = .78$, Cramer's $V = .11$), educational level ($t = .04, p = .85, d = .05$), marital status ($\chi^2(3) = 1.18, p = .76$, Cramer's $V = .11$), or annual family income ($t = .01, p = .91, d = .04$). Teachers completed the TCPR for 76 children at T3. The teachers who did not participate worked in schools that were either out of area or did not permit research. The final sample included in analyses was therefore $n = 76$ (CPP = 37; DC = 39). Within this sample, 81.6% of mothers were married or living with a partner at follow-up and the average annual family income was \$64,829 ($SD = \$38,338$).

Preventive Intervention

CPP is an attachment-theory informed preventive intervention for young children ages zero to five and their caregiver(s) (Lieberman & Van Horn, 2004, 2008). The intervention is based on the premise that caregivers who are unable to provide sensitive and responsive care

are hindered by insecure internal working models of themselves and of the parent-child relationship which have resulted from negative experiences with their own caregiver(s). As such, the primary goals of the intervention are 1) to enhance the caregiver's capacity to respond in developmentally appropriate ways to the child's needs for nurturance, socialization, and protection; 2) to modify distorted or maladaptive perceptions that the caregiver or child may have about each other; 3) to restore the child's sense of safety and of trust in the caregiver as a secure base for meeting the child's basic needs; and 4) to promote the caregiver's ability to support the child's autonomy, while successfully balancing both her own needs, and those of the child (Lieberman & Van Horn, 2009; Toth, Michl, Guild, & Lieberman, in press). To achieve these goals, CPP focuses neither on the caregiver nor the child individually, but on the dyadic relationship between them.

In the present study, CPP was implemented at a research and clinical facility grounded in a Developmental Psychopathology framework. Sessions took place in weekly hour-long sessions over a period of approximately 12 to 18 months. Therapists working within a CPP framework strive to provide caregivers with developmental guidance while also maintaining a non-directive and non-didactic stance. Relevant processes within the caregiver-child relationship are therefore commented upon as they unfold. Interactions within the dyad are viewed as opportunities to explore the caregiver's internal representational world as it relates to her perceptions of and patterns of relating to her child. When necessary, the therapist also serves as a voice for the child, helping to build the caregiver's awareness of the child's efforts to communicate his or her emotions, needs, and fears. Furthermore, modeling of developmentally appropriate behavior occurs through the therapist's interactions with the child, enabling caregivers to begin to internalize more adaptive ways of relating to their offspring. The consistent support of the therapist is ultimately intended to provide caregivers with a corrective emotional experience that fosters more positive representations of the self and of the caregiver-child relationship.

In the current investigation, CPP was initiated following randomization to the CPP group and completion of baseline assessments. The intervention period averaged 58.19 weeks ($SD = 10.00$) in length and ranged from 42 to 79 weeks. Although sessions were scheduled weekly, the mean number of sessions conducted was 45.24 ($SD = 11.16$; range = 30 – 75), owing to cancellations and missed appointments. To ensure fidelity of the intervention, the implementation of CPP was monitored through weekly individual supervision, weekly group supervision and discussions of videotaped therapy sessions, and monthly monitoring of videotaped sessions for each case. Additionally, an adherence checklist was used and any deviations from the intervention standard were immediately addressed with the therapist's supervisor. The intervention was implemented by licensed masters level therapists.

Measures

Diagnostic Interview Schedule, Version III, Revised (DIS-III-R; Robins et al., 1988)—The DIS-III-R is a structured psychiatric interview designed to assess for Axis I disorders in accordance with the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R; American Psychiatric Association, 1987). The interview is organized into modules which probe for symptoms that fall into

different categories of DSM-III-R Axis I disorders. Items are rated on a yes/no basis, and diagnoses are generated by computer algorithms, thereby precluding the need for interrater reliability. The DIS-III-R allows for 49 possible DSM-III-R diagnoses.

