

# Couple Relationship Quality & Offspring Attachment Security: A Systematic Review and Meta-analysis

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## Abstract

This paper provides a meta-analytic examination of strength and direction of association between parents' couple relationship quality and early childhood attachment security (5 years and under). A comprehensive search of four EBSCOhost databases, Informit, Web of Science, and grey literature yielded 24 studies meeting eligibility criteria. Heterogeneity of the couple quality construct and measurement was marked. To disaggregate potentially differentially acting factors, we grouped homogeneous studies, creating two predictor variables defined as "positive dyadic adjustment" and "inter-parental conflict". Associations of each construct with offspring attachment security were examined in two separate meta-analyses. Inter-parental conflict was inversely associated (8 studies,  $k=17$ ,  $r=-0.28$ ,  $CI=[-0.39$  to  $-0.18]$ ), and dyadic adjustment was not associated with offspring attachment security (5 studies,  $k=12$ ,  $r=0.14$ ,  $CI=[-0.03$  to  $0.32]$ ). The study supports finer distinctions of couple relationship constructs and measurement in developmental research, assessment, and intervention.

*Keywords:* Attachment; dyadic adjustment; inter-parental conflict; meta-analysis; systematic review

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### **Introduction**

The purpose of this meta-analysis was to examine the extent to which parents' couple relationship quality is associated with attachment security in offspring 5 years and under. The effects of parenting behaviors on child outcomes, particularly on attachment security, are well established (Ainsworth, Bell, & Stayton, 1971; De Wolff & van IJzendoorn, 1997; Lucassen et al., 2011; Pederson, Bailey, Tarabulsky, Bento, & Moran, 2014). However, to date, there has been no systematic review of the literature on the role of couple relationship quality in offspring attachment security. This is surprising given couple relationship quality has significant potential to impact on parental availability to support and organize children's exploration and emotional experiences.

Attachment theory (Ainsworth & Wittig, 1969; Bowlby, 1969) remains a prominent and pivotal explanatory theory in the field of social and emotional development. The formation and maintenance of a secure attachment to their primary caregivers serve the evolutionary and biological purposes of retaining physical and psychological proximity to a caregiver in times of distress or danger, to achieve both felt security and a return to competent exploration. The relative homeostatic balance of both states across early childhood in turn is a key promoter of early cognitive and social development and emotional growth (Cassidy, Jones, & Shaver, 2013; Simpson, Collins, Farrell, & Raby, 2015; Sroufe, 2005), and informing the quality of future affectional bonds (Roisman, Collins, Sroufe, & Egeland, 2005; Simpson, Collins, & Salvatore, 2011; Sroufe, Egeland, Carlson, & Collins, 2005). A series of recent meta-analyses found that early attachment security has modest but enduring significance for later socioemotional adjustment and is more strongly associated with social competence and externalizing problems than internalizing problems (Groh, Fearon, van IJzendoorn, Bakermans-Kranenburg, & Roisman, 2017).

## Couple Relationship Quality & Offspring Attachment Security

Although Bowlby aspired for future research to account for the additive role of couple and family relationships in the formation of attachment security (Byng-Hall, 1991), this literature remains under-developed (Byng-Hall, 1995; Cowan & Cowan, 2009; Davies & Cummings, 1994; Marvin & Stewart, 1990). Belsky (1981), among the first to promote integration of family sociology and developmental psychology in the study of early attachment experiences, proposed a transactional framework between parenting, the couple relationship, and the infant. In this light, transmission of risk can be traced to patterns of inconsistent, unpredictable, or dys-synchronous responses by parents to their infants' affective states (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1973; George & Solomon, 2008; Lyons-Ruth, Alpern, & Repacholi, 1993; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989). In other words, parents who are more sensitive in their parenting and caregiving are more likely to have offspring with secure attachments (Ainsworth et al., 1971; De Wolff & van IJzendoorn, 1997; Lucassen et al., 2011; Pederson et al., 2014; Slade, 2005). Compromises to these caregiving systems are hypothesized to include threats to the couple relationship, such as inter-parental conflict and in more extreme cases, intimate partner violence. For example, parents preoccupied with chronic inter-parental conflict are more likely to manifest reduced reflective functioning (Slade, 2005), impacting caregiving sensitivity. In a recent meta-analysis, Verhage et al. (2016) found caregiving sensitivity could not fully account for the transmission of attachment from parents' own family-of-origin to their offspring's attachment. Findings endorsed a shift in focus onto other factors, including parents' marital relationship, in explaining this transmission gap.

Both theory and evidence around the role of couple relationship quality in infant psychosocial development are under-developed, despite the formative work of early family therapists (Minuchin, 1974; Satir, 1972) in the study of couple transactions and their impacts across the family system. Since then, the influence of the co-parenting relationship and

## Couple Relationship Quality & Offspring Attachment Security

family alliance on young children's development has been a central focus (Cowan & McHale, 1996; Favez, Frascarolo, Carneiro, Montfort, Corboz-Warnery, & Fivaz-Depeursinge, 2006; Favez et al., 2012; McHale, Lauretti, Talbot, & Pouquette, 2002). Theories of emotional security (Cummings & Davies, 2010; Davies & Cummings, 1994) have also developed, proposing that threats to parents' emotional security may arise from the couple relationship and in turn disrupt the parent-child relationship. The Family Stress Model (Conger, Conger, Martin 2010; Conger & Elder, 1994; Conger, McLoyd, Wallace, Sun, Simons, & Brody, 2002) underscores the interaction of the couple relationship with socio-economic stress and harsh, inconsistent parenting practices in influencing later offspring competencies and problems. Most populous are studies of inter-parental conflict and family violence, supporting cascading threats from the couple relationship to the parent-child relationship and to children's emotional insecurity (e.g. Davies et al., 2002), internalizing and externalizing behaviors (e.g. Ablow, Measelle, Cowan & Cowan, 2009; Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006; Grych et al., 2000) and a range of subsequent developmental outcomes (see Cox, Paley, & Harter, 2001 and Emery, 1999, for reviews). A recent meta-analysis by Vu, Jouriles, McDonald, and Rosenfield (2016) established longitudinal prospective associations between children's exposure to intimate partner violence and the presence of childhood adjustment problems. Their findings also emphasized the vulnerability of the early years, where exposure to intimate partner violence at younger ages resulted in a larger association with child externalizing problems.

Spill over of negative affect engendered by marital stress has been linked to harsher parenting responses, and in turn to de-stabilized attachment security (Engfer, 1988; Erel & Burman, 1995; Floyd, Gilliom, & Costigan, 1998), and increased risk for externalizing symptoms, bullying and cruelty to others in adolescence (Gerard, Krishnakumar, & Buehler, 2006). Early meta-analytic findings (Erel & Burman, 1995) found pervasive and destructive

## Couple Relationship Quality & Offspring Attachment Security

effects of marital discord in the family system on child development, insufficiently buffered by a positive parent-child relationship. Pre-occupation with the couple relationship has likewise been associated with parents' diminished "cognitive room" for their children (Katz & Gottman, 1995, p.74), mental withdrawal, and blunted awareness and diminished responsiveness to children's needs (Engfer, 1988).

Other mechanisms of impact proposed by family systems theory include a circular relationship between the child who attempts to intervene in inter-parental conflict, resulting in scapegoating, detouring, triangulation, and weakened boundaries between the marital and parent-child subsystems (Fauber, Forehand, Thomas, & Wierson, 1990; Minuchin, 1974; Minuchin, Rosman, & Baker, 1978; Vogel & Bell, 1960). Relative to children who distance themselves from inter-parental conflict, children who intervene have been found to have poorer mental health outcomes (Cummings & Davies, 2002; Mueller, Jouriles, McDonald, & Rosenfield, 2014).

Theory remains ahead of empirical evidence in understanding of associations between couple relationship qualities (e.g. marital satisfaction, dyadic adjustment) and offspring development, particularly that with respect to attachment in the early years. Emphasis to date has been on behavioral and social outcomes, rather than any formative influences on attachment in the early years (Cowan, Cowan, & Mehta, 2009; Goldberg & Carlson, 2014; Zemp, Bodenmann, Backes, Sutter-Stickel, & Revenson, 2016). As the first meta-analytic work of this kind, the current study aimed to cast a wide net on studies of couple relationship qualities, broadly defined, with an outcome in offspring attachment, exploring the nature and magnitude of effects evident within the available data, taking into account sample sizes and other covariates.

Meta-analytic progress to date in this area has been confounded by a number of factors. The multi-dimensionality within the construct of couple relationship quality is

## Couple Relationship Quality & Offspring Attachment Security

significant and has hampered meaningful cluster reviews of the evidence for transmission of couple relationship quality to child outcomes (Bradbury, Fincham, & Beach, 2000). At minimum, couple relationship quality can be dichotomized along destructive and constructive lines. The former is inclusive of subjective experiences of frustration, anger, tension or apprehension, with clear behavioral markers in disagreement rates, frequency and intensity of inter-parental conflict, and acute or chronic intimate partner violence. Measures of couple conflict include *Conflict and Problem-Solving Scales* (Kerig, 1996), *Revised Conflict Tactics Scale 2* (Straus, Hamby, Boney-McCoy, & Sugarman, 1996), the *Marital Conflict* subscale of Braiker & Kelley's (1979) four-factor index, and other observational coding systems developed by researchers (e.g. Frosch, Mangelsdorf, & McHale, 2000; Howes & Markman, 1989). More constructive feelings of accord, harmony, support, mutual confidence, and marital satisfaction have traditionally been harder to mark at the behavioral level. Measures of constructive aspects of the couple relationship range from validated, reliable, and well-replicated self-report scales, such as the *Dyadic Adjustment Scale* (DAS: Spanier, 1976) and *Short Marital Adjustment Test* (SMAT: Locke & Wallace, 1959), to observational coding systems employed by independent researchers (e.g. Frosch & Mangelsdorf, 2001; Olson & Ryder, 1970).

