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The Significance of Attachment Security for Children's Social Competence with Peers: A Meta-Analytic Study

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Abstract

This meta-analytic review examines the association between attachment during the early life course and social competence with peers during childhood, and compares the strength of this association with those for externalizing and internalizing symptomatology. Based on eighty independent samples (N = 4,441), the association between security and peer competence was significant (d = 0.39, *CI* 0.32; 0.47) and not moderated by the age at which peer competence was assessed. Avoidance (d = 0.17, *CI* 0.05; 0.30), resistance (d = 0.29, *CI* 0.09; 0.48), and disorganization (d = 0.25, *CI* 0.10; 0.40) were significantly associated with lower peer competence. Attachment security was significantly more strongly associated with peer competence than internalizing (but not externalizing) symptomatology. Discussion focuses on the significance of early attachment for the development of peer competence versus externalizing and internalizing psychopathology.

Keywords

attachment; social competence; peers; meta-analysis; psychopathology

The introduction and validation of methods for assessing individual differences in the quality of the parent-child attachment relationship (e.g., Ainsworth, Blehar, Waters, & Wall, 1978) sparked a wave of research on the social and emotional sequelae of early (in)security

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(Berlin, Cassidy, & Appleyard, 2008; DeKlyen & Greenberg, 2008), with no area of development receiving more attention than children's social competence. Given the vast amount of research that has now accumulated, the present study uses meta-analysis to provide a quantitative review of what is currently known about the role of early attachment security in the development of children's social competence with peers, updating an earlier effort by Schneider, Atkinson, and Tardif (2001) published over a decade ago. Importantly, the present review is also an extension of a recent series of meta-analyses on the implications of early attachment for children's mental health, including externalizing behaviors (Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010) and internalizing symptoms (Groh, Roisman, Van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012); thus, we include here a comparison of the predictive significance of early attachment across these developmental domains.

Central to attachment theory is the claim that early parent-child attachment security plays an important role in promoting positive social and emotional adaptation across the life course (Bowlby, 1969/1982). A number of mechanisms have been proposed to account for such links, with the dominant explanation concerning the internal working model construct (Bowlby, 1973; Bretherton & Munholland, 2008). According to attachment theory, children's early attachment-relevant experiences with parents become internalized in the form of cognitive-affective representations, or internal working models, which guide thoughts, feelings, and behavior in relation to parents as a potential haven of safety and comfort in times of stress. Over time, such models become generalized and encompass views of the self, others, and the nature of relationships, ultimately contributing to children's relationships with peers and their mental health. Although such models become resistant to change with development, they are believed to be open to revision given changes in the caregiving environment. In addition to this primary explanatory construct, other potential factors (possibly related to internal working models) have been proposed to mediate links between attachment security and social and emotional competence, including (a) positive social expectations (Dodge & Coie, 1987), (b) continuity in supportive caregiving (Lamb, Thompson, Gardner, Charnov, & Estes, 1984), and (c) social regulation of biological systems mediating effective stress and arousal regulation (Suomi, 2003).

One of the earliest and most influential longitudinal studies of the developmental consequences of mother-child attachment security is the Minnesota Longitudinal Study of Risk and Adaptation (Sroufe, Egeland, Carlson, & Collins, 2005). Findings from this study provided some of the first evidence supporting the predictive significance of early attachment security for children's social competence with peers (Sroufe, 1983). Drawing on evidence from this study, Sroufe and his colleagues (Sroufe, Egeland, & Kreutzer, 1990) also elaborated on a provocative claim made by attachment theory concerning the implications of early attachment for development across the life course (Bowlby, 1969/1982), arguing that early attachment experiences might be expected to have enduring implications for developmental adaptation.

Importantly, however, the proliferation of research on the developmental consequences of early attachment variation following the development of the Strange Situation Procedure led Sroufe (1988) to caution against the overextension of attachment theory. More specifically,

he and others argued that, because it is within the early parent-child attachment relationship that children develop a sense of self-worth and key interaction skills necessary for intimate relationships, variation in the quality of early attachments might be especially relevant for subsequent relationships, including those with peers and particularly with friends, and to a lesser extent emotional and behavioral disorders, including externalizing and internalizing symptomatology (e.g., Belsky & Cassidy, 1995; Sroufe, 1988).

In the current meta-analysis, we evaluate the extant literature in light of these claims regarding the significance of early attachment security for the development of children's social competence with peers. As we have recently meta-analyzed the literature on attachment and psychopathology, including externalizing (Fearon et al., 2010) and internalizing (Groh et al., 2012) symptomatology, we also address claims regarding the differential predictive significance of attachment variation, by comparing the meta-analytic association between early attachment security and subsequent adaptation across these developmental domains.

In our prior meta-analyses on attachment and *externalizing* symptoms (Fearon et al., 2010) —including 69 independent samples comprising nearly 6,000 children—and *internalizing* symptoms (Groh et al., 2012; see also Madigan, Atkinson, Laurin, & Benoit, 2013)—including 42 independent samples comprising over 4,000 children—we provided support for the claim that early attachment insecurity is associated with enhanced risk of externalizing ($d = 0.31$) and internalizing ($d = 0.15$) problems. Moreover, the association was significantly larger for externalizing than internalizing symptoms (Groh et al., 2012) and each outcome domain tended to be associated with specific insecure subtypes. Contrary to some theorizing and evidence (Carlson, 1998; Sroufe, 2003), we found that disorganization ($d = 0.34$) and avoidance ($d = 0.12$)—but not resistance ($d = 0.03$, ns)—significantly predicted externalizing symptoms and that avoidance ($d = 0.17$)—but not resistance ($d = 0.03$, ns) or disorganization ($d = 0.08$, ns)—significantly predicted internalizing symptoms. Crucially, we also found meta-analytic support for the claim that early attachment is associated with children's mental health in enduring ways, in that the age at which the outcome was assessed did not significantly moderate associations between early attachment insecurity and internalizing or externalizing symptoms, indicating that such effects do not wane over the course of childhood. Unlike the effect of insecurity on internalizing symptoms, the effect of insecurity on externalizing symptoms was found to be significantly stronger for boys and in clinical samples.

Taken together, these meta-analyses provide evidence consistent with a modest yet enduring effect of early attachment insecurity on psychopathology (Fearon et al., 2010; Groh et al., 2012). However, in the absence of a comparable meta-analysis, it remains unclear whether there is evidence across the literature that, as hypothesized, early attachment security promotes children's social competence with peers, whether this association endures over time, whether there are important moderators of this association, and whether early security is more strongly associated with the quality of children's relationships with friends (vs. non-friends) and peer competence (vs. internalizing and externalizing symptoms).

That said, over a decade ago, Schneider and colleagues (2001) conducted a broad meta-analytic review of the literature on the association between attachment and peer relationship functioning. In 63 studies including over 3,000 individuals, mother-child attachment security ($d = 0.41$), but not father-child attachment security ($k = 5$; $d = 0.20$), was found to be significantly associated with peer relationship functioning. Schneider and colleagues (2001) also found that attachment security was more strongly associated with children's relationship functioning with friends ($d = 0.49$) than with non-friends ($d = 0.28$). Finally, while attachment security was found to be more strongly associated with peer functioning in middle childhood and adolescence (vs. early childhood), type of attachment assessment, environmental risk factors (e.g., socioeconomic status), and child risk factors (e.g., psychological disturbance, child gender) were not found to significantly moderate the association between attachment security and peer functioning.

Schneider et al.'s (2001) meta-analysis made an important contribution to the field in terms of providing meta-analytic support for the predictive significance of attachment for children's socioemotional development; however, it had a relatively broad focus. Specifically, early observational (e.g., Strange Situation Procedure), middle childhood self-report (e.g., Kerns Security Scale; Kerns, Kelpac, & Cole, 1996), and adolescent representational (e.g., Adult Attachment Interview; George, Kaplan, & Main, 1985) attachment assessments were included in the meta-analysis, which may have contributed to the finding that the effect of attachment security differed by age. Similarly, Schneider and colleagues (2001) included outcomes relevant to internalizing (e.g., social withdrawal) and externalizing (e.g., aggression) symptoms. Although such behavioral problems occur within the milieu of the peer environment, attachment scholars have made specific predictions regarding the significance of attachment security for the development of positive peer functioning, distinct from predictions regarding insecure subtypes for heightening children's risk for developing specific types of (internalizing and externalizing) psychopathology (see Berlin et al., 2008; DeKlyen & Greenberg, 2008; Sroufe et al., 2005).

Moreover, Schneider et al. (2001) reported the effect of attachment on peer functioning separately by outcome type (aggression, sociability, social withdrawal) and age of attachment assessment. However, because of the broad focus of their meta-analysis, differences for outcome type were confounded by age and vice versa. In short, questions regarding the significance of *early* attachment security for the development of children's social competence with peers that lie at the heart of attachment theory and research (Berlin et al., 2008) remain to be tested. Also of note, Schneider et al.'s (2001) meta-analysis focused on the broad comparison of links between secure versus insecure attachment and peer functioning, and it is important to also examine whether insecurity subtypes similarly hinder children's social competence (Berlin et al., 2008). Given these issues and the fact that a large number of studies ($k = 23$) have been published since Schneider et al.'s (2001) meta-analysis—including the NICHD Study of Early Child Care and Youth Development (SECCYD), which comprises the largest study of attachment and social competence to date—the field awaits a comprehensive meta-analysis focused specifically on the significance of early attachment for children's social competence with peers.

For these reasons, we conducted the present meta-analysis of eighty independent samples (*N* = 4,441) to estimate the association between early attachment (in)security and children's social competence with peers. Although a number of representational measures of attachment have been developed in recent years, there is a relative lack of validity testing for many of the new assessments because researchers have primarily focused on assessment creation (see Kerns, 2008). In light of this drawback and the centrality of claims regarding the significance of *early* attachment for children's social competence (Berlin et al., 2008), we specifically focused on standardized observational assessments of attachment in the current meta-analysis. In line with expectations derived from the literature, we hypothesized that: (1) early attachment security would be significantly associated with peer competence, (2) early attachment insecurity subtypes would be negatively associated with peer competence, and (3) early attachment security would be associated with peer competence in an enduring manner (i.e., the association would not decrease in magnitude as a function of the age at which peer competence was assessed).