Beck Depression Inventory (BDI; Beck et al., 1961)—The BDI is a widely used 21-item self-report measure that assesses for affective, cognitive, motivational, and physiological symptoms of depression. For each item, responders are asked to choose one of four self-evaluative statements that best represents their symptomatology over the past week. Items are rated on a 0 to 3 scale, with 3 indicating the most intense symptom severity. Cutoff scores for different levels of depression severity have been specified (0–9: none or minimal, 10–18: mild to moderate, 19–29: moderate to severe, and 30–63: severe; Beck, Steer, & Garbin, 1988). The BDI has been shown to correlate with psychiatric ratings of depression in both psychiatric and student samples (Beck et al., 1988). Test-retest reliabilities range from .48 to .86 among psychiatric patients and .60 to .83 among non-psychiatric populations (Beck et al., 1988). For the present study, the BDI was used to measure the severity of maternal depressive symptoms at baseline and T2 follow-up. The updated BDI-II (described below) was used to measure depression severity at the T3 final follow-up. Internal consistencies for the present sample were .88 and .89 at T1 and T2, respectively.

Beck Depression Inventory-II (BDI-II; Beck et al., 1996)—In the present study, the BDI-II was utilized to assess and control for maternal depressive symptoms at T3, and also for the purpose of participant retention analyses. The BDI-II is a revision of the original BDI, and was developed in response to the DSM-IV's updated diagnostic criteria for depression. The scale retains the format and structure of the BDI and is also 21 items long. However, items involving changes in body image, hypochondria, and difficulty working were replaced. Furthermore, all but three items in the BDI-II were reworded, and items pertaining to sleep loss and loss of appetite were revised to include both increases and decreases in sleep and appetite. Cutoffs for depression severity were also revised (0–13: minimal, 14–19: mild, 20–28: moderate, 29–63: severe). A meta-analysis of 118 studies that reported psychometric properties of the BDI-II indicated test-retest reliabilities ranging from .73 to .96 across psychiatric, medical, and non-clinical samples (Wang & Gorenstein, 2013). The BDI-II also demonstrates strong convergent validity with other widely used measures of depression and anxiety (Wang & Gorenstein, 2013). T3 internal consistency for the present sample was .90.

Strange Situation procedure (Ainsworth et al., 1978)—The Strange Situation is a paradigm designed to observe attachment relationships between caregiver and child. During the procedure, the child is observed playing in a room, while the caregiver and a strange experimenter enter and leave the room at various intervals. The objective is to observe the child's behavior during separations and reunions with the caregiver as well as the child's response to being in the presence of a stranger. The child's behavioral patterns are then classified into one of four attachment styles: insecure-avoidant (A), secure (B), insecure-resistant (C), or disorganized (D). For the purposes of the present study, attachment types A, C and D were collapsed into a single category representing insecure attachment.

Two trained raters who were unaware of diagnostic status and group assignment coded all videotaped sessions conducted at baseline. Interrater reliability was 90%. Over the course of coding, conferencing occurred for videos that were deemed by either coder to be ambiguous or complex (19% of sessions). The Ainsworth et al., 1978 criteria for attachment types A, B, and C were supplemented by a developmental systems approach for children ages 18 to 24 months (Schneider-Rosen, Braunwald, Carlson, & Cicchetti, 1985). Type D classifications were determined using the Main and Solomon (1990) criteria.

Strange Situations conducted at T2 post-intervention follow-up were coded using the same procedure outlined above. To serve as an additional check on reliability, a third blinded rater who had no previous involvement with the investigation coded 20% of all videos. Coder agreement was 94%. Given that children were 3 years old at T2, the MacArthur Preschool Attachment Classification System (Cassidy & Marvin, 1992) was used to classify attachment styles.