Although not mutually exclusive, destructive and constructive aspects of couple relationship quality (e.g. inter-parental conflict and dyadic adjustment respectively) are conceptually distinct. Factors leading to couple distress are not simply the inverse of factors leading to a satisfying relationship (Fincham, Beach, & Kemp-Fincham, 1997). Dimensions of marital satisfaction and dissatisfaction “have different correlates, and account for unique variance in reported marital behaviors and attributions” (Bradbury et al., 2000, p.974). Pertinent to the current study is the extent to which these factors within the couple relationship context have differential impacts for offspring attachment security.

## Couple Relationship Quality & Offspring Attachment Security

Continuity of couple relationship experiences may also be an important factor for developmental research. Although there is extensive literature on the experience of the couple relationship from pregnancy to the postnatal period (e.g. Belsky & Rovine, 1990; Cowan & Cowan, 2000; Doss & Rhoades, 2017; Lawrence, Rothman, Cobb, & Bradbury, 2010; Twenge, Campbell, & Foster, 2003), little research explores continuity in the preconception window, despite cohort findings suggesting significant longitudinal pathways. Using the National Longitudinal Study of Adolescent Health, Valle and Tillman (2014) found adolescent romantic relationship experiences continued to have long-term effects on relationship trajectories. In a high-risk sample from the Minnesota Longitudinal Study of Parents and Children, adolescent dating experience remained a significant predictor of couple relationship quality in young adulthood after accounting for earlier relational experiences with parents and peers (Madsen & Collins, 2011). As such, the progression of couple relationship experiences in the approach to parenthood may be relevant to understanding the contemporaneous impacts of couple relationship quality.

The primary purpose of this meta-analytic review was to examine the associations between couple relationship quality and offspring attachment security in the infancy to pre-school years, in order to contribute to the conceptualization of family based early risk factors and their measurement, in turn possibly suggesting core screening and intervention targets in the promotion of early attachment security. The aims of this study were twofold. The first was to broadly survey all empirical studies on couple relationship quality, in the preconception, antenatal, and postnatal periods, with an outcome in offspring attachment security. The second was to examine heterogeneity of exposure and outcome measurement, and conduct meta-analytic examination of meaningfully clustered studies, to explore the nature and magnitude of effects evident within the available data, taking into account timing, sample sizes, and related covariates. We approached the review with an exploratory purpose

## Couple Relationship Quality & Offspring Attachment Security

but anticipated the need for a dichotomized treatment of couple quality, expecting constructive couple relationship qualities (e.g. dyadic adjustment) to be positively associated with offspring attachment security, and destructive couple relationship qualities (e.g. inter-parental conflict) to be inversely associated.

### **Method**

A systematic literature search following PRISMA guidelines was completed in April 2017 with the aim of examining the extent to which parents' couple relationship quality at three time periods – preconception, antenatal, and postnatal – may influence offspring attachment security in early childhood (5 years and under).

### ***Eligibility criteria***

Studies were included if they assessed parents' couple relationship quality (preconception, antenatal, or postnatal), assessed offspring attachment security at 5 years and under using observational measures of attachment, used a non-clinical sample (excluding family violence and abuse samples), or had a representative non-clinical comparison sample. The literature search was restricted to published and unpublished empirical studies in English.

### ***Literature search and information sources***

Parallel literature searches were conducted in four EBSCOhost databases (PsycINFO, Medline, CINAHL, Social Work Abstracts), Informit, and Web of Science. These databases were selected for their quality and depth of coverage of social science literature (Taylor, Wylie, Dempster, & Donnelly, 2007). Search terms selected through team collaboration encompassed three major concepts: (1) couple relationships (couple\*, boyfriend, dating, defacto or de-facto, family, girlfriend, husband\*, intimate partner, long term relationship,

## Couple Relationship Quality & Offspring Attachment Security

marital, marri\*, monogam\*, relationship quality, relationship satisfaction, romance, romant\*, sexual partners, spous\*, wife, wives), (2) intergenerational (intergenerational or inter-generational, transgenerational or trans-generational), and (3) attachment.

A search for grey literature was designed in conjunction with a university library specialist and conducted in Google (i.e. the first 10 pages of results were reviewed), and ProQuest for dissertations and theses only. In addition, key articles were cross-checked in Web of Science and GoogleScholar, using publications identified in initial reading. See Appendix A for the list of key articles.

### *Study selection*

The initial search from the EBSCOhost databases yielded 563 studies, with 165 grey literature papers and 501 additional records identified through key article cross-checking. This resulted in a total of 1063 articles after the removal of duplicate records. See Figure 1 for a PRISMA diagram outlining the identification, screening, eligibility, and inclusion process of the reviewed literature.

<INSERT FIGURE 1 ABOUT HERE>

The first author completed title and abstract screening of all articles, and a second independent researcher completed title and abstract screening for 10% of the full sample (98.10% agreement, kappa=0.70, SE=0.14). As a result, 1024 articles did not meet the inclusion criteria. Of the remaining 39 articles, all full texts were assessed again by the first and fourth authors with 89.74% agreement for inclusion (kappa=0.79, SE=0.10).

Disagreement was resolved by conferencing.

Studies that (a) did not assess couple relationship quality or offspring attachment security, (b) did not clearly specify a time period for couple relationship quality measurement matching those considered in this review, (c) did not have data available despite authors

being contacted, or (d) did not utilize observational measures of attachment assessment were excluded, resulting in 24 studies. Given the lack of applicable risk of bias assessment tools for observational studies in this field, an assessment of the 24 resultant studies was not undertaken. However, study characteristics and potential risks of bias are discussed in the reporting of results.

### ***Data collection process***

Data were extracted from the included papers by the first and fourth authors (see Tables 1 & 2). Studies identified through this systematic review were predominantly from North America, with one study each from Japan and Canada. Twenty of the 24 studies (83.3%) had sample sizes under 150. Both longitudinal and cross-sectional study designs were utilized.

<INSERT TABLES 1 AND 2 ABOUT HERE>

Of the 24 studies, 23 examined parents' couple relationship quality in the postnatal period, 4 in the antenatal period, and 1 in the preconception period. Twelve studies reported on the influence of couple relationship quality on child's attachment security with father, and 22 on child's attachment security with mother. Studies may assess couple relationship quality at various time points, and attachment security with both father and mother, resulting in a total of more than 24 observations. As shown in Table 2, the majority of outcomes in attachment security were reported based on observations from the *Strange Situation Procedure* (Ainsworth & Wittig, 1969) using the infant attachment system (Ainsworth et al., 1978), the *Preschool Attachment Classification System* (Cassidy & Marvin, 1992), or the *Preschool Attachment Assessment* (Crittenden, 1992). The remaining studies assessed attachment security using the *Attachment Q-Sort* (AQS: Waters & Deane, 1985) and included both observer and parent-rated versions.

*Meta-analytic procedures*

Meta-analyses are rightly restricted to studies of adequate conceptual homogeneity. In the 24 included studies, couple relationship quality was variously operationalized (e.g. dyadic adjustment, inter-parental conflict, partner support). To deal with this heterogeneity, meta-analyses reported in this review were divided and restricted to dyadic adjustment and inter-parental conflict, each in relation to offspring attachment security. Twelve studies reported on other measures of couple quality and were synthesized in a narrative review (see Appendix B).

The Metafor package in R (Viechtbauer, 2010) was used for meta-analysis. Because studies varied in the effect size metric reported, all effects were converted to  $r$  values to allow cross study comparison using an interpretable metric with good statistical properties (Rosenthal & DiMatteo, 2001). Effect sizes and relevant demographics were extracted from each paper and tabulated in R. In longitudinal studies with various timepoints, effect sizes for each timepoint were treated separately. A multilevel modeling approach was utilized to obtain estimates of average effect sizes across all studies while controlling for the non-independence of multiple estimates within the same study (Hox, 2010). Effect sizes were weighted by sample size. Within this multilevel modeling framework, random-effects modeling was undertaken to assess the extent to which effect sizes were heterogeneous across papers. Cochran's  $Q$  statistic reflects the total amount of variance in the meta-analysis and is sensitive to the number of associations considered. A statistically significant  $Q$ -statistic indicates substantial heterogeneity. Duval and Tweedie's (2000) trim-and-fill method was used to estimate potential publication bias. Intra-class correlations (ICCs) greater than 0.25 were followed up with meta-regression analyses that examined various moderated effects independently due to the small number of studies included in each meta-analysis. These separate analyses examined the following predictors for both meta-analyses: attachment

## Couple Relationship Quality & Offspring Attachment Security

measure, child's age at which couple relationship was assessed, and child's age at which attachment was assessed. Specific to the meta-analysis on dyadic adjustment, gender of parent involved was also examined. Specific to the meta-analysis on inter-parental conflict, these additional predictors were examined separately: gender of target parent or dyad in assessment of conflict, reporter of conflict, measurement of conflict, and at-risk characteristics of sample. See Table 3 for information on how variables were coded.