Second, we examined a range of factors that might be expected to moderate the association between early attachment quality and peer competence, including: (1) type of measure and rater used to assess attachment, (2) child gender, (3) socioeconomic risk of the cohort (low vs. middle/high), (4) other contextual risk of the cohort (e.g., prenatal exposure to drugs; at-risk vs. not at-risk), (5) type of relationship in which social competence was assessed (friend vs. non-friend), and (6) type of peer competence assessment. We also examined the predictive significance of father-child attachment for peer competence within a smaller set of studies with relevant data, with the hypothesis that—as with mother-child attachment—secure father-child attachment would be significantly associated with peer competence.

Third and finally, we compared the relative magnitude of the meta-analytic association documented here between the quality of attachment and peer competence with estimates we previously established in our prior meta-analyses with respect to attachment variation and externalizing behavior (Fearon et al., 2010) and internalizing symptoms (Groh et al., 2012). We hypothesized that early security would be more strongly associated with peer competence than externalizing and internalizing symptomatology.

Method

Literature Search

A corpus of relevant published articles and dissertations was compiled for this meta-analysis by systematically searching the electronic databases PsycInfo and Web of Science with the keywords social competenc*, peer competenc*, interpersonal function*, social bonding, social function*, peer relation*, sociometric, relation* function*, popular*, social interaction, social reject*, peer reject*, social accept*, peer accept*, sociability, friend*, social aggress*, prosocial, pro-social, antisocial, anti-social, interpersonal interaction, and empathy (asterisks indicate that the search contained the word or word fragment). To further narrow the search, the papers were also required to contain the keyword attachment. This initial search returned 5,363 and 10,161 articles from PsycInfo and Web of Science, respectively. The abstracts of these articles that were written in English or another language understood by the authors (German, Portuguese, French, Turkish, Mandarin Chinese) were

reviewed and a large number of clearly irrelevant articles were discarded (e.g., non-empirical papers, studies not involving children), resulting in a total of 284 remaining articles. Each of these articles was carefully examined by the authors according to the criteria described below. Additionally, ten relevant articles were also obtained through searching the reference lists of the obtained empirical articles.

Studies were included in the meta-analysis if they reported on the relation between attachment and social competence with peers. Social competence was defined as social skills (e.g., ability to make friends, interpersonal awareness, empathy, intimacy), peer interaction quality (e.g., initiation into peer group, play behavior, helping behavior), and social status (e.g., popularity, likability). The specific focus of this meta-analysis was on children's social competence with peers outside of the family context. Accordingly, papers were excluded if they reported on (a) sibling relationships, (b) interactions with adults, (c) constructs pertaining to temperament (e.g., inhibition), (d) constructs pertaining to self development (e.g., self-esteem), (e) broad assessments of affect (e.g., positive emotion), (f) aspects of peer interactions reflecting externalizing (e.g., aggression) or internalizing (e.g., social withdrawal) symptoms, and (g) constructs relevant to social cognition (e.g., social information processing).

Peer competence was assessed using questionnaires completed by parents (e.g., Hubbs-Tait, Osofsky, Hann, & Culp, 1994), teachers/caregivers (e.g., Fagot, 1997) and/or target child (e.g., Bystritsky, 1999); sociometric ratings completed by peers either alone (Veríssimo et al., 2011) or in combination with the target child (e.g., Cassidy, 1988;); and/or observations that occurred in groups (e.g., Waters, Wippman, & Sroufe, 1979) or dyads (Park & Waters, 1989) and that were coded by trained observers. When articles included multiple informants of social competence, data from each informant were combined. Articles were only included if they used observational assessments of attachment security, such as the Strange Situation Procedure (SSP; Ainsworth et al., 1978), Cassidy and Marvin Preschool Attachment system (Cassidy, Marvin, & the MacArthur Working Group on Attachment, 1989), Attachment Q-Sort (AQS; Waters & Deane, 1985), or Main and Cassidy system (Main & Cassidy, 1988). In cases where more than one attachment assessment was used (e.g. SSP followed by second SSP or AQS at a later age) the earliest assessment was selected. For one study, the SSP and AQS were administered at the same time point (Smeekens, Riksen-Walraven, & Van Bakel, 2009). Because the SSP includes information on insecurity subtypes and the AQS does not, the SSP data were extracted. Some studies reported results separately for boys and girls. In these cases, we calculated separate effect sizes for each gender, and the subsamples were treated as independent outcomes in analyses. Ten papers reported on outcome data for father-child attachment security, and were included in a separate meta-analysis on the association between father-child attachment and peer competence.

Several studies presented data on (partly) overlapping samples (e.g., Bureau & Moss, 2010; Moss, Parent, Gosselin, Rousseau, & St-Laurent, 1996). Because participants cannot be included in a meta-analysis more than once, the papers that reported on the earliest outcome assessment were included in our meta-analysis (e.g. Bureau & Moss, 2010), except when the earliest outcome assessment focused on a sub-sample of participants from the larger longitudinal sample (e.g., data from Sroufe, Egeland, & Carlson [1999] were used because

they report on the earliest outcome assessment from the full Minnesota longitudinal sample). Several studies reported on data from multiple types of social competence assessments. Data from the earliest outcome were included in the main set of meta-analyses. If more than one peer competence assessment was administered at the earliest time point, these data were combined. We also conducted separate meta-analyses comparing effects by assessment type (see below). For these analyses, data from the earliest outcome for each type of assessment were included. The same procedure was followed for studies that reported on multiple types of relationships (friend, non-friend) and multiple types of observations (group, dyad).

In total, after excluding reports involving overlapping samples, 66 studies were identified that yielded 80 independent samples comprising 4,441 children that could be included in the meta-analyses, with sample sizes ranging from 7 to 516 (see Table 1). Because the AQS does not yield data on the different subtypes of insecurity, studies employing the AQS only appear in the meta-analyses involving the overall contrast between security and insecurity.

Coding System

A coding system for describing the characteristics of the sample and study design was developed based on the system presented in the meta-analyses on attachment and externalizing and internalizing symptomatology (Fearon et al., 2010; Groh et al., 2012). Attachment was coded based on the observational measure used and all of the studies included one of several well-known attachment assessments (SSP, AQS, Preschool Attachment Assessment, Cassidy & Marvin, Main & Cassidy). For each type of attachment measure, the coder extracted data at the level of the individual attachment classification when possible (i.e., A, B, C and D, note: for studies in which disorganization was assessed, children who received the primary classification of disorganized were always considered in the disorganized category). For the AQS, the informant who completed the sort (observer, mother, father) was coded. In some cases, either the mean, standard deviation, or number of children in attachment categories was not reported. To obtain such crucial statistical information, authors were contacted for five studies. In three cases, the authors were able to provide the relevant information. In the remaining two cases, the authors were unable to provide the relevant information, but other data relevant to the meta-analysis were available in the published literature (e.g., authors no longer had access to sociometric data [Howes, 1991], but complete observational data were available in the literature [Howes, Rodning, Galluzzo, & Myers, 1990]). As in Fearon et al. (2010) and Groh et al., (2012), we analyzed (publicly available) raw data pertinent to the aims of this meta-analysis from the NICHD SECCYD to examine associations between attachment and peer competence within sub-samples (e.g., low vs. higher SES groups).

Several important potential moderators related to the sample were coded: socioeconomic status (high or middle vs. low), risk status (at-risk vs. not at-risk), child gender, type of relationship in which peer competence was assessed (friend vs. non-friend), and type of peer competence measure (e.g., reported social skills, sociometrics vs. observation [group vs. dyad]). When socio-economic status was not noted, a default of high/middle class was recorded. Risk status was recorded if the authors indicated the sample experienced psychosocial (target child met clinical cut-off for externalizing symptoms) or contextual

(e.g., prenatal exposure to drugs) risk. As in Schneider et al. (2001), studies were coded as pertaining to friendship if the authors indicated the outcome was children's social competence with peers nominated by either the mother or the target child as friends. Age at attachment and peer competence assessment were also coded. To assess inter-rater reliability, twenty (30%) randomly selected studies were coded by two coders. The agreement between the coders across the moderator variables was 98%.

Meta-Analytic Procedures

Analogous to our previous meta-analyses (Fearon et al., 2010; Groh et al., 2012) we conducted four separate meta-analyses on the social competence construct, one for the relation between attachment security and social competence, one for the relation between avoidance and social competence, one for the relation between resistance and social competence, and one for the relation between disorganization and social competence. In these main analyses we compared the social competence of children in each attachment classification with all other classifications combined (e.g., insecure-avoidant vs. not-avoidant [B, C, D]). In a separate set of analyses on a smaller set of studies with pertinent data, we also compared each insecure classification with the secure classification (e.g., insecure-avoidant vs. secure) and with each of the other insecure classifications (e.g., insecure-avoidant vs. insecure-resistant).

A set of moderation analyses were conducted to determine whether socioeconomic status, risk status, type of attachment assessment, or child gender moderated the effect of attachment on social competence. In addition, we examined whether type of relationship or type of peer competence assessment moderated the effect of attachment on peer competence. These meta-analyses focused on (partially) overlapping groups of participants, and the 85% confidence intervals were reported to allow for exploratory comparisons (see below).