Teacher Checklist of Peer Relationships (TCPR; Coie & Dodge, 1988; Dodge & Coie, 1987; Dodge & Somberg, 1987)—The TCPR is an 18-item teacher-report measure with three subscales. Teachers are instructed to rate their student according to how well they believe the child relates to his or her peers as well as the extent of his or her prosocial behavior. The first two subscales, Peer Relations (6 items) and Aggression (5 items) are rated on a Likert scale ranging from 1–5 (1 = “never true”, 5 = “almost always true”). Sample items include: “Other children like this child and seek him or her out for play” and “This child starts fights with peers”. The third subscale, Teacher’s Assessment of Children’s Social Skills (7 items), is also rated on a 5-point Likert scale (1 = “very poor” and 5 = “very well”). Sample items include “accurately interpreting what a peer is trying to do” and “generating good quality solutions to interpersonal problems”. The TCPR has been shown to be highly correlated with the Child Behavior Checklist ($r = .72$; Dodge & Somberg, 1987). More specifically, the Teacher’s Assessment of Children’s Social Skills subscale has been shown to be associated with sociometric status of boys determined through peer nominations, with popular boys having higher mean scores, and rejected boys having lower mean scores (Coie & Dodge, 1988). In the present sample item 1 (“understanding others’ feelings”) on the Teacher’s Assessment of Children’s Social Skills subscale demonstrated poor reliability (Chronbach’s $\alpha = .16$). This item was therefore dropped from analyses. Internal consistency for the remaining 17 items comprising the full scale was strong (Chronbach’s $\alpha = 0.93$). The three subscales also demonstrated strong internal consistency (Peer Relations $\alpha = .87$; Aggression $\alpha = .91$; Teacher’s Assessment of Social Skills $\alpha = .90$). In the current investigation, each child’s primary teacher completed the TCPR.

Preliminary Analyses

For descriptive purposes, maternal depression severity and demographic characteristics are presented in Table 1. Group contrasts indicated that, maternal demographics across conditions were comparable at baseline.

Analysis of covariance (ANCOVA) controlling for child gender and age at T3 indicated that the main effect of baseline group assignment on T3 peer relations was non-significant; however, a non-trivial effect size was found (CPP vs. DC; $F(1,72) = 1.30$ $p = .26$, $d = .20$; Table 2). ANCOVA was also used to compare T3 peer relationship means relative to post-intervention attachment status (secure vs. insecure) among children in both groups. After controlling for child age and gender, findings indicated that among the children of depressed mothers, regardless of baseline group assignment, those who were securely attached at age 3 had significantly higher teacher ratings of peer relationship quality ($M = 4.09$, $SD = .62$) in middle childhood than those with insecure attachments ($M = 3.79$, $SD = .70$; $F(1,72) = 4.33$, $p = .04$; Table 2).

Tests of Mediation

Our planned analyses focused on children from the CPP and DC groups for whom teachers had completed the TCPR at T3 ($n = 80$). In order to examine the longitudinal association between CPP, attachment security, and peer relations, a path analysis model was utilized within a Structural Equation Modeling (SEM) framework (Kline, 2005). Path analysis allows for the testing of multiple manifest variables within a longitudinal framework, can simultaneously account for multiple outcome variables, and specifies model fit. Baseline group assignment (DC = 0, CPP = 1) and baseline attachment security (0 = insecure, 1 = secure) served as exogenous predictors of post-intervention attachment security, which was also a binary variable (0 = insecure, 1 = secure). In turn, baseline group assignment and post-intervention attachment security were modeled to predict peer relationship quality in middle childhood. Child age at final follow up was controlled for in this model (Figure 1). Child gender and maternal depressive symptoms (as measured by the BDI-II) at T2 and T3 were also modeled as covariates, but were not found to have significant unique effects on the dependent variables, and were therefore dropped from analyses.

Path models were estimated via the weighted least squares mean- and variance-adjusted approach (WLSMV) using Mplus, Version 7 statistical software (Muthén & Muthén, 1998–2012). WLSMV is a robust estimator which does not assume normally distributed variables and is ideal for modeling categorical data. Model fit was assessed using four widely used indices: the chi-square goodness of fit test, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the weighted root mean square residual (WRMR) or the standardized root mean square residual (SRMR). A non-significant χ^2 statistic, RMSEA values less than or equal to .06, CFI values greater than .95, WRMR values less than 1.0, and SRMR values less than or equal to 0.07 were considered indicative of good model fit (Hu & Bentler, 1999; Yu and Muthén, 2002).