<INSERT TABLE 3 ABOUT HERE>

### Results

#### *Association between dyadic adjustment & offspring attachment security*

The aim of the first meta-analysis was to examine the association between dyadic adjustment and offspring attachment security, and included studies that assessed dyadic adjustment using the DAS (Spanier, 1976) or SMAT (Locke & Wallace, 1959). Spanier and Cole (1976, pp.127-128) defined dyadic adjustment as “a process, the outcome of which is determined by the degree of troublesome marital differences, interspousal tensions and personal anxiety, marital satisfaction, dyadic cohesion, and consensus on matters of importance to marital functioning.” Measures of dyadic adjustment (e.g. DAS, SMAT) as a result assess dyadic consensus, satisfaction, cohesion, affectional expression, and the management of interpersonal tension. They are not intended as measures of conflict. The *DAS* and the *SMAT* have been validated against the other, and scale reliability has been repeatedly demonstrated. Ten studies met selection criteria for this meta-analysis, although adequate data were only available for five studies. For these five studies, direct associations between dyadic adjustment and attachment security were not reported or provided on request or confounded dyadic adjustment with a variety of other family variables. Remaining papers which did not meet criteria for meta-analysis are narratively synthesized in Appendix B.

## Couple Relationship Quality & Offspring Attachment Security

Multilevel random effects meta-analysis was conducted on five studies reporting the association between dyadic adjustment and attachment security. A total of 12 effects were included in the model, clustered by study. Dyadic adjustment was not associated with offspring attachment security,  $r = 0.14$  (CI: -0.03 to 0.32),  $SE = 0.09$ ,  $p = 0.11$ ,  $ICC = 0.29$ . A graphical display of the result is shown as a forest plot in Figure 2. The Duval and Tweedie procedure did not indicate publication bias (see Figure 3). The Q statistic was statistically significant,  $k = 12$ ,  $Q(11) = 30.10$ ,  $p = 0.002$ , suggesting heterogeneity.

<INSERT FIGURES 2 AND 3 ABOUT HERE>

Potential moderators were examined in the association between dyadic adjustment and offspring attachment security. Separate meta-regression analyses were conducted with four variables independently (see Table 4). None of the moderator analyses except “attachment measure used” were significant. Interpretation of these results must bear in mind the limitations of the small number of studies available for these analyses.

<INSERT TABLE 4 ABOUT HERE>

The only significant moderator was “attachment measure.” Studies utilizing parent-rated *AQS* as an attachment measure ( $k = 5$ ,  $r = 0.39$ ,  $p < 0.001$ ,  $CI = [0.24 \text{ to } 0.54]$ ) were more likely to have a larger effect size than studies utilizing the *SSP* and observer-rated *AQS* ( $k = 7$ ,  $r = 0.02$ ,  $p = 0.58$ ,  $CI = [-0.05 \text{ to } 0.09]$ ). This discrepancy might reflect findings from a meta-analysis by van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Risken-Walraven (2004), reporting on the convergent validity between observer-rated *AQS* and *SSP*, but not parent-rated *AQS*. The current discrepancy in effect sizes lends support to the meta-analytic finding that the parent-rated and observer-rated *AQS* are measuring different constructs.

### ***Association between inter-parental conflict & offspring attachment security***

The aim of the second meta-analysis was to examine the association between inter-parental

## Couple Relationship Quality & Offspring Attachment Security

conflict and offspring attachment security. Inter-parental conflict is a well-researched, conceptually coherent aspect of couple relationship quality, referring to both overt and covert conflict between partners. A subset of studies ( $n=8$ ) from this review examined the association between inter-parental conflict and offspring attachment security. Measurement of inter-parental conflict was varied, ranging from parent self-report to independent observer coding, and this was accounted for in the meta-analysis.

A multilevel random effects meta-analysis was conducted on all eight studies reporting the association between inter-parental conflict and attachment security. A total of 17 effects were included in the model, clustered by study. Inter-parental conflict was inversely associated with attachment security,  $r = -0.28$  (CI: -0.39 to -0.18),  $SE = 0.05$ ,  $p < 0.0001$ ,  $ICC = 0.30$ . A graphical display of the result is shown as a forest plot in Figure 4. The Duval and Tweedie procedure did not indicate publication bias (see Figure 5). Test of heterogeneity was significant ( $Q = 30.82$ ,  $df = 16$ ,  $p = 0.01$ ), suggesting considerable heterogeneity among the true effects.

<INSERT FIGURES 4 AND 5 ABOUT HERE>

Potential moderators in the association between inter-parental conflict and offspring attachment security were examined in the next set of analyses. Separate meta-regression analyses were conducted with seven variables (see Table 5). None of the moderators tested were significant.

<INSERT TABLE 5 ABOUT HERE>

### **Discussion**

The purpose of this systematic review was to examine the meta-analytic evidence for associations between parents' couple relationship quality and attachment security in offspring 5 years and under. Through the review of 24 identified studies, heterogeneity of both

## Couple Relationship Quality & Offspring Attachment Security

operationalization and measurement of couple relationship quality became apparent.

Disaggregation of two subsets of studies was possible based on two clear constructs: dyadic adjustment and inter-parental conflict. Separate meta-analyses on each showed that dyadic adjustment was not associated with offspring attachment security and that inter-parental conflict had a small inverse association with offspring attachment security. The differential findings of these two constructs further underscore the need to disaggregate couple relationship constructs in future research. Two caveats should be made about these findings at the outset. First, these findings report on statistical associations and are by no means causative. Second, while the findings suggest that screening and assessment of inter-parental conflict are important in identifying risk of attachment insecurity in early childhood, other factors and pathways may also be at play here. In particular, the effects are uncorrected for the influence of relevant third variables, such as caregiving sensitivity.

### *Dyadic adjustment and offspring attachment*

At first glance, the lack of association between positive dyadic adjustment (assessed with the DAS or SMAT) and offspring attachment security appears somewhat contrary to family systems theory and related hypotheses. Both theoretical and measurement explanation are worth considering. Dyadic adjustment is a broad construct defined around parents' subjective experience of the "ambient" couple relationship, degree of consensus, cohesion and affectional expression between partners, and to a smaller extent, the successful management of interpersonal tension (Spanier & Cole, 1976). Our findings suggest at a theoretical level that dyadic adjustment, thus defined, may not be a sufficiently robust exposure in the ecology of offspring attachment development. At a measurement level, lack of specificity may also be at play, and independent analysis of the *DAS* and *SMAT* subscales (e.g. dyadic consensus, dyadic satisfaction, affectional expression) may prove more informative and reveal some

## Couple Relationship Quality & Offspring Attachment Security

relationship with offspring attachment. Furthermore, aspects of a couples' lived partnership experience may not be witnessed by others, particularly by their child, therefore mitigating the potential benefits of high dyadic adjustment to offspring attachment security. On the other hand, overt inter-parental conflict is manifest to those nearby, and for very young children, likely to have a stronger negative influence on confidence in their secure base.

Beyond measurement refinements, theory would also suggest several additive and interactive effects remain important to explore. For example, the interaction between low quality and high conflict couple environments may provide more traction in the study of offspring outcomes. Following transmission hypotheses from couple relationship problems to diminished care-giving sensitivity (George & Solomon, 2008), this meta-analytic finding may only suggest poor dyadic adjustment is an insufficient pathogen for the parents' caregiving system in the absence of other risk factors. Conversely, couple quality may have a protective role in the presence of certain risks. For example, Eiden, Teti & Corns (1995) found high dyadic adjustment was only positively correlated with child-mother attachment security when mothers had an insecure working model. Findings from four of the narratively synthesized studies with a focus on dyadic adjustment, however, presented mixed evidence on interactional effects of dyadic adjustment with family variables in relation to offspring attachment security (Braungart-Rieker, Courtney, & Garwood, 1999; Dickstein, Seifer, & Albus, 2009; Shaw & Vondra, 1993; Speltz, Endriga, Fisher, & Mason, 1997). Further research is required to understand the complex relationships between dyadic adjustment, other family functioning variables, and the development of offspring attachment security in the early years.

Of note, type of attachment measure was a significant moderator in the first meta-analysis. Dyadic adjustment was positively associated with attachment when assessed using the parent-rated *AQS*, but not the observer-rated *AQS* or the *SSP*. This finding suggests that

parents with a more positive state of mind regarding their spousal relationship may also be more optimistic about their relationship with their child. The finding likely reflects a common method variance effect, where information on both variables is collected from the same source (i.e. parent), who is also party to both relationships in question resulting in an inflated estimate of the association between dyadic adjustment and parent-rated attachment. A meta-analysis by van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Risken-Walraven (2004) found validity of the observer-rated AQS against the *SSP*, but not the parent-rated AQS, suggesting that the parent-rated version is not an adequate assessment of attachment. The findings from this study support the view that the parent-rated AQS may be more suitable as a subjective report of the parent-child relationship.

### ***Inter-parental conflict and offspring attachment***

The second meta-analysis confirmed an inverse but weak association of inter-parental conflict with offspring attachment security, independent of the diversity of conflict measurement methods. While this effect size ( $r = 0.28$ ) is among the larger associations between parental variables and child developmental outcomes reported to date (e.g. Verhage et al., 2016; Vu et al., 2016), it remains small to modest. Where inter-parental conflict has been established as a driver of compromised social developmental outcomes for children (Davies & Cummings, 1994; Fincham & Grych, 2001; Madigan, Brumariu, Villani, Atkinson, & Lyons-Ruth, 2016), associations with attachment security per se are under-explored. A number of explanations for both the significance and the modesty of the effect size are possible.