The meta-analyses were performed using the Comprehensive Meta-Analysis (CMA) program (Borenstein, Rothstein, & Cohen, 2005, Version 2). For each study, an effect size (*d*) was calculated as the standardized difference between the two pertinent groups (e.g., secure vs. insecure). In cases where continuous attachment scores were correlated with social competence (e.g., studies reporting on the AQS) we re-computed the statistic into Cohen's *d* (see Mullen, 1989, and Mullen and Rosenthal, 1985, chapter 6, for the formulae for transformation of various statistics into Cohen's *d*). Effect sizes indicating a positive relation between social competence and security (higher levels of competence in the secure group compared to the reference group) were given a positive sign. Effect sizes indicating a negative relation between social competence and avoidance, resistance, and disorganization, respectively (lower levels of competence in the resistant group compared to the reference group), were also given a positive sign. Thus, a positive combined effect for the set of studies comparing resistant children with non-resistant children on social competence would mean that across these studies the level of social competence in resistant children was lower than in other children. Using CMA, combined effect sizes were computed. Significance tests and moderator analyses were performed through random effects models, as this approach is considered to be most widely applicable and conservative (Borenstein et al., 2005). Random effects models allow for the possibility that there are random differences between studies

that are associated with variations in procedures, measures, settings, that go beyond subject-level sampling error, and thus point to different study populations (Lipsey & Wilson, 2001). To test the homogeneity of the overall and specific sets of effect sizes, we computed *Q*-statistics (Borenstein et al., 2005). In addition, we computed 95% confidence intervals (*CI*s) around the point estimate of each set of effect sizes. *Q*-statistics and *p*-values were also computed to assess differences between combined effect sizes for specific subsets of studies grouped by moderators. Again, the more conservative random effects model tests were used. Contrasts were only tested when at least two of the subsets consisted of at least four studies.

When the children in two sets of studies (partially) overlapped (e.g., some studies reported on multiple types of social competence assessments, and we wanted to compare the combined effects for these sets), it was impossible to directly compare effect sizes across these sets. We computed 85% confidence intervals for the point estimates of the combined effect sizes in the two sets; non-overlapping 85% *CI*s indicate a significant difference between combined effect sizes. This approach of comparing 85% *CI*s served as a conservative significance test (Goldstein & Healy, 1995; Van IJzendoorn, Juffer, & Klein Poelhuis, 2005).

We used the "trim and fill" method (Duval & Tweedie, 2000a, 2000b) to calculate the effect of potential data censoring or publication bias on the outcome of the meta-analyses. Using this method, a funnel plot is constructed of each study's effect size against the sample size or the standard error (usually plotted as 1/SE, or precision). It is expected that this plot has the shape of a funnel, because studies with smaller sample sizes and larger standard errors have increasingly large variation in estimates of their effect size as random variation becomes increasingly influential, whereas studies with larger sample sizes have smaller variation in effect sizes (Duval & Tweedie, 2000b; Sutton, Duval, Tweedie, Abrams, & Jones, 2000). The plots would be expected to be shaped like a funnel if no data censoring is present. However, since smaller non-significant results are less likely to be published ('file-drawer' problem, Mullen, 1989), studies in the bottom left hand corner of the plot are often omitted (Sutton et al., 2000). In our meta-analyses, the *k* right-most studies considered to be symmetrically unmatched were trimmed. The trimmed studies can then be replaced and their missing counterparts imputed or "filled" as mirror images of the trimmed outcomes. This allows for the computation of an adjusted overall effect size and confidence interval (Gilbody, Song, Eastwood, & Sutton, 2000; Sutton et al., 2000).

For each study, Fisher's *Z* scores were computed as well-distributed equivalents for the effect size *d*, and the *Z* scores were standardized to test for outliers. For the main analyses, no outliers (standardized *Z*-values outside of +/−3.29; Tabachnik & Fidell, 2001) were found. We also tested for outlying sample sizes. The NICHD SECCYD high SES boy and girl samples had sample sizes that were three *SD*s above the mean, thus, we winsorized these sample size values. To maintain the ranking of studies by sample size, we added ten to the third largest sample size in the corpus ($N = 165$; Balentine, 2007) and used that value for the sample size of the second largest sample (high SES girls, $N = 175$) and added ten to that value for the sample size of the largest sample (high SES boys, $N = 185$; see Table 1). The pattern and significance of results were nearly identical when the winsorized and non-winsorized values were used in analyses.

Results

Is secure attachment associated with greater social competence?

The first set of meta-analyses concerned the difference in social competence between children rated as secure versus insecure. The insecure group comprised avoidant, resistant, and (if assessed) disorganized children. In eighty independent samples including $N = 4,441$ children, the association between attachment security and social competence was reported. Any study assessing attachment and social competence was included in this total set, regardless of the type of measures used. In this overall set we found a significant combined effect size of $d = 0.39$ (see Table 2). Children rated as secure showed higher levels of social competence with peers than children rated as insecure. The trim-and-fill approach showed that eight studies had to be trimmed and filled, and the resulting combined effect size was reduced slightly to $d = 0.36$, (95% *CI* 0.30; 0.42). Excluding the two largest independent samples (NICHD SECCYD males high/middle SES, NICHD SECCYD females high/middle SES) had little effect on the combined effect size ($d = 0.41$, *CI* 0.33; 0.48). Similarly, when each sample was systematically removed and the effect was re-computed for the k-1 studies, the effect size remained nearly unchanged (ds ranged from 0.38 – 0.40). We computed Orwin's fail-safe N (Borenstein, Hedges, Higgins, & Rothstein, 2009) using a Fisher Z of . 01 as criterion for a 'trivial' effect size, and found $k = 1,460$ studies with null effects needed to bring the observed effect size down to this trivial level.

We looked for significant moderators that might account for between-study variability in the outcome (see Table 2). Age at which social competence was assessed did not yield a significant regression weight (slope = 0.00; $p = .31$), indicating that the association between attachment security and social competence did not become stronger or weaker with age. Similarly, time between attachment and social competence assessments did not yield a significant regression weight (slope = 0.00, $p = .22$), suggesting that the association between attachment security and social competence is similar regardless of whether social competence is assessed contemporaneously or longitudinally.

Next, we examined whether the association between attachment security and social competence was moderated by type of attachment assessment. We conducted these analyses for all studies, as well as with studies that used the mother-reported AQS removed from analyses. The effect size in samples employing the AQS was larger than that of studies employing the Strange Situation (all studies: $Q(1) = 10.23$, $p < .01$; mother-reported AQS removed: $Q(1) = 7.16$, $p < .01$). The effect size of studies employing the Modified Strange Situation procedure did not significantly differ from those employing the Strange Situation ($Q[1] = 2.07$, $p = .15$) or the AQS ($Q[1] = 0.48$, $p = .49$). Because the different attachment measures are typically conducted at different ages, we also conducted a meta-regression analysis with assessment age as a predictor. As expected, the regression was significant (all studies: slope = .01, $p < .01$; mother-reported AQS removed: slope = .01, $p < .01$). However, when both age of attachment assessment and type of attachment assessment (i.e., SSP v. AQS; SSP v. MSSP) were added to the meta-regression, all effects dropped to non-significance (all studies [age: slope = .00, $p = .29$; SSP v. AQS: slope = .15, $p = .23$; SSP v.

MSSP: slope = .06, p = .60]; mother-reported AQS removed [age: slope = .00, p = .11; SSP v. AQS: slope = .15, p = .33; SSP v. MSSP: slope = .01, p = .94]).

Among studies that used the AQS, the effect size for samples in which observers completed the AQS did not significantly differ from samples in which mothers completed the AQS (Q[1] = 0.55, p = .46). However, within the sub-set of samples that used the mother-reported AQS, the effect size for samples in which social competence was also assessed using mother reports was significantly larger than the effect size for samples in which social competence was not assessed using mother reports (Q[1] = 5.48, p < .05).

In studies that reported effects separately for boys (k = 11) and girls (k = 12), the effect size for boys was not significantly larger than for girls, Q(1) = 0.97, p = .33. A regression analysis including studies that did not report effects separately for boys and girls did not show a significant regression weight for the percentage of boys in the sample (slope = −0.01, p = .15). Socio-economic status and risk status were not significant moderators of the effect.

Ten papers also reported on outcome data for father-child attachment security. The combined effect size for these studies was d = 0.14 (k = 10, N = 351, 95% *CI* −0.08; 0.36) in a homogeneous set of outcomes (Q[9] = 7.27, p = .61). The 85% *CI*s for the effect of father-child (−0.02; 0.30) and mother-child (0.34; 0.45) attachment did not overlap, indicating that mother-child security was more strongly associated with peer competence than father-child security.

Are avoidant, resistant, and disorganized attachments associated with lower levels of social competence?

To examine whether specific patterns of attachment insecurity are associated with lower levels of social competence, we first conducted meta-analyses comparing the social competence of children with each insecure classification to all other children (e.g., avoidant v. not-avoidant [B, C, D]). Next, in a smaller subset of studies with relevant data, we conducted meta-analyses comparing the social competence of children with each insecure classification to secure children (e.g., A v. B) and to children with each of the other insecure classifications (e.g., A v. C).

Insecure Subtype v. All Other Attachment Patterns Combined—In twelve studies involving N = 1,062 children and their mothers, the insecure-avoidant attachment classification was differentiated from the other classifications, and in these studies the combined effect size was significant, d = 0.17 (see Table 3). The trim-and-fill approach indicated that no studies needed to be trimmed and filled, suggesting that asymmetrically unmatched studies were unlikely and providing little evidence for asymmetrical publication bias. Moderator effects for gender, SES, risk status and attachment assessment could not be tested because sub-groups included fewer than four samples.

In twelve studies involving N = 1,034 children and their mothers, the insecure-resistant attachment classification was differentiated from the other classifications. In this set of studies the combined effect size was significant, d = 0.29 (see Table 3). The trim-and-fill

approach indicated that no studies needed to be trimmed and filled, suggesting that asymmetrically unmatched studies were unlikely. Moderator effects for gender, SES, risk status and attachment assessment could not be tested because sub-groups included fewer than four samples.