Our model evidenced good fit to the data ($\chi^2(2) = .31$, n.s.; RMSEA = .00; CFI = 1.00; WRMR = .17). There was evidence of significant stability in attachment security over time ($b = .43$, $SE = .11$, $p < .001$), and consistent with previous published data using this sample (Toth et al., 2006), group assignment uniquely predicted post-intervention attachment security after controlling for the effects of baseline attachment ($b = .59$, $SE = .10$, $p < .001$). Specifically, toddlers in the CPP group were more likely to demonstrate secure attachment styles at post-intervention follow-up than toddlers in the DC group. As predicted, there was

also a significant effect of post-intervention (age three) attachment security on peer relations in middle childhood ($b = .35$, $SE = .17$, $p = .033$), such that children who were more securely attached at age 3 were rated as having better peer relationships and interpersonal skills in middle childhood than those with insecure attachments (Figure 1). Finally, older children were rated by their teachers as having better peer relations ($b = .38$, $SE = .12$, $p = .001$).

To investigate whether attachment security at T2 significantly mediated the association between CPP and T3 peer relations, the distribution of the product of the coefficients method was employed with 95% asymmetric confidence intervals (RMediation; Tofighi & MacKinnon, 2011). Results indicated that the indirect effect was significant; 95% CI = [.01 – .63].

Discussion

Preliminary analyses indicated that there was a small, though non-significant effect of CPP on age 9 peer relations. Consistent with our hypothesis, CPP for toddlers of depressed mothers promoted attachment reorganization, and post-intervention attachment security significantly mediated the non-trivial association between CPP and peer relationships in middle childhood. These findings support the supposition that by fostering a more adaptive relationship between child and primary caregiver the child is more likely to follow a normative developmental trajectory and avoid the long term negative sequelae associated with parental depression and insecure attachment. Through strengthening and repair of the attachment relationship with a depressed primary caregiver, CPP may be effective for promoting the development of healthy self-system processes (e.g., positive internal working models of self and other), which in turn, may enable children to more successfully navigate the developmental task of relating to peers in a positive manner.

Our findings are consistent with those from previous longitudinal investigations, which have indicated children with histories of insecure attachment to their mother in toddlerhood are less effective at building close friendships (Freitag et al., 1996), exhibit less positivity and popularity with peers, and are more socially anxious (Bohlin et al., 2000) in middle childhood than children with histories of secure attachment. Evidence suggests that attachment in elementary school children is associated with their internal working models of the self and other. For example, children with secure attachments (or secure base attachment scripts) in relation to their parent(s) tend to have higher self-esteem (Clark & Symons, 2009; Psouni, Di Folco, Zavattini, 2015) and also endorse more positive attributions of others (Cassidy et al., 1996; Clark & Symons, 2009). Furthermore, children with implicit knowledge of secure base interactions with caregivers perceive themselves to be more appreciated and accepted by their peers and mothers, and also as more cognitively competent (Psouni et al., 2015).

In contrast, children who have not experienced their parent(s) as a secure base exhibit more negative working models of the self and of others (see Bretherton, 1991; Cicchetti & Toth, 1998; Stams et al., 2002), which impacts subsequent development by increasing the risk that they will later struggle to develop interpersonal skills that promote positive peer

relationships (Edens, Cavell, & Hughes, 1999). In fact, adolescents with insecure attachment representations are less likely to seek and accept support from peers, more likely to worry about interpersonal rejection, and show higher incidences of hostile and negative affect in their interactions with an unfamiliar peer (Feeney, Cassidy, & Ramos-Marcuse, 2008). Compared to adolescents with greater attachment security, adolescents with insecure attachment representations also experience more difficulty with support-giving behavior, evidencing more self-focus and less sensitivity/responsiveness in their discussions with a stranger (Feeney et al., 2008).

Positive relationships with peers are of particular importance for children's socioemotional development. Numerous studies have found that peer rejection or victimization in childhood is associated with internalizing psychopathology. In a recent review, Platt, Kadosh, and Lau (2013) discuss evidence of a bidirectional relationship between peer rejection and depression, whereby each variable leads to increasing levels of the other over time. Additionally, a longitudinal study which followed children from grades two to three, indicated that children rejected by their peers evidenced subsequent decreases in their social self-concept, which in turn predicted future symptoms of depression and anxiety (Spilt, van Lier, Leflot, Onghena, & Colpin, 2014). With respect to peer victimization, findings from a longitudinal investigation of children followed from grades 4 through 12 indicated that low peer sociability was associated with peer victimization, and that highly victimized youth were at greater risk for internalizing psychopathology (Cillessen & Lansu, 2015). In particular, a meta-analytic review found small to medium effect sizes for the relationship between peer victimization and depression, loneliness, and anxiety in children and adolescents (Hawker & Boulton, 2000).