Dominant explanations for the association of inter-parental conflict with offspring attachment security implicate the parent's ability to function consistently as a secure base and safe haven. From an assumed direct spill over of negative affect from couple conflict to harsh

## Couple Relationship Quality & Offspring Attachment Security

behaviors, reduced caregiving sensitivity (Ainsworth et al., 1978; Bowlby, 1973; George & Solomon, 2008; Lyons-Ruth et al., 1993; Renken et al., 1989), and dampened parental reflective functioning (Slade, 2005), chronic conflict in the couple dyad is likely to foster the need for offspring to deploy secondary strategies associated with insecure attachment patterns in the early years. In more extreme cases of conflict (e.g. intimate partner violence), reflective systems may be immobilized, resulting in parents behaving in frightening or frightened ways toward or in the presence of their young children. Although initially proposed to reflect unresolved trauma related to attachment figures from the family of origin, frightening or frightened representations in either or both parents are likely to interact at a third level, within the couple attachment, during and in anticipation of conflict. The resulting behaviors in turn likely create for the young child a threatening paradox, “wherein the haven of safety is at once the source of the alarm” (Main & Hesse, 1990, p.180). Within this interpersonal context, it is of little surprise that offspring generic adjustment problems have longitudinal associations with exposure to intimate partner violence (Vu et al., 2016). Our findings suggest that even non-violent inter-parental conflict creates small but significant additional risk for offspring attachment status. What remains unknown is the frequency and chronicity of inter-parental conflict that would tip the development of offspring attachment over into insecure territory.

Study characteristics may have limited the strength of the association. Half of the eight studies reported attrition rates of more than 30%, suggesting possible self-selection bias of participants with lower levels of inter-parental conflict. Schulz & Grimes (2002) suggested that an attrition rate of greater than 20% potentially poses serious threats to validity. Further, the range of conflict measurement methods utilized, from observational methods of laboratory-based conflictual scenarios to validated self-report questionnaires, and the nature of inter-parental conflict assessed varied. Most studies enquired about everyday conflict (e.g.

## Couple Relationship Quality & Offspring Attachment Security

arguments about finances and parenting), with only two studies asking participants to report on the frequency and intensity of major disagreements, and the presence of violence. Such measurement breadth may dilute associations with offspring attachment security. Normative levels of inter-parental conflict demonstrate a weak to moderate inverse signal with offspring attachment security, where higher levels of conflict, merging into violence, may have a larger association. Prior studies support specification within measurement of inter-parental conflict by type (e.g. constructive vs. destructive, low intensity vs. high intensity), frequency, and the extent of resolution (Cummings, Goeke-Morey, Papp, & Dukewich, 2002; Grych, Seid, & Fincham, 1992). Such refinements are likely to be important to developmental research.

As with previous meta-analyses that find stronger associations between parent variables (e.g. maternal mental health, adult attachment models) and offspring attachment in clinical samples than in community samples (Atkinson et al., 2000; Verhage et al., 2016), the weak association identified here may reflect the predominance of low-risk community samples in the studies analyzed. In non-clinical populations, the caregiving environment may buffer the child from negativity in the couple relationship. Equally, low level and adequately resolved inter-parental conflict enhances conflict management and resolution skills in children, allowing for better communication and social outcomes (Cummings et al., 2002; McCoy, Cummings, & Davies, 2009; Moore, 2009). However, in clinical populations, compromised caregiving environments may not provide an adequate barrier to the spill over of negative influences from other areas of the family system, particularly when patterns of inter-parental conflict represent ongoing insecurities in parents' internal working models. Further examination of interactive processes between the romantic system, caregiving system, and parents' internal working models, as proposed by Cowan et al. (2009) and George (2009), is required to improve understanding of the impacts on the next generation.

Future research would also benefit from exploring the unique variance explained by timing, chronicity, and magnitude of conflict exposures.

### *Limitations and recommendations for future research*

Despite widespread review and editorial focus on the importance of the couple relationship to offspring attachment security (Cowan & Cowan, 2009; McIntosh, 2011; Verhage et al., 2016), a surprisingly small number of empirical papers was identified for this review. Nonetheless, methodological care with piloting of the search strategy, key article cross-checking and grey literature searching allows confidence that relevant research was substantively included, and conclusions arising from the review are valid. Factors limiting our findings include the narrow sampling band of reported results. All but four of the selected studies took place in North America with predominantly Caucasian samples. Sample sizes were relatively small and generally non-representative. More studies are required to improve our understanding around the complex transmission pathways between the couple relationship and offspring attachment security. Potential additive or multiplicative effects between the two domains of dyadic adjustment and inter-parental conflict should also be considered.

Based on limitations encountered in the process of this review, a number of issues need to be considered for future research in this field. Measurement targets and methods varied considerably in the 24 studies reviewed, from self-report questionnaires to observational coding systems. Self-report couple data are often subject to social desirability biases due to the goal of favorable self-presentation in significant interpersonal relationships (Sabourin, Valois, & Lussier, 2005). Observational assessments by an objective researcher in turn suffer for their inability to capture the subjective lens through which relationship-based responses are shaped. Content focus was also varied. To date, such content and procedural

variability has diluted rather than enabled focus on operant factors within couple relationships most relevant to the study of offspring emotional health. Given the differential effects that each aspect of couple relationship quality has on offspring attachment security, more nuanced and consistent measurement of each construct is required.

The included studies had a primary focus on couple relationship quality in the postnatal period, and at a single time point, limiting generalizability of findings to other periods in the life course. A dearth of longitudinal studies is a clear gap in the literature, given established evidence for intergenerational and longitudinal transmission of couple relationship experiences, encompassing both constructive and destructive aspects of relationship functioning (e.g. Amato & Booth, 2001; Ehrensaft, Knous-Westfall, & Cohen, 2011; Kouros, Cummings, & Davies, 2010; Madigan et al., 2016; Madsen & Collins, 2011; Meier & Allen, 2009; Valle & Tillman, 2014). The accumulation of couple relationship experiences over the life course, including the influence of the previous generation, may provide another productive avenue for the study of transmission of risk to offspring, particularly attachment security.

Similarly, dyadic adjustment was originally defined as a process over time (Spanier & Cole, 1976), and more recently, researchers have called for its measurement as a trajectory that reflects temporal fluctuations in couple evaluations rather than a judgment made by spouses at a single time point (Bradbury et al., 2000). Other researchers have also recommended taking into account the measurement of the frequency and chronicity of interparental conflict (Cummings et al., 2002; Grych et al., 1992). A trajectory-driven operationalization of these variables might reveal latent relationships not evident in the current group of studies.

Finally, a majority of studies in this review did not account for potential child gender differences. Given established differences between gendered parent-child dyads in family

research (Caldera & Lindsey, 2006; Davies & Lindsay, 2001; Kerig, Cowan, & Cowan, 1993) and potentially differential impact of couple relationship quality for daughter-parent attachments (Brock & Kochanska, 2016; Goldberg & Easterbrooks, 1984), this is a limitation. Future studies should take this into account and analyze accordingly.

### ***Conclusion and clinical implications***

This systematic review has examined factors in couple relationship quality associated with attachment security in offspring. Although weak, the findings provide evidence of the inverse association between inter-parental conflict and offspring attachment security. In light of accrued clinical and theoretical wisdom regarding detrimental impacts of inter-parental conflict on offspring attachment security, the finding is in the expected direction. In contrast, there was no association with positive dyadic adjustment, which may be the case, or may be suggestive of the need for sharper conceptual and measurement focus on constructive aspects of the couple relationship and their transmission to offspring attachment. Indeed, this review has revealed a significant gap in research regarding effects of the couple relationship on offspring attachment security, and given support to extension of this field.

While meta-analytic evidence for prediction and remediation pathways remains some way off, these findings suggest that inter-parental conflict may be an important inclusion in general population screening of risk for offspring attachment. Developmental benefits to offspring of parent interventions may be enhanced by an increased focus on conflict resolution and management in the inter-parental relationship. While programs that enable parents to better understand the deep developmental ramifications of inter-parental conflict are progressing in the family law arena (e.g. McIntosh & Tan, 2017), community wide strategies to promote earliest prevention are needed. For the optimal support of clinical responses through to public health interventions, continuing to grow the evidence on the

influence of the couple relationship for lifecourse attachment outcomes will be an important future contribution.

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**List of tables**

Table 1. Study characteristics.