In twelve studies including $N = 1{,}103$ participants, a combined effect size of $d = 0.25$ was found for the association between disorganization and lower levels of social competence (see Table 3). The trim-and-fill approach showed no symmetrically unmatched studies. The effect size in samples employing the modified Strange Situation procedure was larger than that of studies employing the Strange Situation procedure, $Q(1) = 3.99$, $p < .05$. SES did not significantly moderate the effect of disorganization on social competence. Moderator effects for risk status and gender could not be tested because sub-groups included fewer than four samples.

Insecure Subtype v. Secure Attachment—We also compared the secure classification with each of the insecure classifications. Similar to the results from comparisons of each insecure classification to all other classifications, the combined effect size for the association between security versus avoidance and social competence was $d = 0.27$. For secure versus resistant attachment it was $d = 0.41$, and for secure versus disorganized attachment it was $d = 0.26$ (see Table 3). Moderator effects could not be tested for any of these comparisons because sub-groups included fewer than four samples.

Insecure Subtype v. Other Insecure Subtype—Finally, we compared each insecure classification with each of the other insecure classifications. Results indicated that there were no significant differences between insecurity subtypes on social competence (see Table 3), suggesting that avoidance, resistance, and disorganization are similarly associated with lower levels of social competence. Moderator effects could not be tested for any of these comparisons because sub-groups included fewer than four samples.

Type of Relationship

Studies differed in the type of relationship (i.e., friend, non-friend) in which children's social competence was assessed and some studies reported on children's social competence within multiple types of relationships. We investigated whether type of relationship moderated the effect of security, avoidance, resistance, or disorganization on social competence. Since it was impossible to directly compare effect sizes across these sets (sometimes including the same children), we computed 85% confidence intervals for the point estimates of the combined effect sizes as a conservative significance test (see Method). As seen in Table 4, relationship type was found to significantly moderate the effect of secure (vs. insecure) attachment and resistant (vs. not-resistant) attachment on social competence. The effect of attachment security and resistance in studies that focused on children's social competence with friends was *smaller* than the effect for studies that focused on children's social competence with non-friends (secure: $Q[1] = 9.46$, $p < .01$; resistant: $Q[1] = 5.78$, $p < .05$). Type of relationship was not found to significantly moderate the effect of avoidance or disorganization on lower levels of social competence.

Type of Social Competence Assessment

Studies differed in the type of social competence assessment used (e.g., reported social skills) and many studies reported on two or more assessment types. We investigated whether assessment type moderated the effect of security, resistance, avoidance, or disorganization on social competence and we computed 85% confidence intervals for the point estimates because some studies had overlapping samples. Regarding the effect of resistance on lower levels of social competence, the effect for studies including reports of social skills was larger than the effect for studies including sociometric assessments ($Q[1] = 4.04$, $p < .05$) but not larger than the effect for observational assessments ($Q[1] = 1.51$, $p = .22$). The effect for studies including observational assessments was not significantly different from those including sociometric assessments ($Q[1] = 2.38$, $p = .12$). Assessment type was not found to significantly moderate the effect of security, avoidance, or disorganization on social competence (see Table 4).

Studies that employed observational assessments of social competence differed in the type of observation employed (e.g., observations of non-friends) and some studies reported on two or more observation types. We investigated whether the type of observation moderated the effect of security, avoidance, resistance, or disorganization on social competence and we computed 85% confidence intervals for the point estimates because some studies had overlapping samples. As seen in Table 4, type of observation was found to significantly moderate the effect of security versus insecurity on social competence. The effect for studies including observations of non-friends was larger than the effect for studies including observations of friends ($Q[1] = 7.53$, $p < .01$). The effect for studies including observations of peer interactions in groups did not significantly differ from those including observations of interactions with friends ($Q[1] = 3.03$, $p = .08$) or observations of interactions with non-friends ($Q[1] = 1.94$, $p = .16$). The type of observation was not found to significantly moderate the effect of resistance, avoidance, or disorganization on lower levels of social competence.

Social Competence, Externalizing Problems, and Internalizing Problems

Finally, we compared the combined effect sizes for the association between attachment quality and social competence with peers, internalizing psychopathology (Groh et al., 2012), and externalizing psychopathology (Fearon et al., 2010). The combined effect sizes are presented in Figure 1. Similar to externalizing and internalizing symptoms, the effects of secure and avoidant attachment on social competence were significant. Unlike internalizing symptoms, but similar to externalizing symptoms, disorganized attachment was significantly associated with lower levels of social competence. Moreover, and unlike effects for externalizing and internalizing symptoms, resistant attachment was significantly associated with lower levels of social competence.

In order to compare the effect sizes for social competence with peers, internalizing symptoms, and externalizing symptoms for each of the attachment classifications, we computed the 85% confidence intervals for the point estimates of the combined effect sizes. Regarding the effect for security, the 85% confidence intervals for social competence and externalizing symptoms did not overlap with the 85% confidence interval for internalizing

symptoms (social competence: $k = 80$, $d = 0.39$, 85% *CI* 0.34; 0.45; externalizing: $k = 69$, $d = 0.31$, 85% *CI* 0.25; 0.37; internalizing: $k = 42$, $d = 0.15$; 85% *CI* 0.08; 0.22). Attachment security was significantly more strongly related to social competence and externalizing problems than to internalizing problems. Similarly, for resistant attachment the 85% confidence interval for social competence did not overlap with the confidence interval for internalizing symptoms, but it did overlap with the confidence interval for externalizing symptoms (social competence: $k = 12$, $d = 0.29$, 85% *CI* 0.14; 0.43; externalizing: $k = 35$, $d = 0.11$, 85% *CI* −0.01; 0.21; internalizing: $k = 21$, $d = 0.03$, 85% *CI* −0.07; 0.13). Avoidant and disorganized attachment were not significantly more strongly associated with social competence than externalizing and internalizing problems (see Figure 1).

Discussion

The current review builds on an earlier quantitative review by Schneider et al. (2001) and extends and complements findings from two recently published meta-analyses on early attachment and externalizing and internalizing symptoms (Fearon et al., 2010; Groh et al., 2010) by providing the meta-analytic estimates of the association between individual differences in attachment in the early life course and social competence with peers. In combination, this series of meta-analyses comprises the most comprehensive set of quantitative reviews of the literature on the predictive significance of early attachment for children's socioemotional developmental (mal)adaptation, allowing for the evaluation of empirical support across the literature for central claims of attachment theory. The results of the current meta-analysis provide evidence that early attachment is moderately associated with children's social competence with peers, with early security promoting children's peer competence and early insecurity, regardless of subtype, undermining children's peer competence. Moreover, consistent with evidence from Fearon et al. (2010) and Groh et al. (2012), results from the current meta-analysis provide evidence that such predictive effects endured into early adolescence in the sense that they did not decrease in magnitude as a function of the age at which social competence was assessed. Findings from these quantitative reviews also provide evidence that, in comparison to the effect of attachment insecurity on internalizing and externalizing problem behaviors, early security plays a particularly salient role in the evolution of children's peer competence.

Drawing on data from 80 samples comprising over 4,000 children, the average effect of attachment security (vs. insecurity) on children's social competence identified in the current meta-analysis was $d = 0.39$ (*CI* 0.32; 0.47). This effect is robust in the sense that over 1,400 studies with null effects would need to be added to the database to reduce the combined effect down to a trivial level, largely surpassing the fail-safe N of 514 studies required by Rosenthal's (1991) criterion. Although the magnitude of this effect is comparable to the effect from Schneider et al.'s (2001) meta-analysis on attachment and peer functioning ($d = 0.41$) published over a decade ago, the current meta-analysis provides a more precise estimate of the effect of *early* attachment security on children's *social competence with peers*.

In the current meta-analysis, we extended prior meta-analytic work by investigating the contribution of each of the insecurity subtypes to children's social competence. Consistent

with expectations (e.g., Sroufe et al., 2005), avoidance (d = 0.17, *CI* 0.05; 0.30), resistance (d = 0.29, *CI* 0.09; 0.48), and disorganization (d = 0.25, *CI* 0.10; 0.40) were all found to significantly undermine the development of children's peer competence. Moreover, the magnitudes of these associations were similar across insecurity subtypes, indicating that early avoidance, resistance, and disorganization confer similar risk for the development of children's peer competence. In contrast to prior meta-analytic evidence in which specific insecurity subtypes were found to place children at significantly heightened risk for developing specific types of psychopathology (Fearon et al., 2010; Groh et al., 2012), findings from the current meta-analysis suggest that developing an insecure attachment relationship in early childhood, regardless of subtype, is negatively associated with children's peer competence.

Consistent with the idea that early attachment has enduring implications for developmental adaptation (Sroufe et al., 1990), we found that the association between attachment and social competence did not vary with the age at which social competence was assessed, indicating that the association between early attachment security and social competence did not wane in magnitude over the course of development from infancy to early adolescence. Together with meta-analytic evidence that the effect of early attachment on internalizing and externalizing symptoms does not vary in magnitude with the age at which psychopathology is assessed (Fearon et al., 2010; Groh et al., 2012), such evidence provides mounting support for the enduring predictive significance of early attachment for children's developmental adaptation into early adolescence. As such, there is an urgent need for theory-driven studies that address mediating processes that account for such enduring effects, for example by addressing questions concerning whether such long-term continuities are due to the ongoing supportive function of attachment relationships and/or the early effects of attachment experiences on the construction of stable psychological structures (see Beijersbergen, Juffer, Bakermans-Kranenberg, & Van IJzendoorn, 2012; Belsky & Fearon, 2002; Fraley, Roisman, & Haltigan, 2013).

We also examined the role of potentially important moderators of the association between early attachment variation and social competence that have been highlighted in the literature. Focusing first on type of attachment assessment, the magnitude of the association between attachment and social competence in studies employing the AQS was found to be larger than for those employing the standard SSP, even with studies employing the mother-reported AQS removed from analyses. Interpreting this effect proves challenging due to the fact that the age at which attachment is assessed and the type of attachment assessment are confounded, as indicated by the finding that the effects for age and type of attachment assessment dropped to non-significance when simultaneously added to a meta-regression predicting study effect sizes. This pattern of results is strikingly similar to what we have found in our prior meta-analytic work on attachment and psychopathology (Fearon et al., 2010; Groh et al., 2012), and thus, is emerging as a common theme in the attachment literature. Yet, because it remains unclear if such patterns can be explained by methodological differences (e.g., longer observation time in later attachment assessments) or developmental differences (e.g., attachment representations may not consolidate until early childhood; Bowlby, 1969/1982), it is a topic that warrants further inquiry.