Problematic peer relations have also been associated with externalizing behavior problems in childhood and adolescence (Hoza, Molina, Bukowski, & Sippola, 1995; Laird, Jordan, Dodge, Pettit, & Bates, 2001; Morison & Masten, 1991; Sturaro, van Lier, Pol, Cuijpers, & Koot, 2011; van Lier & Koot, 2010; Woodward & Fergusson, 1999). Evidence suggests that rejected youth may self-select into antisocial peer networks, which then encourage further antisocial behavior as well as friendships with deviant peers (Burt, Obradovi, Long, & Masten, 2008; Coie, Terry, Zakriski, & Lochman, 1995; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Laird, Jordan, Dodge, Pettit, & Bates, 2001). Moreover, externalizing and antisocial behaviors are themselves predictive of peer victimization (Cillessen & Lansu, 2015), leading to a potentially negative cycle in which negative outcomes mutually amplify each other, resulting in increasing levels of maladaptation as a child develops.

In addition to emotional and psychological associations, peer relations have also been linked to academic achievement. Students who are well-accepted by their peers tend to have higher grades (Flook, Repetti, & Ullman, 2005; Ollendick, Weist, Borden, & Greene, 1992; O'Neil, Welsh, Parke, Wang, & Strand, 1997), score higher on achievement tests (Buhs, Ladd, & Herald, 2006; Diehl, Lemerise, Caverly, Ramsay, & Roberts, 1998; Ladd, Kochenderfer, & Coleman, 1997; Kiuru et al., 2013) and are more likely to graduate (Risi, Gerhardstein, & Kistner, 2003) than less-accepted students. Similarly, a longitudinal investigation that followed Italian schoolchildren indicated that prosocial behavior (e.g., helpfulness, sharing, kindness, cooperativeness, and ability to console one's peers) towards peers among third

graders was predictive of greater academic achievement in the eighth grade, even after controlling for initial variances in level of achievement (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000).

In light of the significance of peer relations across multiple developmental domains, interventions that target children at risk for decreased social competence with peers are of paramount importance for facilitating healthy trajectories of socioemotional development. As a result of the impaired caregiving that offspring of depressed mothers receive, they are more vulnerable than offspring of nondepressed mothers to insecure attachment (Wan & Green, 2009) and relational difficulties with peers (Goodman, Brogan, Lynch, & Fielding, 1993; Goodman & Gotlib, 2002; Maughan et al., 2007; Wang & Dix, 2013); however, very few studies have assessed the effects of interventions for maternal depression on long-term child developmental outcomes (Tsivos et al., 2015). Moreover, the majority of interventions for maternal depression target mother and child separately, utilize didactic psychoeducation groups, or simply do not involve the child (Tsivos et al., 2015).

The evidence for interventions that target maternal depression alone has been mixed with respect to child outcomes. The Sequenced Alternatives to Relieve Depression (STAR*D) study followed depressed mothers and their offspring (ages 7 to 17) over three month intervals for a period of one year while mothers received treatment for their depression (Pilowsky et al., 2008). Initially, all mothers were treated with citalopram. Participants who did not respond to the medication, or who were intolerant to citalopram were offered alternative treatments, including other antidepressant medications, Cognitive Behavioral Therapy (CBT), or a combination of treatments. Findings indicated that during the year following treatment initiation, both maternal depression severity and child psychiatric symptoms continued to decrease over time, and reduction in maternal depressive symptoms was significantly associated with reductions in child psychiatric symptoms (Pilowsky et al., 2008).