No. Author (Year), Country	Sample and recruitment	Study design	n available for analysis/Initial N	% attrition	Method for dealing with missing data
1. Belsky (1996), USA	Representative sample of a larger study with residents of central Pennsylvania, recruited through birth announcements.	L	126/ns	ns	Unclear
2. Bernier & Matte- Gagné (2011), Canada	Representative sample of families from a large metropolitan area recruited through random birth lists from the Ministry of Health & Social Services	L	181/181	ns	Unclear
3. Braungart-Rieker, Courtney, & Garwood (1999), USA	Non-representative subset of families from a larger study recruited through birth announcements (older, more educated and financially secure than original sample).	L	77/105	26.70%	Complete data used

Couple Relationship Quality & Offspring Attachment Security

No. Author (Year), Country	Sample and recruitment	Study design	n available for analysis/Initial N	% attrition	Method for dealing with missing data
4. Brock & Kochanska (2016), USA	Two-parent families from a range of towns and cities in the US Midwest with normally developing infants; sampling method not stated.	L	62/100	38.00%	Complete data used
5. Cassé, Oosterman, & Schuengel (2016)	Normative and at-risk subsamples from Generation <sup>2</sup> cohort study in Amsterdam, Netherlands	C	260/260	NA	-
6. Dickstein, Seifer, & Albus (2009), USA	Representative sample from the Family Relationships Study of mother-child dyads in Providence, Rhode Island.	L	89/110	19.10%	Complete data used
7. Durrett, Otaki, & Richards (1984), Japan	Representative sample of Japanese mothers from urban, middle-class, intact families recruited through health centers.	C	34/34	NA	-

Couple Relationship Quality & Offspring Attachment Security

No. Author (Year), Country	Sample and recruitment	Study design	n available for analysis/Initial N	% attrition	Method for dealing with missing data
8. Eiden, Teti, & Corns (1995), USA	Representative subset of families from a larger study in the Baltimore-Washington area recruited through hospital records and newspaper advertisements.	C	45/47	4.20%	Unclear
9. Finger, Hans, Bernstein, & Cox (2009), USA	High-risk sample recruited through local early intervention programs, childcare settings, and public places in a disadvantaged Chicago neighborhood.	C	79/79	NA	-
10. Frosch, Mangelsdorf, & McHale (2000), USA	Convenience sample of ethnically and economically homogeneous families in a university town, recruited through birth announcements.	L	53/120	55.80%	Complete data used
11. Goldberg & Easterbrooks (1984), USA	Representative sample of families in rural and urban areas within a 45-minute radius of Ann Arbor, Michigan, recruited through a variety of community programs.	C	75/75	NA	-

Couple Relationship Quality & Offspring Attachment Security

No. Author (Year), Country	Sample and recruitment	Study design	n available for analysis/Initial N	% attrition	Method for dealing with missing data
12. Howes & Markman (1989), USA	Subset of families from the Denver Family Development Project with a child between 1 to 3 years of age; sampling method not stated.	L	20/30(M) 19/30(F)	33.33%	Complete data used
13. Isabella & Belsky (1985), USA	Representative sample of families from the Pennsylvania Infant & Family Development Project, recruited through a community obstetrics practice and community-sponsored childbirth educational classes.	L	51/64	20.00%	Complete data used
14. Lickenbrock & Braungart-Rieker (2015), USA	Convenience sample of families from a larger study recruited through the local community (flyers, business cards, informational booth).	L	117/135(M) 105/135(F)	13.33%	Complete data used
15. Lindsey, Caldera, & Tankersley (2009), USA	Representative sample of families from the Kansas site of NICHD SECCYD study recruited through hospital records.	L	80/134	40.30%	Complete data used

Couple Relationship Quality & Offspring Attachment Security

No. Author (Year), Country	Sample and recruitment	Study design	n available for analysis/Initial N	% attrition	Method for dealing with missing data
16. Lucas-Thompson & Clarke-Stewart (2007), USA	Representative sample of families from the NICHD SECCYD study who had completed the first phase, recruited through hospital records.	L	1130/ns	NS	Unclear
17. Lundy (2002), USA	Convenience sample of families recruited through local pediatricians, daycare facilities, newspaper advertisements, and Department of Psychology subject pool.	C	30/48	37.50%	Complete data used
18. Moss, Cyr, & Dubois-Comtois (2004), Canada	Representative sample of middle-income low-risk families from a larger study, recruited through preschools in diverse socioeconomic areas.	L	242/ns	NS	Unclear
19. Owen & Cox (1997), USA	Representative sample of families from a larger study recruited through several obstetrical practices at a large medical center in Dallas, Texas.	L	38/40 (Mother) 33/40 (Father)	5.00%	Complete data used

## Couple Relationship Quality & Offspring Attachment Security

No. Author (Year), Country	Sample and recruitment	Study design	n available for analysis/Initial N	% attrition	Method for dealing with missing data
20. Posada & Pratt (2008), USA	Representative sample of families recruited through birth announcements.	C	45/48	6.25%	Complete data used
21. Shaw & Vondra (1993), USA	High-risk sample mother-child dyads recruited through the Women, Infant, and Children Nutritional Care (WIC) Program.	C	100/129	22.48%	Complete data used
22. Speltz, Endriga, Fisher, & Mason (1997), USA	Matched samples: families of children with and without cleft, recruited through pediatric clinics and community centers.	L	64/ns	NS	Unclear
23. Volling & Belsky (1992), USA	Representative sample of families from the Pennsylvania Infant & Family Development Project, recruited through community obstetrics practice and community-sponsored childbirth educational classes; simple random sampling.	L	88/113	22.12%	Complete data used

Couple Relationship Quality & Offspring Attachment Security

No. Author (Year), Country	Sample and recruitment	Study design	n available for analysis/Initial N	% attrition	Method for dealing with missing data
24. Wong, Mangelsdorf, Brown, Neff, & Schoppe-Sullivan (2009), USA	Convenience sample of families recruited through childbirth classes, community newsletters, and flyers, in a small Midwestern city.	L	59/103	42.72%	Complete data used
For study design, C: cross-sectional; L: longitudinal. For % attrition, NA: not applicable due to cross-sectional study design; NS: not stated.					

## Couple Relationship Quality & Offspring Attachment Security

Table 2. Study measures and analytic approaches.

Ref.	Couple relationship quality measure				Attachment measure		
	Variable assessed	Name	Child's age (months)	Reporter	Name	Child's age (months)	Parent
1	Marital quality	Braiker & Kelley Index	10	Father	SSP (I)	13	Father
2	Dyadic adjustment	Dyadic Adjustment Scale (DAS) (brief validated 4-item)	15	Mother	AQS (O)	15	Mother
3	Dyadic adjustment	DAS	12	Father	SSP (I)	12/13	Father
				Mother			Mother
4	Inter-parental conflict	Conflict and Problem-Solving Scales	24	Father	AQS (O)	24	Father
				Mother			Mother
5	Marital quality	Spouse/Parenting Partner Relationship subscale of the Dutch Parenting Stress Index	12	Mother	SSP (I)	12	Mother
6	Marital quality	Marital Attachment Interview	3rd trimester 4	Mother Researcher	SSP (I)	14	Mother

Couple Relationship Quality & Offspring Attachment Security

Ref.	Couple relationship quality measure				Attachment measure			
	Variable assessed	Name	Child's age (months)	Reporter	Name	Child's age (months)	Parent	
		Birth Narrative interview & Family Narrative						
		Consortium scoring system; Global						
		Assessment of Relationship Functioning; DAS						
7	Perceived partner support	The Taylor Inventory	12	Mother	SSP (I)	12	Mother	
8	Dyadic adjustment	Marital Adjustment Test; DAS (Marital Consensus subscale only)	33	Mother	AQS (P)	33	Mother	
9	Inter-parental conflict; perceived partner support	Conflict Tactics Scale; 1 self-report item of partner support	16-21	Mother	SSP (I)	16-21	Mother	
10	Inter-parental conflict; marital quality	Adapted Frosch et al.'s observation-based coding system	6; 36	Researcher	AQS (P)	36	Father Mother	

Couple Relationship Quality & Offspring Attachment Security

Ref.	Couple relationship quality measure				Attachment measure		
	Variable assessed	Name	Child's age (months)	Reporter	Name	Child's age (months)	Parent
11	Dyadic adjustment; inter-parental communication	DAS; Standardized Inventory of Marital Conflicts	20	Father Mother Researcher	SSP (I)	20	Father Mother
12	Dyadic adjustment; inter-parental conflict; inter-parental communication	Marital Adjustment Test; Relationship Problem Inventory; Communication Box Rating	Premarital; 20 <sup>a</sup>	Father Mother	AQS (P)	20 <sup>a</sup>	Father Mother
13	Marital quality	Huston scales; Braiker & Kelley Index	3rd trimester; 3; 9	Father Mother	SSP (I)	12	Mother

Couple Relationship Quality & Offspring Attachment Security

Ref.	Couple relationship quality measure				Attachment measure		
	Variable assessed	Name	Child's age (months)	Reporter	Name	Child's age (months)	Parent
14	Dyadic adjustment; inter-parental conflict <sup>b</sup>	Short Marital Adjustment Test (SMAT);	3; 5; 7	Father	SSP (I)	12 (Mother)	Father
		Conflict Tactics Scale		Mother			Mother
15	Inter-parental conflict	Braiker & Kelley Index (Marital Conflict subscale only)	1	Father	SSP (I) <sup>c</sup>	15 (Mother)	Father
				Mother			Mother
16	Marital quality	Personal Assessment of Intimacy in Relationships (Emotional Intimacy subscale only)	1; 36; 48	Mother	AQS (O)	24	Mother
17	Marital quality	1 self-report item of marital satisfaction	6	Father	AQS (P)	13	Father
				Mother			Mother
18	Dyadic adjustment	DAS	48	Mother	SSP (PS)	48	Mother
19	Inter-parental conflict	Beavers-Timberlawn Family Evaluation Scale	Prenatal; 3 <sup>d</sup>	Researcher	SSP (I) <sup>c</sup>	12	Father
							Mother

Couple Relationship Quality & Offspring Attachment Security

Ref.	Couple relationship quality measure				Attachment measure		
	Variable assessed	Name	Child's age (months)	Reporter	Name	Child's age (months)	Parent
20	Inter-parental conflict	Adapted SMAT & DAS (marital conflict items only); Posada & Waters questionnaire regarding spousal physical aggression & child exposure	36-43	Mother	AQS (O)	36-43	Mother
21	Dyadic adjustment	SMAT	12	Mother	SSP (I)	12	Mother
22	Dyadic adjustment	DAS	3	Mother	SSP (I)	12	Mother
23	Marital quality	Braiker & Kelley Index	3rd trimester; 3; 9	Father	SSP (I)	13	Father
24	Marital quality	Who Does What? Questionnaire; Frosch et al.'s observation-based coding system	3rd trimester	Researcher	SSP (I) <sup>c</sup>	12 (Mother) 13 (Father)	Father Mother

For attachment measure name, AQS: Attachment Q-Sort (O: observer-rated, P: parent-rated; Waters & Deane, 1985); SSP (I): Strange Situation Procedure (Infant; Ainsworth, Blehar, Waters, & Wall, 1978); SSP (PS): SSP (Preschool; Cassidy & Marvin, 1992).  
<sup>a</sup> First follow-up assessment after child's first birthday.  
<sup>b</sup> Inter-parental conflict data was extracted from Lickenbrock (2010), the thesis which resulted in the Lickenbrock & Braungart-Rieker (2015) paper included in the current review.  
<sup>c</sup> SSP (I) attachment classification subsequently coded into 4- or 6-point continuum.