Focusing on the sub-set of studies that employed the AQS, prior meta-analytic evidence suggests that the mother-reported AQS is not as psychometrically valid and reliable as the observer-reported AQS (Van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004). In light of such evidence and because a considerable amount of mother-reported AQS data exist in this literature ($k = 22$), we examined whether AQS reporter influenced study effect sizes. Although AQS reporter was not found to be a significant moderator, within the sub-set of studies employing the mother-reported AQS, those that also used mother reports of social competence had significantly larger effect sizes ($d = 0.79$) than those that did not ($d = 0.40$). Thus, the mother-reported AQS may artificially inflate associations between attachment and social competence when mothers are also relied upon to report on their child's social competence, providing further support for the use of the observer-reported AQS.

Although there are relatively few claims regarding the moderating role of gender on the link between attachment and social competence, Cohn (1990) and Turner (1991) have argued that because insecure boys may be more likely to exhibit externalizing behavior problems than insecure girls, they may be especially likely to be rejected by peers and perceived as less socially competent. Partially supporting this claim, prior meta-analytic evidence indicates that although early insecurity places both boys and girls at heightened risk for developing externalizing behavior problems, this risk is especially heightened in boys (Fearon et al., 2010). In the current meta-analysis, however, gender was not found to significantly moderate the effect of attachment on social competence. Thus, perhaps because of gendered expectations for social behavior (Maccoby, 1990), the implications of exhibiting such behavior problems for insecure girls may be as harmful for their social competence as stronger levels of such behavior in insecure boys.

The impact of early attachment security on children's socioemotional development has been argued to be amplified under conditions of contextual or psychosocial risk (e.g., DeKlyen & Greenberg, 2008; Belsky & Fearon, 2002). Accordingly, we examined whether risk status moderated the effect of attachment security on children's social competence. Focusing first on socioeconomic risk, we found that whether studies focused on low versus high/middle SES samples did not moderate the effect of attachment on social competence. Combined with meta-analytic evidence that SES does not moderate the association between attachment and externalizing and internalizing symptomatology (Fearon et al., 2010; Groh et al., 2012), our results cumulatively provide little support for a diathesis-stress model in which the influence of attachment on future adaptation is theorized to be strongest in economically deprived populations. Next, we examined whether other risk factors moderated the impact of attachment security on social competence. Similar to findings regarding socioeconomic risk, whether samples were at-risk (vs. not at-risk) for other contextual (e.g., prenatal exposure to drugs) or psychosocial (e.g., child psychopathology) reasons was not found to moderate the effect of attachment on social competence, again, providing little evidence for a cumulative-risk model.

Despite such evidence, it is important to note that within the literature on risk and resilience, it has been argued that the experience of multiple risk factors may be especially important for heightening children's risk for developmental maladaptation (Rutter, 1979). In fact,

within the NICHD SECCYD it has been found that the association between attachment and social competence is amplified under conditions of multiple risk factors (Belsky & Fearon, 2002). Because so few studies in the literature have included samples with multiple risk factors ($k = 3$), we were unable to address whether the experience of multiple risk factors compounds the effect of early attachment on social competence. As such, the literature would benefit from more studies focused on samples experiencing multiple types of risk. In addition to focusing on contextual factors, future research might also consider the role of children's differential susceptibility to context, investigating whether there are some children for whom the predictive significance of attachment variation is amplified, for better and for worse (Belsky, Bakermans-Kranenburg, & Van IJzendoorn, 2007; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van IJzendoorn, 2011; Van IJzendoorn & Bakermans-Kranenburg, 2012).

In light of arguments that friendships may have an attachment component (Ainsworth, 1989) and early attachment variation might be especially predictive of children's friendships (Belsky & Cassidy, 1995; Sroufe, 1988), we also investigated whether the association between attachment and social competence was stronger when children's social competence with friends (vs. non-friends) was the outcome. Although we did find that type of relationship moderated the effect of security on peer competence, the magnitude of the effect was strongest when social competence with *non-friends* was assessed, a pattern consistent across insecurity subtypes.

This finding is surprising given past theorizing and evidence from an earlier meta-analysis in which the influence of security on friendships was found to be stronger than on non-friend peer relationships (Schneider et al., 2001). Although this prior meta-analysis was broader in scope than the current meta-analysis, for this particular contrast, studies in the prior and current meta-analyses largely overlapped in terms of the assessment age of attachment (i.e., with the exception of one study in which attachment was assessed via self-report at age 10 in Schneider et al. [2001], all attachment assessments were administered before 5.5 years) and social competence (assessments conducted between 3 – 11 years), making such factors unlikely contributors to the divergence in findings. However, a number of other factors might have played a role, the most obvious of which is that a number of additional studies on attachment and friendship ($k = 6$) have been published since the prior meta-analysis, some of which reported weak or non-significant effects (e.g., Agnor, 2009). In addition, the earlier meta-analysis by Schneider et al. (2001) appears to have missed some studies, the majority of which produced weak, non-significant effects (e.g., Clarke-Stewart, 1981; Hubbs-Tait et al., 1994). Moreover, the prior meta-analysis included some articles not included in the current review because they drew on data from the overlapping samples (e.g., Kerns, 1994; Park & Waters, 1989) or the attachment assessment did not meet our inclusion criteria (e.g., self-report, Kerns et al., 1996). Such factors likely contributed to the larger effect for friends reported by Schneider et al. (2001; $d = 0.49$) than reported here ($d = 0.15$). Of course, meta-analyses require decisions about ways in which data are collected and coded that might differ between research teams. Explicit decision rules make it possible for researchers and readers to reconcile or interpret divergent outcomes.

A potential factor that might have contributed to the larger effect for *non-friends* reported here ($d = 0.41$) than reported previously ($d = 0.28$), is that in the current meta-analysis, the effect for friends was compared to the effect for non-friends for all studies with relevant data, whereas Schneider and colleagues' (2001) effect for non-friends reflects a smaller sample of studies that were randomly selected and matched to each study reporting on friends. Thus, we also examined effects within the same type of social competence outcome assessment by comparing the effect of attachment security on observations of friend and non-friend dyads, and found again that the magnitude of the effect for attachment security was stronger for children's social competence with non-friends than friends. Taken together, while this pattern of findings was unexpected, it is important to emphasize that early attachment security significantly contributed to both children's social competence with friends *and* non-friends, highlighting the broad significance of early attachment security for children's social competence with peers regardless of friendship status.

Providing further evidence for the idea that attachment quality has broad implications for children's interpersonal functioning with peers, in the current meta-analysis, we found limited evidence that the type of social competence assessment moderated the association between early attachment security and peer competence. That said, the effect for resistant attachment was found to be stronger among studies employing social skills assessments than those employing sociometric assessments. Prior evidence suggests that resistant children may exhibit behavior that might exclude them from the peer group (e.g., chronic contact/attention seeking behavior toward teachers; Sroufe, Fox, & Pancake, 1983). Thus, resistance may be especially associated with lower levels of reported social skills because such dependent behavior may lead them to be perceived as less socially competent by adults, but not actively disliked by peers.

Evidence from this meta-analysis provides a more precise estimate of the magnitude of the effect of *early* attachment security and insecurity subtypes on children's peer competence and clarifies the role of potential moderating factors. At the same time, however, this report highlights some of the gaps in the current literature. First, as seen most clearly in Figure 1, in comparison to the literature on early attachment and internalizing and externalizing symptoms, the majority of studies on attachment and social competence exclusively report on data for the insecure group as a whole, resulting in strikingly few studies reporting on data for insecure subtypes. The consequence of this lack of data is that in the current meta-analysis there were too few studies to allow for an investigation of potential moderators of the negative effect of avoidance and resistance on children's social competence. Clearly, there is a need for future studies to report data for the insecurity subtypes. Second, based on the available data in the literature, father-child attachment security was not found to significantly predict peer competence, suggesting that, unlike mother-child attachment, father-child attachment is not an especially strong predictor of children's peer competence. Some caution is urged when interpreting this effect, however, because some attachment scholars have argued that the effects of father-child attachment may differ by the gender of the child (e.g., Berlin et al., 2008; Grossmann, Grossmann, & Kindler, 2005; Schneider et al., 2001). Because of the limited number of studies reporting on father-child attachment and the fact that only two of these studies report on effects separately for boys and girls, we were

unable to evaluate the empirical evidence in light of this claim, highlighting the need for further research in this area.

Having now taken stock of the literatures on the predictive significance of early attachment for children's peer competence, externalizing symptomatology (Fearon et al., 2010), and internalizing symptomatology (Groh et al., 2012), we are able to evaluate the empirical evidence in light of claims regarding the relative predictive significance of early attachment across developmental domains. Providing some support for the claim that the early parent-child attachment relationship might be expected to have the strongest implications for subsequent interpersonal relations and important, yet weaker, implications for psychopathology (Belsky & Cassidy, 1995; Sroufe, 1988), in the current meta-analysis the effect of early attachment security was largest in magnitude for children's social competence with peers and stronger than the effect for internalizing symptoms. However, the meta-analytic association between early security and peer competence was not significantly larger than that of early security and externalizing symptoms. It is important to note, however, that externalizing symptoms includes aspects of maladaptive behavior exhibited within the peer context (e.g., aggression), and due to the social context in which such behavior occurs, it may be especially associated with early security. In fact, the meta-analytic association between early security and observations of children's externalizing symptoms ($d = 0.58$), most of which were conducted with peers, was larger than reports of externalizing symptoms by parents ($d = 0.22$) and teachers ($d = 0.30$; Fearon et al., 2010), and such effects based on parent and teacher reports were smaller in magnitude than the association between early attachment and peer competence ($d = .39$). Similarly, a potential reason the meta-analytic effect of security was found to be weakest for internalizing symptoms might be the heavy reliance on observations of internalizing symptoms by mothers and teachers who find it difficult to report on such symptoms. As noted in Groh et al. (2012), further research that makes use of trained observers (e.g., clinicians) of internalizing symptoms is necessary to examine whether the effect of security on internalizing symptoms is larger and more comparable to the effect on externalizing symptoms and social competence when such reports are used.