Two studies evaluating Interpersonal Psychotherapy (IPT) for maternal depression also yielded positive results, demonstrating that the intervention was effective in increasing mothers' positive involvement during interactions with their infants and toddlers (Clark, Tluczek, & Wenzel, 2003; Beeber et al., 2013). In contrast, however, Forman and colleagues (2007) found that, following IPT, treated depressed mothers still rated their children as lower in attachment security, higher in behavior problems, and more negative in temperament than nondepressed mothers. In another study, investigators evaluated the relative efficacies of non-directive counseling, CBT, and psychodynamic therapy, and found that all three treatments led to better infant emotional and behavioral ratings and more sensitive mother-infant interactions in the short-term (Murray, Cooper, Wilson, & Romaniuk, 2003). However, none of the treatments had a significant impact on the security of infant mother attachment, maternal management of early infant behavior problems, infant cognitive development, or any child outcome at five years of age. Although this has not been a comprehensive review of child outcomes following treatment of maternal depression (for a systematic review, see Tsivos et al., 2015), the heterogeneity of findings within the literature suggests that treatment of mothers alone is not always sufficient for preventing psychopathology and maladaptive socioemotional development in offspring. Therefore,

interventions targeting the mother-child relationship are consequently of particular importance for improving child outcomes, and may be provided in conjunction with individual or group therapy for the caregiver.

Apart from CPP, dyadic interventions that have been evaluated for use with depressed mothers and their children have included mother-infant therapy group models (Clark, Tluczek, & Brown, 2008; Jung, Short, Letourneau, & Andrews, 2007), a home-visiting video-feedback intervention (van Doesum et al., 2008), psychoeducational groups (Gladstone, Forbes, Diehl, & Beardslee, 2015), and baby massage (O'Higgins, Roberts, & Clover, 2008; Onozawa, Glover, Adams, Modi, & Kumar, 2001). Among these studies, van Doesum and colleagues (2008) were the only investigators to evaluate the efficacy of their home-visiting intervention on infant attachment security. Findings from a six month follow-up assessment indicated that infants in the intervention group had significantly higher scores for attachment security, as measured by the Attachment Q-set, than those in the control group. However, no significant group differences were found at follow-up with respect to infant internalizing symptoms, externalizing symptoms, or levels of dysregulation (e.g., sleeping and eating difficulties; van Doesum et al., 2008). In another study, O'Higgins and colleagues (2008) examined the effects of infant massage for improving mother-infant interaction quality. They found that at one year post-intervention, mothers in the infant massage condition demonstrated significantly higher sensitivity towards their infants than mothers who had been randomized to an adult support group. These results were confounded, however, by the fact that none of the depressed mothers showed impaired interactions with their infants at baseline.

Findings from the present study also showed that older children were rated by teachers as having better peer relations than younger children. These results are consistent with findings from a recent investigation in which older children evidenced higher average levels of social cooperation and social interaction than their younger peers (Gomes & Pereira, 2014). Similarly, an investigation of Chinese school children demonstrated that older children endorsed higher levels of generalized trust in others, which was associated with higher levels peer acceptance and better friendship quality (Xu, Tang, Jiang, & Ma, 2013). Taken together, these findings support the notion that children acquire more advanced social skills and cognitive beliefs as they develop, both of which may help to strengthen peer relations.

Future Directions

Findings from the present investigation indicate that CPP is particularly promising for preventing long-term peer relational problems in offspring of depressed mothers. Future research is warranted to replicate these findings and to examine the potential effects of CPP on childrens' relationships with parents and teachers as well as their internal representations of self and other. There is also considerable need for additional research comparing the relative longitudinal efficacies of existing relational interventions for this population to determine the extent to which treatment effects are sustained. Given our findings that attachment security mediates the relationship between CPP and peer relations, the assessment of child-parent attachment in future investigations may contribute valuable

knowledge to the existing body of research regarding the mechanisms through which preventive interventions are effective.

Limitations

Although the present investigation has many strengths, there were also a few limitations. Firstly, the sample was restricted to middle-class mothers in an effort to minimize confounding risk factors that might have interfered with observing intervention effects. Other demographic characteristics were also somewhat homogenous, including the fact that the majority of mothers were Caucasian and had graduated from college. Therefore, our findings may not generalize to children and mothers of different racial and ethnic backgrounds, or to those from lower socioeconomic strata. However, previous research has shown CPP to be efficacious in fostering secure attachment in maltreated infants who were predominantly of minority race/ethnicity and low socioeconomic status (Cicchetti et al., 2006). In a sample of multiethnic preschoolers from diverse socioeconomic backgrounds, CPP also significantly reduced the prevalence of behavior problems (Lieberman et al., 2006). Thus, these findings are promising with respect to CPP's potential to improve social functioning in more diverse populations.