Couple Relationship Quality & Offspring Attachment Security

Couple relationship quality measure				Attachment measure			
Ref.	Variable assessed	Name	Child's age (months)	Reporter	Name	Child's age (months)	Parent
<sup>d</sup> Couple relationship qualities at both time points were converted to a composite score.							

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Table 3. Coding of variables used in meta-analysis.

Variable	Code or unit type
Attachment measure	<i>SSP</i>
	<i>AQS</i> (Observer-rated)
	<i>AQS</i> (Parent-rated)
Child age when couple relationship was assessed	Months since child's birth (negative if prior to birth)
Child age when attachment was assessed	Months since child's birth
Time lag between assessments	Time difference between attachment and couple relationship assessments
<i>Specific to meta-analysis with dyadic adjustment</i>	
Parent involved	Father
	Mother
<i>Specific to meta-analysis with inter-parental conflict</i>	
Target parent/dyad in assessment of conflict	Mother
	Father
	Both
Reporter of conflict	Parent
	Researcher
Measurement of conflict	Self-report
	Observation
At-risk characteristics of sample	At-risk
	Not at risk

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## Couple Relationship Quality & Offspring Attachment Security

Table 4. Results of moderator analyses in association between dyadic adjustment and offspring attachment security.

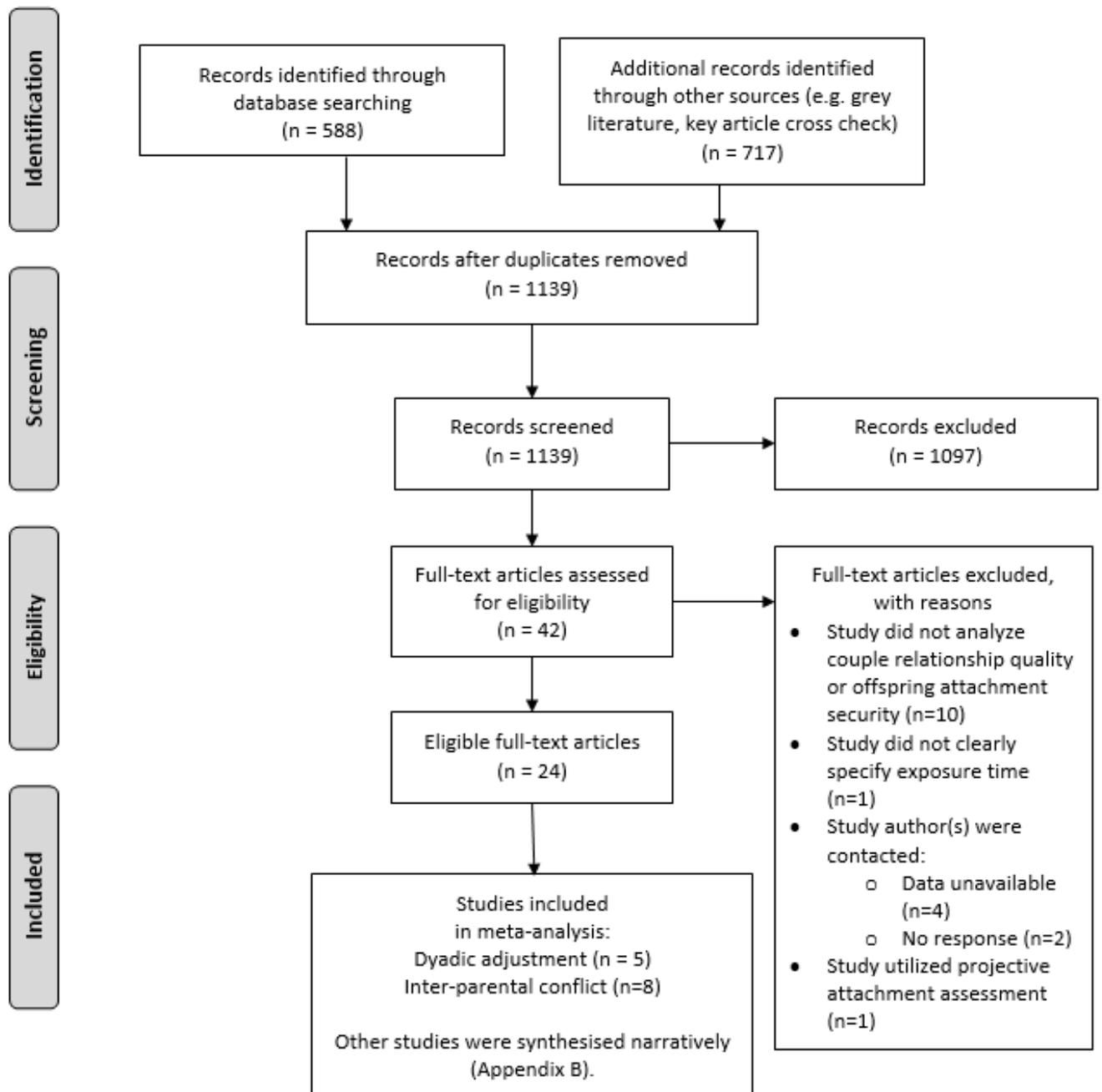
Moderator variable	Test of residual heterogeneity			Moderator analysis		
	QE	df	p	QM	df	p
Attachment measure	9.23	9	0.42	20.87	2	<0.01
Child age when dyadic adjustment was assessed	30.09	10	<0.01	0.73	1	0.39
Child age when attachment was assessed	23.67	10	0.01	1.07	1	0.30
Time lag between dyadic adjustment and attachment assessments	28.69	10	<0.01	0.39	1	0.53
Parent involved	27.87	10	<0.01	0.70	1	0.40

Table 5. Results of moderator analyses in association between inter-parental conflict and offspring attachment security.

Moderator variable	Test of residual			Moderator		
	heterogeneity			analysis		
	QE	df	p	QM	df	p
Attachment measure	26.64	14	0.02	0.61	2	0.74
Child age when conflict was assessed	29.39	15	0.01	0.85	1	0.36
Child age when attachment was assessed	29.87	15	0.01	0.15	1	0.70
Time lag between conflict and attachment assessments	30.23	15	0.01	0.74	1	0.39
Target parent or dyad in assessment of conflict	29.06	14	0.01	0.82	2	0.66
Reporter of conflict	28.98	14	0.01	0.26	2	0.88
Measurement of conflict	30.07	15	0.01	0.14	1	0.71
At-risk characteristics of sample	29.95	15	0.01	0.12	1	0.73