Finally, we would be remiss if we failed to note that, although we believe that meta-analytic reviews are crucial in advancing our understanding of large, complex literatures, questions remain about the causal implications of early attachment security for subsequent adaptation. The current review, like those of Fearon et al. (2010) and Groh et al. (2012), focused exclusively on bivariate associations between early attachment security and subsequent manifestations of peer competence, as well as the patterning of those predictive relations as a function of when peer competence was assessed and other moderators. Having now taken stock of the literature, the field would certainly benefit from studies that take advantage of the best of nonexperimental and experimental (i.e., intervention) research designs with a focus both on unconfounding effects of shared genes from shared environments in attachment research (Fearon et al., 2006; Roisman & Fraley, 2008) and in identifying the precise mechanisms through which early attachment-relevant experiences have enduring implications for developmental adaptation.

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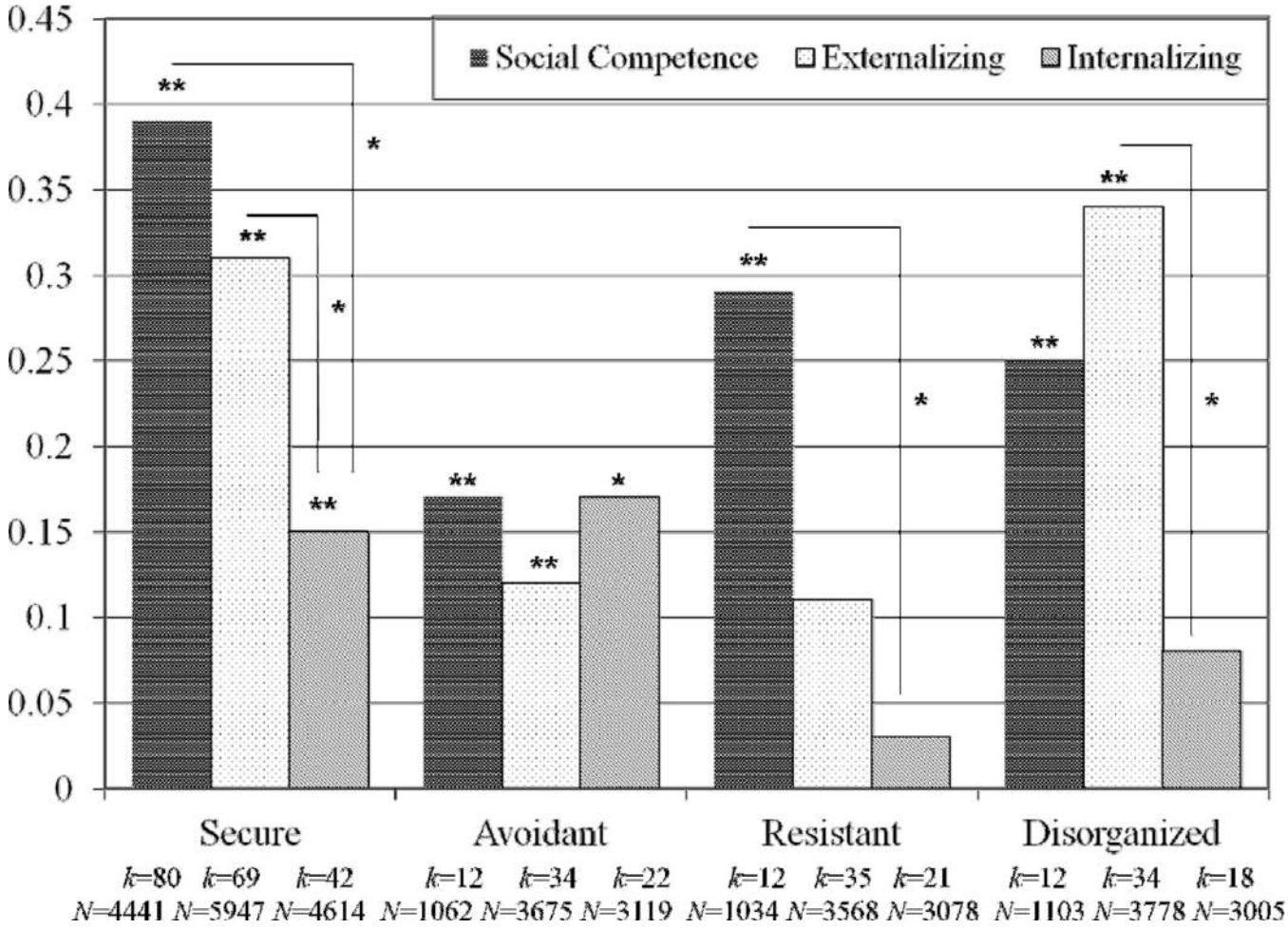

Figure 1. Combined Effect Sizes for the Four Attachment Categories for Social Competence with Peers, Externalizing Symptoms, and Internalizing Symptoms

Note. Secure = Secure v. All Insecure (avoidant, resistant, disorganized); Avoidant = Insecure-Avoidant v. All Not-Avoidant (secure, resistant, disorganized); Resistant = Insecure-Resistant v. All Not-Resistant (secure, avoidant, disorganized); Disorganized = Disorganized v. All Not-Disorganized (secure, avoidant, resistant). Asterisks over bars indicate significant combined effect sizes. Asterisks along lines indicate significant differences between the combined effect sizes. Effect sizes are presented in the direction of hypotheses. Thus, security was associated meta-analytically with higher levels of social competence and lower levels of externalizing and internalizing symptomatology, whereas insecure subtypes were associated meta-analytically with lower levels of social competence and higher levels of externalizing and internalizing symptomatology.

*$p < .05$ ** $p < .01$

Table 1

Sample characteristics for studies

Source	Sample Description	Attachment Measure[1]	Assessment Type[2]	Relationship Type	Age of Attachment	Age of Outcome	*N*
Adams, 1994	Low SES	SSP	Soc Skills	Non-Friend	17 mo.	93 mo.	25
Adamson, 1990		AQS (P)	Group Obs	Non-Friend	54 mo.	54 mo.	28
Agnor, 2009	Low SES; Males	AQS (P)	Soc Skills; Socio	Friend; Non-Friend	60 mo.	60 mo.	16
	Low SES; Females	AQS (P)	Soc Skills; Socio	Friend; Non-Friend	60 mo.	60 mo.	13
Balentine, 2007	Mixed At-Risk/Not At-Risk	AQS (P)	Soc Skills; Socio	Non-Friend	24 mo.	48 mo.	165
Barglow et al., 1998	Males	SSP	Dyadic Obs	Non-Friend	12 mo.	82 mo.	47
	Females	SSP	Dyadic Obs	Non-Friend	12 mo.	82 mo.	45
Bohlin et al., 2000		SSP	Group Obs	Non-Friend	15 mo.	96 mo.	87
		SSP	Soc Skills; Socio	Non-Friend	15 mo.	102 mo.	87
Booth et al., 1998	Males	MSSP	Soc Skills; Blend	Friend; Non-Friend	52 mo.	96 mo.	34
	Females	MSSP	Soc Skills; Blend	Friend; Non-Friend	52 mo.	96 mo.	24
Bost et al., 1998	Low SES	AQS (Obs)	Blend	Non-Friend	42 mo.	42 mo.	69
Bureau & Moss, 2010		MSSP	Soc Skills	Non-Friend	76 mo.	76 mo.	104
Burmenskaya, 2009		MSSP	Soc Skills	Non-Friend	72 mo.	72 mo.	42
Burns, 2002		AQS (P)	Soc Skills; Group Obs	Non-Friend	48 mo.	48 mo.	44
Carter et al., 1999		SSP	Soc Skills	Non-Friend	12 mo.	12 mo.	90
Cassibba et al., 2000		AQS (Obs)	Group Obs	Non-Friend	26 mo.	26 mo.	50
Cassidy, 1988		MSSP	Soc Skills	Non-Friend	62 mo.	62 mo.	52
Cassidy et al., 1996		MSSP	Socio	Friend	66 mo.	66 mo.	33
Clarke-Stewart, 1981		MSSP	Dyadic Obs	Friend; Non-Friend	30 mo.	30 mo.	62
Denham, DeMulder, & Mitchell-Copeland Sample							
DeMulder et al., 2000	Males	AQS (Obs)	Soc Skills; Socio	Non-Friend	47 mo.	47 mo.	51
	Females	AQS (Obs)	Soc Skills; Socio	Non-Friend	47 mo.	47 mo.	43
Mitchell-Copeland et al., 1997		AQS (Obs)	Group Obs	Non-Friend	45 mo.	45 mo.	62
Fagot, 1997		SSP	Soc Skills; Group Obs	Non-Friend	18 mo.	21 mo.	156
Freitag et al., 1996	Mother-Child Attachment	SSP	Soc Skills	Friend	12 mo.	120 mo.	40
	Father-Child Attachment	SSP	Soc Skills	Friend	18 mo.	120 mo.	33
Howes Sample							