A second limitation relates to mothers being free to seek other services for their depression if desired. As it would have been unethical to prevent depressed mothers from obtaining treatment, it is possible that additional services sought and/or use of psychotropic medication may have contributed to children's improved social functioning. However, given that additional services received would have focused on treating maternal depressive symptoms and not on the mother-child relationship, the likelihood of this possibility is diminished. Additionally, contrasts revealed no significant differences between the CPP and DC groups with respect to services sought.

Third, the TCPR was the only measure used to assess the quality of children's peer relationships in middle childhood. Given that study participants were located in schools across multiple districts, it would have been difficult to obtain peer-report data for all participants and many school districts have policies that restrict students from rating peers for research purposes. However, a strength of the TCPR is that it is a teacher-report measure and therefore avoids the biases associated with self- and parent-report measures.

Lastly, in this investigation CPP was compared against a non-intervention control condition rather than another active treatment. As a result, we cannot be certain that our findings are unique to an attachment-theory-informed intervention. However, prior investigations conducted with maltreated children have evaluated the efficacy of CPP against another parenting intervention. Cicchetti and colleagues (2006) evaluated the relative efficacy of CPP versus a psychoeducational parenting intervention (PPI) and found that both were effective at promoting secure attachment in infants. However, a one-year follow-up of the same sample indicated that maltreated children randomized to CPP had higher rates of secure and lower rates of disorganized attachment than children whose parents completed PPI (Stronach et al., 2013). These findings are the first to demonstrate the superiority of CPP over alternative interventions for fostering sustained improvements in attachment security (Stronach et al., 2013). Finally, a similarly designed study with a different sample of

maltreated toddlers found that when compared to a psychoeducational home visiting intervention only CPP was effective at fostering positive representations of the self and caregiver (Toth et al., 2002).

Conclusions

To our knowledge, the present investigation is the longest longitudinal follow-up of a dyadic relational intervention for depressed mothers and their offspring to date. Our findings indicate that CPP fosters the reorganization of attachment security in toddlers of depressed mothers, and post-intervention attachment organization significantly mediates the non-trivial association we observed between CPP and peer outcomes. Given the dearth of research examining the roll of attachment security following the implementation of relationally-based preventive interventions for offspring of depressed mothers, there is considerable need for additional randomized controlled trials to compare the relative efficacies of existing treatment models for promoting secure attachment relationships. The current data provide compelling evidence for the use of CPP to foster adaptive developmental trajectories that are associated with greater relational competence with peers. Attachment appears to be a key factor in this process, supporting the use of interventions guided by attachment theory for targeting the early parent-child relationship in families at risk due to parental depression.