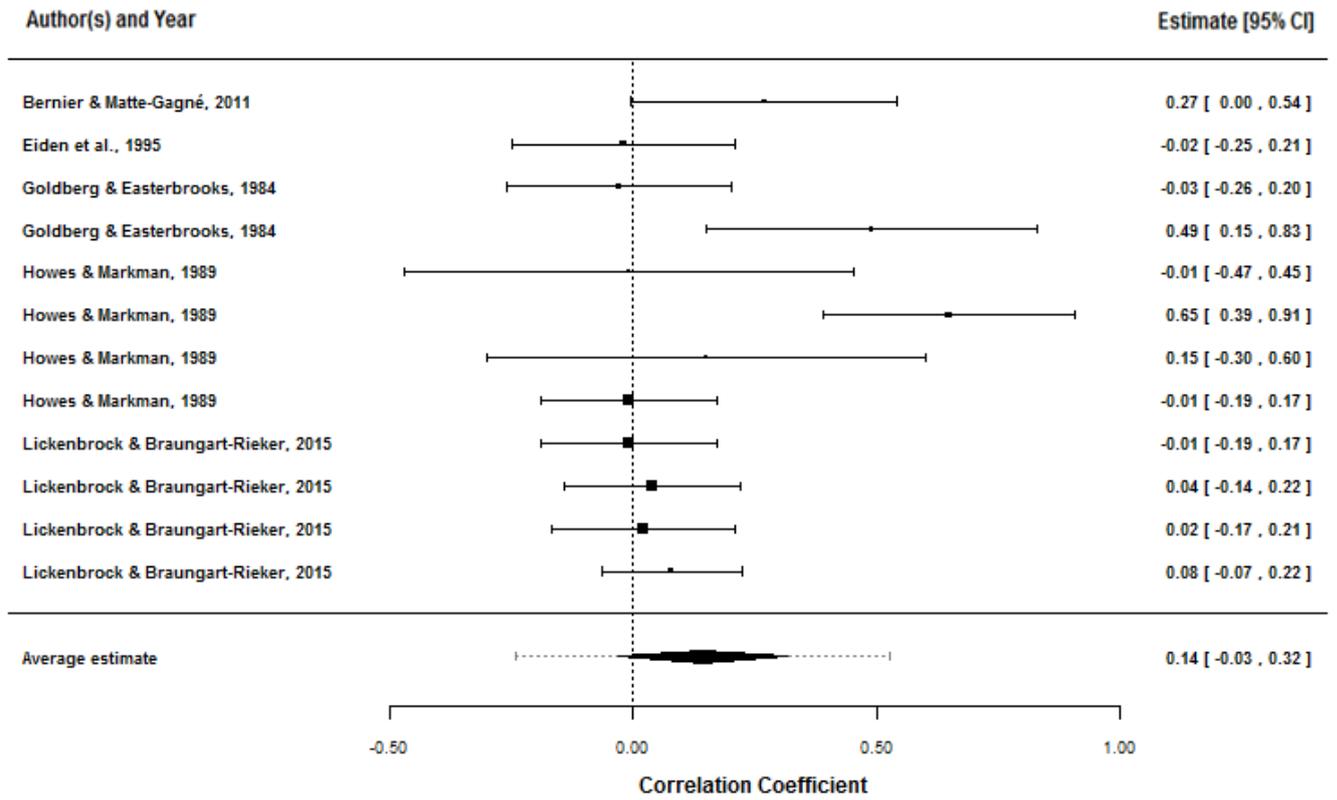
List of figures

Figure 1. PRISMA diagram of the systematic review



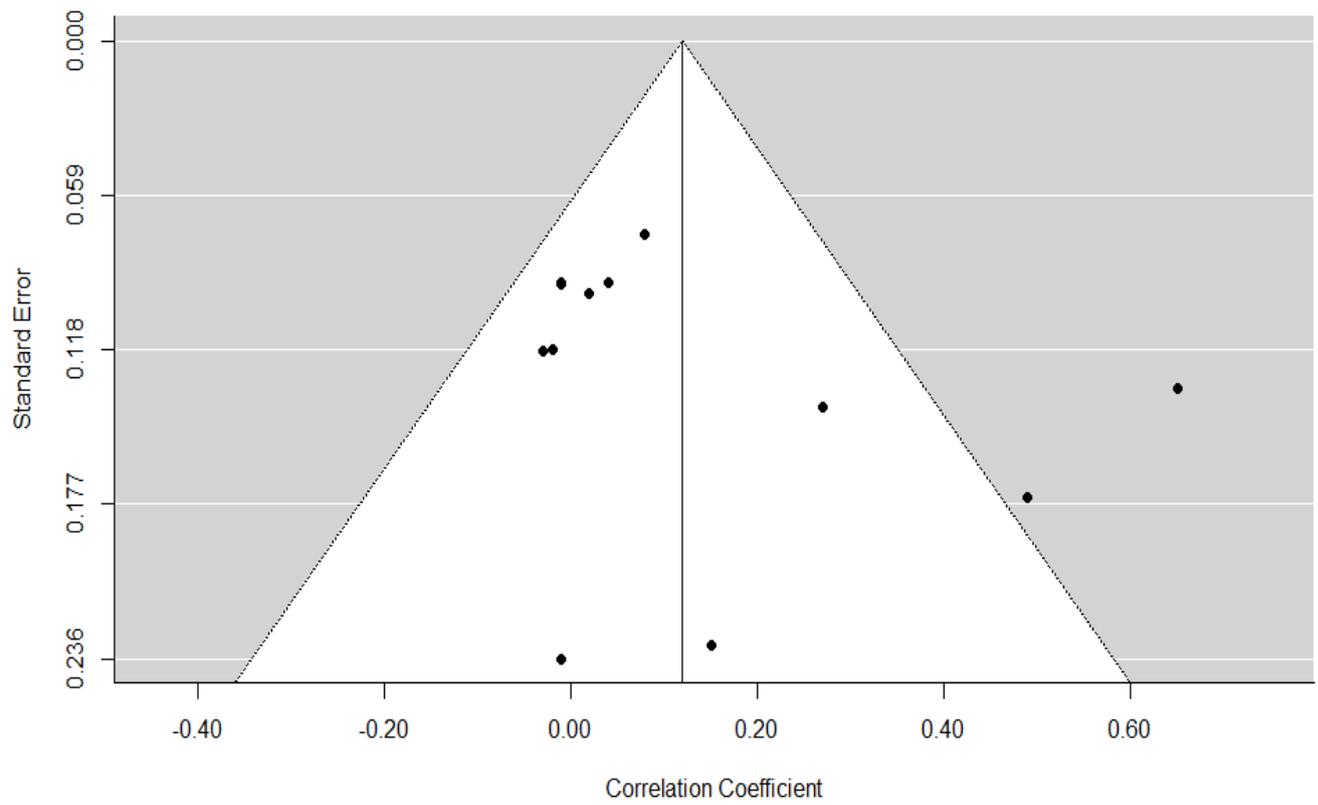
## Couple Relationship Quality & Offspring Attachment Security

Figure 2. Forest plot showing the 12 effects from meta-analysis on dyadic adjustment and offspring attachment security.



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Figure 3. Funnel plot resulting from Duval and Tweedie's Trim and Fill Method to assess for publication bias in meta-analysis on dyadic adjustment and offspring attachment security.



## Couple Relationship Quality & Offspring Attachment Security

Figure 4. Forest plot showing the 17 effects from meta-analysis on inter-parental conflict and offspring attachment security.

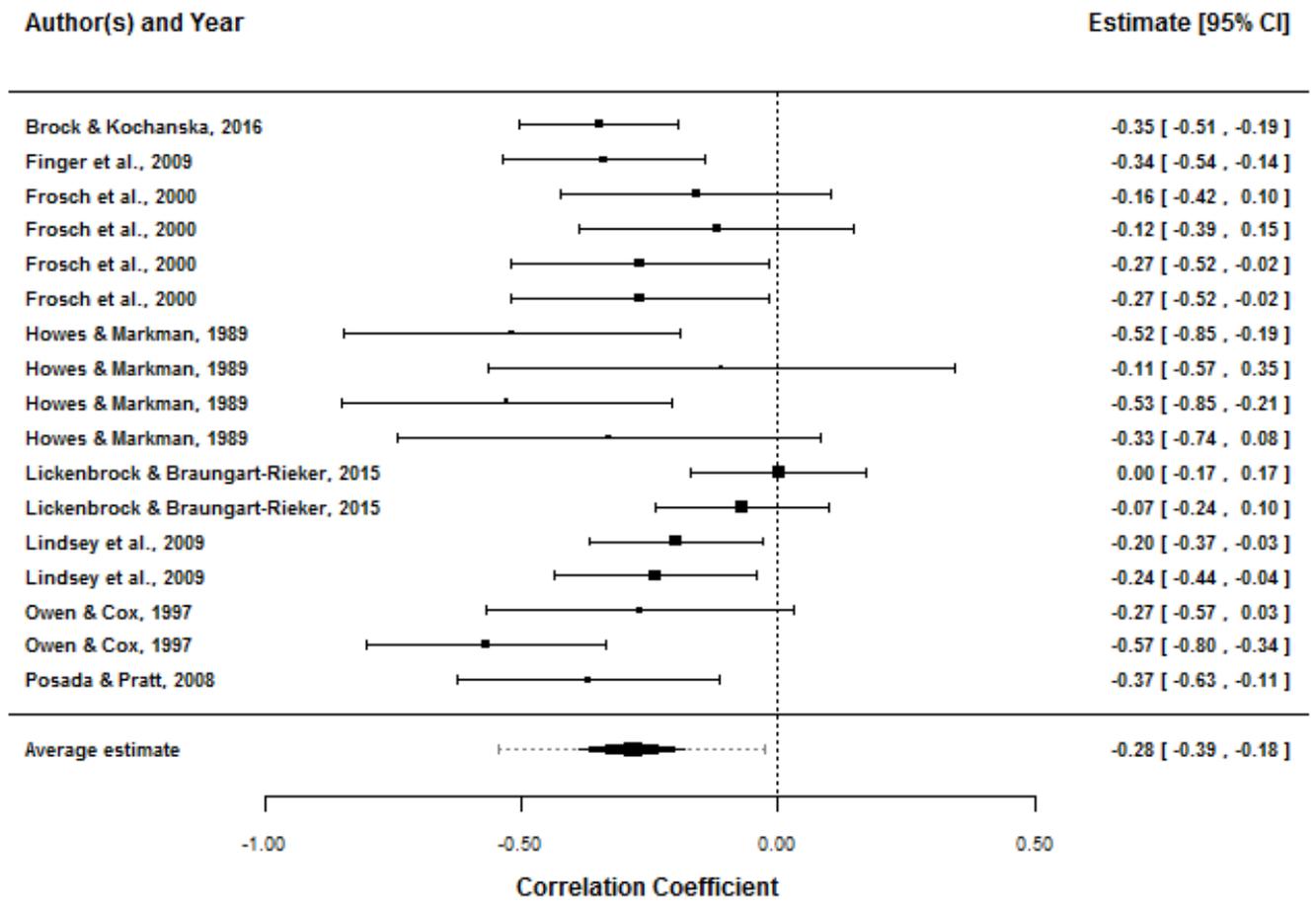
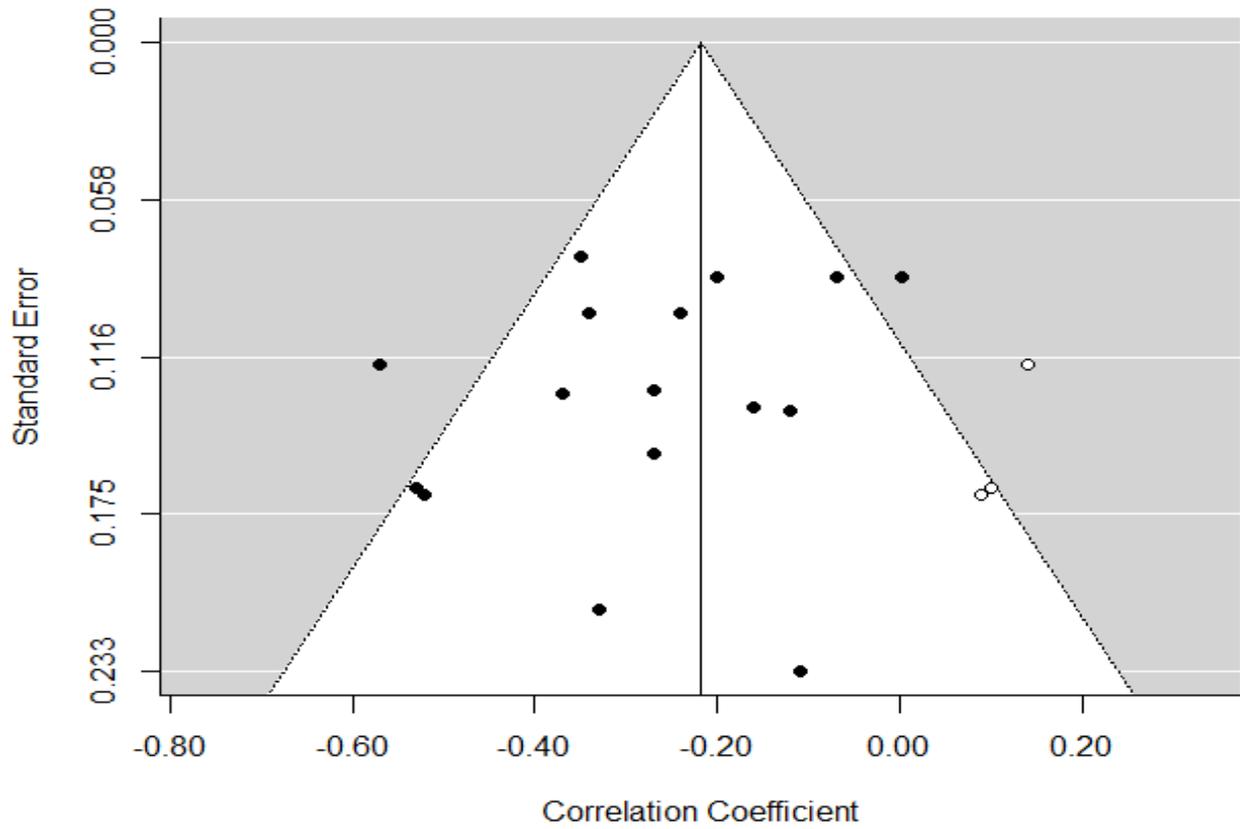