Source	Sample Description	Attachment Measure[1]	Assessment Type[2]	Relationship Type	Age of Attachment	Age of Outcome	*N*
Bystritsky, 1999		SSP	Social Skills	Friend	12 mo.	168 mo	62
Howes et al., 1990		SSP	Group Obs	Non-Friend	12 mo.	22 mo.	42
Howes et al., 1990		AQS (Obs)	Group Obs	Non-Friend	19 mo.	19 mo.	60
Hubbs-Tait et al., 1994	Low SES	SSP	Soc Skills	Friend; Non-Friend	13 mo.	54 mo.	42; 41
Jacobson et al., 1986		SSP	Dyadic Obs	Non-Friend	18 mo.	24 mo.	24
Kaloustian, 2008		AQS (Obs)	Soc Skills	Non-Friend	66 mo.	92 mo.	33
Kerns & Barth, 1995	Mother-Child Attachment						
	Males	AQS (P)	Soc Skills; Socio	Non-Friend	44 mo.	44 mo.	18
	Females	AQS (P)	Soc Skills; Socio	Non-Friend	44 mo.	44 mo.	18
	Father-Child Attachment						
	Males	AQS (P)	Soc Skills	Non-Friend	44 mo.	44 mo.	18
	Females	AQS (P)	Soc Skills	Non-Friend	44 mo.	44 mo.	18
Korntheuer et al., 2010		MSSP	Blend	Non-Friend	24 mo.	24 mo.	85
Kremmel, 2008	Low SES	AQS (P)	Socio	Non-Friend	54 mo.	54 mo.	91
LaFrenière et al., 1992	Mother-Child Attachment						
	Males	AQS (P)	Soc Skills; Group Obs	Non-Friend	44 mo.	44 mo.	41
	Females	AQS (P)	Soc Skills; Group Obs	Non-Friend	45 mo.	45 mo.	42
	Father-Child Attachment						
	Males	AQS (P)	Soc Skills; Group Obs	Non-Friend	44 mo.	44 mo.	41
	Females	AQS (P)	Soc Skills; Group Obs	Non-Friend	45 mo.	45 mo.	42
Laible, 2006		AQS (P)	Soc Skills	Non-Friend	53 mo.	53 mo.	51
Lamarca, 1995		AQS (P)	Socio; Group Obs	Non-Friend	55 mo.	55 mo.	81
Lewis & Feiring, 1989		MSSP	Soc Skills	Friend	12 mo.	108 mo.	125
Lieberman, 1977		MSSP	Dyadic Obs	Non-Friend	36 mo.	36 mo.	40
Malatesta-Magai et al., 1994		SSP	Dyadic Obs	Non-Friend	22 mo.	34 mo.	42
Mallik, 2000	Low SES; At-Risk	SSP	Soc Skills	Non-Friend	15 mo.	36 mo.	50
McElwain & Volling, 2004	Mother-Child Attachment	SSP	Dyadic Obs	Friend	12 mo.	51 mo.	30
	Father-Child Attachment	SSP	Dyadic Obs	Friend	12 mo.	51 mo.	30
Milligan, 2004		AQS (P)	Dyadic Obs	Friend	66 mo.	66 mo.	30
Minnesota Sample							
LaFreniére, 1982	Low SES; Effect for C	SSP	Group Obs	Non-Friend	15 mo.	50 mo.	36

Source	Sample Description	Attachment Measure[1]	Assessment Type[2]	Relationship Type	Age of Attachment	Age of Outcome	*N*
Pancake, 1988	Low SES; Effect for A	SSP	Dyadic Obs	Non-Friend	15 mo.	53 mo.	12
Pastor, 1980	Low SES; Effect for B/A/C	SSP	Dyadic Obs	Non-Friend	15 mo.	22 mo.	37
Shulman et al., 1994	Low SES; Effect for A/C	SSP	Soc Skills	Non-Friend	15 mo.	128 mo.	32
	Low SES; Effect for B	SSP	Socio; Dyadic Obs	Friend	15 mo.	128 mo.	32
Sroufe, 1983	Low SES; Effect for B	SSP	Socio; Group Obs	Non-Friend	15 mo.	50 mo.	39
Sroufe et al., 1999	Low SES; Effect for B	SSP	Soc Skills	Non-Friend	15 mo.	48 mo.	84
Nakano, 1984–1985	Females	SSP	Dyadic Obs	Non-Friend	18 mo.	23 mo.	7
Neyer et al., 1998		MSSP	Blend	Non-Friend	46 mo.	46 mo.	52
NICHD SECCYD Sample							
	Low SES						
	Males	SSP	Soc Skills	Non-Friend	15 mo.	24 mo.	60
		SSP	Group Obs	Non-Friend	15 mo.	24 mo.	18
		SSP	Dyadic Obs	Friend	15 mo.	36 mo.	19
		SSP	Socio	Non-Friend	15 mo.	54 mo.	32
	Females	SSP	Soc Skills	Non-Friend	15 mo.	24 mo.	58
		SSP	Group Obs	Non-Friend	15 mo.	24 mo.	21
		SSP	Dyadic Obs	Friend	15 mo.	36 mo.	18
		SSP	Socio	Non-Friend	15 mo.	54 mo.	28
	High/Middle SES						
	Males	SSP	Soc Skills	Non-Friend	15 mo.	24 mo.	516[3]
		SSP	Group Obs	Non-Friend	15 mo.	24 mo.	303[3]
		SSP	Dyadic Obs	Friend	15 mo.	36 mo.	278[3]
		SSP	Socio	Non-Friend	15 mo.	54 mo.	325[3]
	Females	SSP	Soc Skills	Non-Friend	15 mo.	24 mo.	505[3]
		SSP	Group Obs	Non-Friend	15 mo.	24 mo.	307[3]
		SSP	Dyadic Obs	Friend	15 mo.	36 mo.	284[3]
		SSP	Socio	Non-Friend	15 mo.	54 mo.	361[3]
Panfile & Laible, 2012		AQS (P)	Soc Skills	Non-Friend	36 mo.	36 mo.	63
Park, 1992		AQS (P)	Soc Skills	Friend	54 mo.	54 mo.	41

Source	Sample Description	Attachment Measure[1]	Assessment Type[2]	Relationship Type	Age of Attachment	Age of Outcome	*N*
Park & Waters, 1989		AQS (P)	Dyadic Obs	Friend	45 mo.	45 mo.	33
Pitterle, 2003		AQS (P)	Soc Skills	Non-Friend	48 mo.	48 mo.	60
Purdue Sample							
Porter, 2009		AQS (P)	Group Obs	Non-Friend	48 mo.	48 mo.	54
Walls, 1997		AQS (P)	Soc Skills	Non-Friend	16 mo.	51 mo.	33
Regan, 1996		SSP	Soc Skills	Friend	16 mo.	102 mo.	51
Ritchie, 1995	Low SES; At-Risk	AQS (Obs)	Soc Skills	Non-Friend	58 mo.	58 mo.	23
Silverman, 1990	Males	AQS (Obs)	Soc Skills	Non-Friend	41 mo.	41 mo.	18
	Females	AQS (Obs)	Soc Skills	Non-Friend	41 mo.	41 mo.	18
Smeekens et al., 2009		MSSP	Blend	Non-Friend	15 mo.	64 mo.	108
Stams et al., 2002	At-Risk; Effect for B	SSP	Blend	Non-Friend	12 mo.	84 mo.	145
	At-Risk; Effect for D	SSP	Blend	Non-Friend	12 mo.	84 mo.	143
Suess et al., 1992	Mother-Child Attachment	SSP	Group Obs	Non-Friend	12 mo.	60 mo.	35
	Father-Child Attachment	SSP	Group Obs	Non-Friend	18 mo.	60 mo.	33
Sull, 1995		AQS (P)	Group Obs	Non-Friend	56 mo.	56 mo.	89
Szewczyk-Sokolowski et al., 2005		AQS (Obs)	Socio	Non-Friend	54 mo.	54 mo.	98
Thompson, 2000	Not At-Risk	MSSP	Soc Skills	Non-Friend	54 mo.	54 mo.	44
	At-Risk	MSSP	Soc Skills	Non-Friend	54 mo.	54 mo.	37
Turner, 1991	Males	MSSP	Group Obs	Non-Friend	54 mo.	54 mo.	18
	Females	MSSP	Group Obs	Non-Friend	54 mo.	54 mo.	22
U. of Texas at Austin Sample							
Cutler, 1995	Father-Child Attachment	AQS (P)	Dyadic Obs	Friend	45 mo.	45 mo.	35
Goldetsky, 1999	Mother-Child Attachment	SSP	Dyadic Obs	Friend	18 mo.	26 mo.	28
U. of Virginia Sample							
Cohn, 1990	Males; Effect for B	MSSP	Soc Skills; Socio	Non-Friend	74 mo.	74 mo.	34
	Females; Effect for B	MSSP	Soc Skills; Socio	Non-Friend	74 mo.	74 mo.	46
Cohn, 1988	Males; Effect for D	MSSP	Socio	Non-Friend	74 mo.	74 mo.	42
	Females; Effect for D	MSSP	Socio	Non-Friend	74 mo.	74 mo.	47
Van IJzendoorn et al., 1992		SSP	Soc Skills; Group Obs	Non-Friend	12 mo.	55 mo.	56
Vandell et al., 1988		SSP	Dyadic Obs	Non-Friend	12 mo.	15 mo.	28

Source	Sample Description	Attachment Measure[1]	Assessment Type[2]	Relationship Type	Age of Attachment	Age of Outcome	*N*
Veríssimo et al., 2011	Mother-Child Attachment	AQS (Obs)	Socio	Friend	32 mo.	54 mo.	35
	Father-Child Attachment	AQS (Obs)	Socio	Friend	32 mo.	54 mo.	35
Vondra et al., 1999	Low SES	MSSP	Soc Skills	Non-Friend	18 mo.	85 mo.	88
Waters et al., 1979		MSSP	Group Obs	Non-Friend	15 mo.	42 mo.	32
Weatherill, 2007	Low SES; Not At-Risk	SSP	Soc Skills	Non-Friend	12 mo.	48 mo.	29
	Low SES; At-Risk	SSP	Soc Skills	Non-Friend	12 mo.	48 mo.	56
Wood et al., 2004		AQS (P)	Socio	Non-Friend	42 mo.	57 mo.	37
Wu, 1992		AQS (P)	Soc Skills; Socio	Non-Friend	58 mo.	58 mo.	78
Youngblade & Belsky, 1992	Mother-Child Attachment	SSP	Dyadic Obs	Friend	12 mo.	60 mo.	73
	Father-Child Attachment	SSP	Dyadic Obs	Friend	13 mo.	60 mo.	66

[1] AQS = Waters and Deane (1985) Attachment Q-Set (Obs indicates completed by observer, P indicates completed by parent); MSSP = Modified SSP by reducing number of separations, lengthening duration of separation, combining SSP with Cassidy and Marvin/MacArthur Preschool Attachment Coding System; SSP = Ainsworth, Blehar, Waters, and Wall (1978) Strange Situation procedure

[2] Dyadic Obs = Directly observed social competence in dyads; Group Obs = Directly observed social competence in groups; Soc Skills = Reported Social Skills; Socio = Sociometrics; Blend = Blend of reported social skills, sociometrics, and/or direct observation of social competence

[3] Values reflect sample size before winsorizing; winsorized *N* for High/Middle SES males = 185; winsorized *N* for High/Middle SES females = 175.