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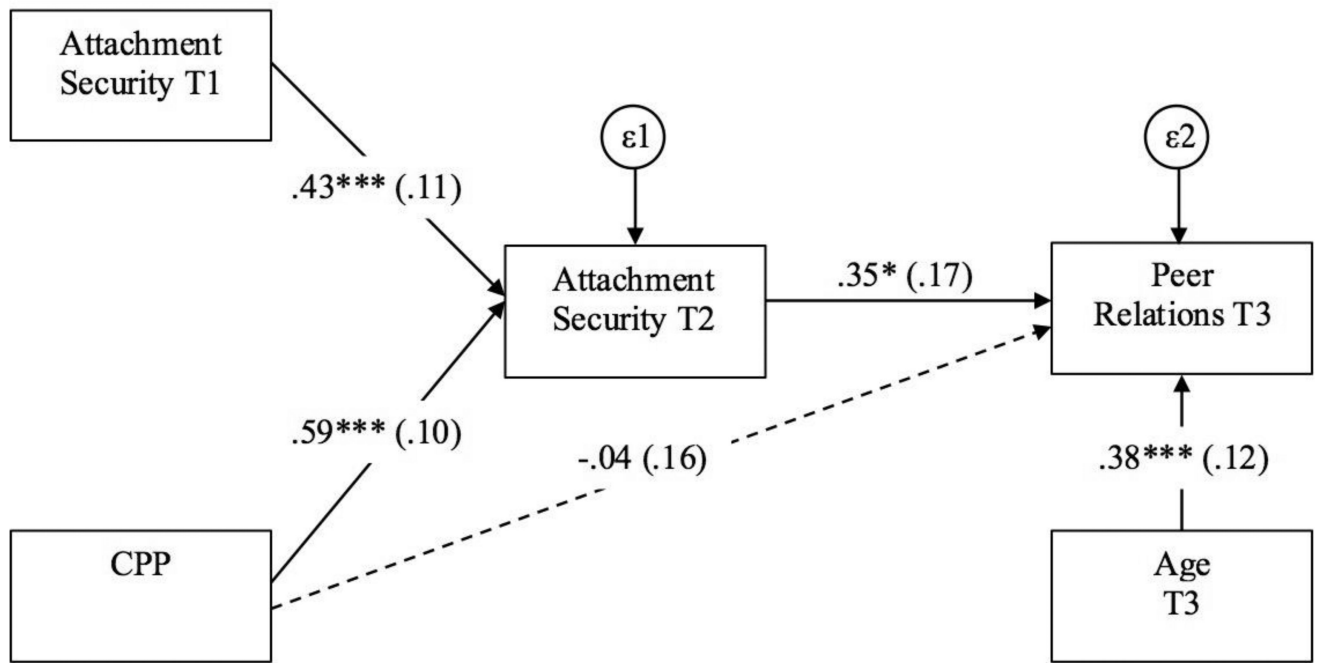


Figure 1. Path model denoting standardized estimates of the direct and indirect pathways for the association between CPP, attachment security, and peer relationships across time. Standard errors are in parentheses. To remain consistent with the WLSMV estimation technique, exogenous variables were left uncorrelated. Dashed pathways are nonsignificant. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 1

Baseline maternal depression severity, demographic characteristics, and group contrasts between the DC and CPP conditions.

	Baseline Group		Group Contrasts				
	DC (n = 64)	CPP (n = 66)	M (SD)	df	t	p	d
Maternal Demographics							
BDI score	16.91 (9.26)	15.44 (9.15)	128	-0.91	.37	.16	
Age	30.66 (4.91)	31.55 (4.87)	128	1.04	.30	.18	
Annual family income	45,727 (11,402)	48,485 (11,224)	128	1.39	.17	.24	
Yrs of education	14.95 (1.79)	15.33 (1.56)	128	1.29	.20	.23	
	n (%)	n (%)	df	χ²	p	Cohen's V	
Race/ethnicity			4	3.92	.42	.17	
<i>White, non-hispanic</i>	56 (87.50)	63 (95.45)					
<i>White, hispanic</i>	1 (1.56)	0 (0)					
<i>Black, non-hispanic</i>	3 (4.69)	2 (3.03)					
<i>Black, hispanic</i>	2 (3.13)	1 (1.52)					
<i>Other</i>	1 (3.13)	0 (0)					
Marital status			3	5.70	.13	.21	
<i>Married</i>	51 (79.69)	56 (84.84)					
<i>Separated</i>	3 (4.69)	5 (7.58)					
<i>Divorced</i>	5 (7.81)	0 (0)					
<i>Never married</i>	5 (7.81)	5 (7.58)					

Group contrasts were performed using t-tests and chi-square significance testing.

Main effects of baseline group assignment on T3 peer relations and of T2 attachment status on T3 peer relations. Child age and gender were included as covariates in both analyses.

Table 2

Child Outcome	Baseline Group		ANCOVA		
	DC (<i>n</i> = 39)	CPP (<i>n</i> = 37)			
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>df</i>	<i>F</i>	<i>p</i>
T3 Peer Relations	3.84 (.74)	3.97 (.61)	72	1.30	.26
					.20 [†]
T2 Attachment					
	Secure (<i>n</i> = 30)	Insecure (<i>n</i> = 46)			
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>df</i>	<i>F</i>	<i>p</i>
T3 Peer Relations	4.09 (.62)	3.79 (.70)	72	4.33	.04*
					.44 ^{††}

* $p < .05$,

[†] small effect size,

^{††} small-medium effect size