Figure 5. Funnel plot resulting from Duval and Tweedie's Trim and Fill Method to assess for publication bias in meta-analysis on inter-parental conflict and offspring attachment security. Solid circles are original data; open circles are imputed filled values.



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## Appendix

### *Appendix A: List of key articles used in systematic search*

- Cummings, E. M., & Davies, P. T. (2010). *Marital conflict and children: An emotional security perspective*. New York, NY: Guilford Press.
- Davies, P. T., & Cummings, E. M. (1994). Marital conflict and child adjustment: An emotional security hypothesis. *Psychological Bulletin*, *116*(3), 387–411. <https://doi.org/10.1037/0033-2909.116.3.387>
- Cowan, P. A., & Cowan, C. P. (2009). Couple relationships: a missing link between adult attachment and children's outcomes. *Attachment & Human Development*, *11*(1), 1–4. <https://doi.org/10.1080/14616730802500149>
- Dickstein, S., Seifer, R., & Albus, K. E. (2009). Maternal adult attachment representations across relationship domains and infant outcomes: the importance of family and couple functioning. *Attachment & Human Development*, *11*(1), 5–27. <https://doi.org/10.1080/14616730802500164>
- Owen, M. T., & Cox, M. J. (1997). Marital conflict and the development of infant-parent attachment relationships. *Journal of Family Psychology*, *11*(2), 152–164. <https://doi.org/10.1037/0893-3200.11.2.152>
- Isabella, R. A., & Belsky, J. (1985). Marital change during the transition to parenthood and security of infant-parent attachment. *Journal of Family Issues*, *6*(4), 505–522. <https://doi.org/10.1177/019251385006004006>

*Appendix B: Table synthesizing findings from remaining studies not included in meta-analysis*

Relationship Variable	Study	Primary findings	Synthesis
Dyadic adjustment <i>(Excluded from meta-analysis due to lack of direct analysis with offspring attachment)</i>	Braungart-Rieker et al. (1999)	When family earner status (i.e. dual or single earner) and parent sensitivity were controlled for, dyadic adjustment did not predict infant-parent attachment.	The pattern of findings from these studies appears congruent with the meta-analysis, in that the association between dyadic adjustment and offspring attachment security is weak. Interaction effects of dyadic adjustment with family variables appear possible but cannot yet be examined at the meta-analytic level. Further research is required to disaggregate the complex relationships between dyadic adjustment, other family functioning
	Dickstein et al. (2009)	A good fit was reported for a Structural Equation Model demonstrating couple functioning (inclusive of dyadic adjustment and other couple-related variables) predicting family functioning, which in turn predicted child-mother attachment.	
	Moss et al. (2004)	Mothers of Insecure-Other toddlers reported poorest dyadic adjustment of all other attachment groups assessed. No associations were found for other attachment classification groups.	

## Couple Relationship Quality & Offspring Attachment Security

Relationship Variable	Study	Primary findings	Synthesis
	Shaw & Vondra (1993)	The number of stressors, including poor dyadic adjustment, had no association with offspring attachment classification.	variables, and the development of attachment security.
	Speltz et al. (1997)	Family context, which dyadic adjustment was a part of, predicted offspring attachment.	
Marital interactions (observed) <i>Positive (e.g. cooperation, being sensitive) and negative (e.g. irritation, negative affect) interactions</i>	Frosch, Mangelsdorf, & McHale (2000) Goldberg & Easterbrooks (1984) Wong, Mangelsdorf, Brown, Neff, &	Fathers rated to be more positively engaged with their partners at 36 months were more likely to have children with secure attachment. Current marital interaction was associated with daughter-father attachment, but not for other child-parent dyads. Overall marital quality (both positive and negative interactions) in the third trimester was positively associated with child-mother attachment security, but not child-father attachment.	Marital interactions in the ante- and post-natal period have weak associations with offspring attachment security. Potential gender differences may exist, warranting separate examination of specific child-parent dyads. Further validation and standardization of observational systems for marital interactions is required.

## Couple Relationship Quality & Offspring Attachment Security

Relationship Variable	Study	Primary findings	Synthesis
	Schoppe-Sullivan (2009)		
Marital interactions (self-report) <i>Assessed using the Braiker &amp; Kelley (1979) Index which assesses positive (love and maintenance) and negative (conflict-negativity and ambivalence) aspects of the couple relationship</i>	Belsky (1996)  Isabella & Belsky (1985)  Volling & Belsky (1992)	Positive and negative interactions in the pre- and post-natal periods were not associated with infant-father attachment.  Positive and negative interactions in the pre-natal period were not associated with infant-mother attachment. However, mothers of insecure infants reported a greater decline in positive and greater increase in negative aspects, relative to mothers of secure infants.  Positive and negative interactions in the pre- and post-natal periods were not associated with infant-father attachment.	There are no associations between self-report couple relationship quality and attachment security in infant-father dyads.  With infant-mother dyads, findings suggest a process-oriented model, where couple relationship trajectories are more determining than an assessment at a single point in time.

## Couple Relationship Quality & Offspring Attachment Security

Relationship Variable	Study	Primary findings	Synthesis
Partner support (self-report)	Durrett, Otaki, & Richards (1984)	Mothers of secure and insecure-ambivalent infants perceived significantly greater support from their partners than mothers of insecure-avoidant infants.	Given the mixed findings from two studies, a conclusion cannot be drawn.
	Finger, Hans, Bernstein, & Cox (2009)	In a high-risk sample, poor partner support was related to disorganized and insecure attachment classifications only when parents were not co-residing.	
Marital satisfaction (self-report)	Cassé, Oosterman, & Schuengel (2016)	No differences in mother's dissatisfaction with their partners were found between child attachment classifications at 12 months in the total sample.	There are no strong associations between marital satisfaction and child-mother attachment security. However, there is some evidence for the link with child-father attachment security.
	Lundy (2002)	No correlation was found for child-mother attachment security, although high levels of marital satisfaction at 6 months postpartum	

## Couple Relationship Quality & Offspring Attachment Security

Relationship Variable	Study	Primary findings	Synthesis
		predicted child-father attachment security at 13 months.	
Inter-parental communication (report by other parent)	Howes & Markman (1989)	Mother's positive communication to father (rated by father) post-marriage was correlated with higher levels of parent-reported attachment security. This association was not significant for child-father dyads, and attachment security was not related to inter-parental communication pre-marriage.	
Emotional intimacy (self-report)	Lucas-Thompson & Clarke-Stewart (2007)	Couple emotional intimacy at 1 month postpartum positively correlated with and predicted attachment security at 2 years.	

**Supplementary material: Studies included in the systematic review and meta-analysis**

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## Couple Relationship Quality & Offspring Attachment Security

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