Table 2

Secure Attachment and Social Competence with Peers

	k	N	d	Confidence Interval 95%	Homogeneity Q	Contrast Q[1]	Contrast p
Secure v. Insecure (A, C, D)[2]	80	4,441	0.39**	0.32 – 0.47	104.84*		
At-risk						0.58	.75
Not at-risk	74	3,965	0.38**	0.30 – 0.46	96.69*		
At-risk child	5	311	0.47**	0.18 – 0.77	6.90		
Mixed	1	165	0.50*	0.04 – 0.96	NA		
Gender						2.36	.31
Boys	11	522	0.37**	0.15 – 0.59	10.62		
Girls	12	511	0.23*	0.01 – 0.45	8.19		
Mixed	57	3,408	0.42**	0.33 – 0.50	81.99**		
SES						2.40	.12
Middle/high	66	3,738	0.42**	0.33 – 0.50	89.30*		
Low	14	703	0.26**	0.08 – 0.44	13.58		
Attachment measure						7.35*	
SSP	28	1,789	0.27**	0.16 – 0.39	24.21		
MSSP	20	1,082	0.41**	0.26 – 0.55	36.76**		
AQS	32	1,570	0.50**	0.38 – 0.62	33.64	0.55	.46
Observer-report	11	498	0.56**	0.36 – 0.77	11.45		
Outcome by mother	1	33	0.58	−0.24 – 1.40	NA		
Outcome by non-mother	10	465	0.57	0.34 – 0.80	11.45		
Mother-report	21	1,072	0.47**	0.33 – 0.61	22.66	5.48*	
Outcome by mother	4	215	0.79**	0.50 – 1.09	2.27		
Outcome by non-mother	17	857	0.40**	0.26 – 0.54	13.91		

* $p < .05$

** $p < .01$

[1] subgroups with $k < 4$ excluded from contrast;

[2] A=Avoidant, C=Resistant, D=Disorganized

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Table 3

Avoidant, Resistant, and Disorganized Attachment and Social Competence with Peers

	k	N	D	Confidence Interval 95%	Homogeneity Q	Contrast Q^1	Contrast p
Insecure Subtype v. All Other Attachment Patterns Combined							
Avoidant v. Not-Avoidant (B, C, D)[2]	12	1,062	0.17**	0.05 – 0.30	7.48		
Gender							
Boys	2	245	0.20	−0.06 – 0.45	1.55		
Girls	2	233	0.09	−0.17 – 0.35	0.56		
Mixed	8	584	0.20*	0.02 – 0.37	4.92		
SES							
Middle/high	9	907	0.17**	0.04 – 0.31	5.62		
Low	3	155	0.17	−0.16 – 0.50	1.87		
Attachment measure							
SSP	11	958	0.18**	0.05 – 0.31	7.44		
MSSP	1	104	0.13	−0.26 – 0.53	NA		
Resistant v. Not-Resistant (A, B, D)[2]	12	1,034	0.29**	0.09 – 0.48	22.12*		
Gender							
Boys	2	245	0.22	−0.29 – 0.73	2.80		
Girls	3	240	0.46	−0.04 – 0.97	10.16**		
Mixed	7	549	0.27	−0.03 – 0.57	8.39		
SES							
Middle/high	9	879	0.13	0.00 – 0.27	7.49		
Low	3	155	0.81**	0.46 – 1.16	2.24		
Attachment measure							
SSP	11	930	0.29**	0.07 – 0.51	21.79*		
MSSP	1	104	0.33	−0.31 – 0.97	NA		
Disorganized v. Not-Disorganized (A, B, C)[2]	12	1,103	0.25**	0.10 – 0.40	15.39		
At-risk							
Not at-risk	10	910	0.23**	0.06 – 0.40	14.71		

	k	N	D	Confidence Interval 95%	Homogeneity Q	Contrast Q[1]	Contrast p
At-risk child	2	193	0.33	−0.05 – 0.70	0.12		
Gender							
Boys	3	287	0.12	−0.18 – 0.42	8.08*		
Girls	3	280	0.16	−0.15 – 0.46	1.81		
Mixed	6	536	0.35**	0.14 – 0.56	2.05		
SES						3.27	.07
Middle/high	8	894	0.31**	0.15 – 0.46	9.09		
Low	4	209	0.00	−0.30 – 0.30	2.91		
Attachment measure						3.99*	
SSP	8	802	0.16*	0.01 – 0.31	8.75		
MSSP	4	301	0.46**	0.21 – 0.72	2.33		
Insecure Subtype v. Secure							
Avoidant v. Secure	12	914	0.27	0.11 – 0.43	13.63		
Resistant v. Secure	12	847	0.41	0.16 – 0.66	26.85**		
Disorganized v. Secure	9	694	0.26	0.07 – 0.44	10.11		
Insecure Subtype v. Other Insecure Subtype							
Avoidant v. Resistant	11	457	0.00	–0.19 – 0.19	NA		
Avoidant v. Disorganized	6	409	–0.05	−0.25 – 0.15	NA		
Resistant v. Disorganized	6	351	–0.02	−0.14 – 0.09	NA		

* $p < .05$

** $p < .01$

[1] subgroups with $k < 4$ excluded from contrast;

[2] A=Avoidant, B=Secure, C=Resistant, D=Disorganized

Table 4

Attachment Related to Assessment and Relationship Type

	k	N	d	Confidence Interval 85%	Homogeneity Q	Contrast Q[1]	Contrast p
Secure v. Insecure (A, C, D)[2]							
Relationship						9.46**	
Friend	23	1,201	0.15*	0.04 – 0.26	28.45		
Not Friend	68	3,888	0.41**	0.35 – 0.47	91.19*		
Assessment Type						1.42	.70
Blend	7	517	0.40**	0.22 – 0.58	12.09		
Reported Social Skills	47	2,742	0.37**	0.29 – 0.45	68.40*		
Sociometrics	22	1,403	0.39**	0.28 – 0.50	27.71		
Observations	43	2,454	0.30**	0.22 – 0.38	66.14**	6.99*	
Group	23	1,437	0.31**	0.21 – 0.41	34.23*		
Dyadic (Friend)	11	685	0.10	–0.04 – 0.24	9.99		
Dyadic (Non-Friend)	9	332	0.54**	0.34 – 0.73	12.91		
Avoidant v. Not-Avoidant (B, C, D)[2]							
Relationship						0.15	.70
Friend	6	460	0.12	–0.04 – 0.28	10.47		
Not Friend	11	1,011	0.17*	0.06 – 0.28	7.44		
Assessment Type						0.17	.92
Reported Social Skills	10	998	0.21**	0.10 – 0.33	12.84		
Sociometrics	5	507	0.19	0.03 – 0.36	0.87		
Observations	14	1,147	0.17*	0.06 – 0.28	20.22	0.47	.79
Group	7	677	0.23	0.05 – 0.42	8.11		
Dyadic (Friend)	4	397	0.09	–0.16 – 0.33	10.32*		
Dyadic (Non-Friend)	3	73	0.20	–0.26 – 0.66	1.40		
Resistant v. Not-Resistant (A, B, D)[2]							
Relationship						5.78*	

	k	N	d	Confidence Interval 85%	Homogeneity Q	Contrast Q[1]	Contrast p
Friend	5	448	–0.08	–0.27 – 0.11	2.24		
Not Friend	11	983	0.31**	0.18 – 0.43	18.91*		
Assessment Type						4.72	.09
Reported Social Skills	10	998	0.27**	0.13 – 0.42	28.73**		
Sociometrics	5	507	–0.11	–0.32 – 0.10	3.32		
Observations	13	1,122	0.10	–0.04 – 0.24	16.07	4.35	.11
Group	6	657	0.14	0.01 – 0.27	8.16		
Dyadic (Friend)	4	397	–0.03	–0.20 – 0.13	1.57		
Dyadic (Non-Friend)	3	68	0.56*	0.16 – 0.96	1.41		
Disorganized v. Not-Disorganized (A, B, C)[2]							
Relationship						3.00	.08
Friend	5	439	0.01	–0.15 – 0.18	2.56		
Not Friend	12	1,103	0.24**	0.14 – 0.34	15.24		
Assessment Type						4.93	.18
Blend	2	251	0.40**	0.19 – 0.61	0.10		
Reported Social Skills	8	763	0.14	0.02 – 0.26	7.63		
Sociometrics	6	509	0.07	–0.08 – 0.22	10.43		
Observations	8	796	0.04	–0.08 – 0.16	5.28	0.08	.78
Dyadic (Friend)	4	399	0.06	–0.09 – 0.21	2.65		
Dyadic (Not Friend)	4	397	0.02	–0.13 – 0.17	2.55		

* $p < .05$

** $p < .01$

[1] subgroups with $k < 4$ excluded from contrast;

[2] A=Avoidant, B=Secure, C=Resistant, D=Disorganized