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Children's Attachment to Both Parents from Toddler Age to Middle Childhood: Links to Adaptive and Maladaptive Outcomes

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Abstract

We examined children's attachment security with their mothers and fathers in a community sample ($N = 100$). At 25 months, mothers, fathers, and trained observers completed Attachment Q-Set (AQS). At 100 months, children completed Kerns Security Scale (KSS) for each parent. Children's adaptation (behavior problems and competence in broader ecologies of school and peer group, child- and parent-reported) was assessed at 100 months. By and large, the child's security with the mother and father was modestly to robustly concordant across both relationships, depending on the assessment method. Observers' AQS security scores predicted children's self-reported security 6 years later. For children with low AQS security scores with mothers, variations in security with fathers had significant implications for adaptation: Those whose security with fathers was also low reported the most behavior problems and were seen as least competent in broader ecologies, but those whose security with fathers was high reported few problems and were seen as competent. Security with fathers, observer-rated and child-reported, predicted children's higher competence in broader ecologies. A cumulative index of the history of security from toddler age to middle childhood, integrating measures across both relationships and diverse methodologies, was significantly associated with positive adaptation at 100 months.

Keywords

children's attachment; behavior problems; competence

Ever since Bowlby proposed his groundbreaking and heuristically generative ideas on children's early bonds with their caregivers (1969/1982/1973), attachment theory and research have occupied a central role in the field of social-emotional development. A great deal has been learned about implications of early attachment for future developmental cascades and outcomes, including children's socio-emotional adjustment, competencies, mental health, and behavior problems. Generally, research has supported attachment theory's premise that early security is broadly beneficial for children's developmental adaptation and competence, whereas insecurity carries risks for psychopathology (e.g., Belsky & Nezworski, 1988; Brumariu & Kerns, 2010; DeKlyen & Greenberg, 2008; Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Sroufe, 1996, 2005;

Thompson, 2006, 2008a; Weinfield, Sroufe, Egeland, & Carlson, 2008). Several gaps in our understanding, however, remain.

Generally, when studied in early childhood, attachment stability has been mostly studied for Strange Situation classifications over a relatively limited period of time (Thompson, 2006). Some studies that have examined attachment over several years, notably, the Minnesota Longitudinal Study (Sroufe, Egeland, Carlson, & Collins, 2005) have typically reported some stability, although sometimes it was very modest (McCartney, Owen, Booth, Clarke-Stewart, & Vandell, 2004; see also reviews by Solomon & George, 2008; Thompson, 2006; Pinquart, Feußner, & Ahnert, 2013). Both parents, however, have rarely been included, and in most of the existing research, the child's attachment organization has been assessed with one caregiver (typically the mother).

The need for a better understanding of converging influences of multiple attachment relationships in the child's early social world has been stressed repeatedly (Berlin, Cassidy, & Appleyard, 2008; Brumariu & Kerns, 2010; Fearon et al., 2010; Steele, Steele, & Fonagy, 1996), and even identified as one of the key issues for attachment research in the 21st century (Thompson & Raikes, 2003). The importance of this issue dovetails with societal and cultural transformations regarding fatherhood (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Pleck, 2010). On the one hand, fathers have increasingly become involved as caregivers and attachment figures in young children's lives. On the other hand, the number of female-headed and divorced families has also increased, leading to a growing appreciation of the important role of non-resident fathers as continuing caregivers (Maccoby, Mnookin, Depner, & Peters, 1992; Williams & Kelly, 2005). Although still very sparse, research on fathers as attachment figures has been growing (Bretherton, 2010).

Some studies of security with both parents do exist (El-Sheikh & Buckhalt, 2003; Noom, Dekovic, & Meeus, 1999; Kerns, Tomich, Aspelmeier, & Contreras, 2000; Steele et al., 1996; Suess, Grossmann, & Sroufe, 1992; Verschueren & Marcoen, 1999; Williams & Kelly, 2005). Recently, Kochanska and Kim (2013) examined consequences of the infant's attachment to both mother and father for the child's behavior problems in middle childhood. That study, however, assessed attachment only once. Rarely, have studies examined a child's attachment organization to *both parents* and *at several time points* between infancy and middle childhood, and the implications for his or her future adaptation (but see Grossmann, Grossmann, & Kinder, 2005; Steele & Steele, 2005 for two exceptions). To examine the developmental trajectory from toddler age to middle childhood in mother-child and father-child dyads was the main objective of this study.

In the earlier paper (Kochanska & Kim, 2013), based on the same sample as the one in the current report, children's security was assessed in the Strange Situation in infancy. For children insecure with one parent, being secure with the other parent effectively offset risks for future behavior problems, assessed in a clinical interview in middle childhood. The patterns were the same for attachment to mother and to father: Security with either parent could offset the developmental risks. Having been insecure with both parents conferred the highest risk.

The current study examines, for the same children and parents, links between children's later attachment to their mothers and fathers and developmental outcomes. Children's attachment was assessed at age 2 using Attachment Q-Set (AQS, Version 3.0, Waters, 1987; Waters & Deane, 1985) from parents and observers, and at age 8, children's self-reports in Kerns Security Scale (KSS, Kerns, Klepac, & Cole, 1996; Kerns & Seibert, in press). The measures of their socio-emotional adaptation at age 8 have been expanded to include children's externalizing and internalizing problems, reported in a clinical interview, and measures of competent functioning in two ecologies beyond the immediate family that have long been seen as key in middle childhood: school and peer groups (Erikson, 1963; Masten, et al., 1995; Sroufe et al., 2005), parent- and child-reported.

Our primary goal was to explore whether the same patterns would emerge as those described in Kochanska and Kim (2013). We expected that, at both age 2 and 8, low security with both parents would put the child at high risk, and that for children who were insecurely attached to one parent, security with the other parent would offset the risk for poor outcomes. We also explored whether, given that the attachment measures were now closer in time to the measures of outcomes, main effects of security might emerge.

Although studies including both parents are sparse, those that exist suggest that attachment with the mother and with the father may have different implications for future development. Steele and Steele (2005) suggested that the mother-child relationship may be particularly relevant for the child's self-understanding and dealing with inner conflicts, whereas the father-child relationship may be particularly relevant for the skillful dealing with the outer world of school and peers. This is consistent with other studies on fathering that have linked multiple aspects of father-child relationships with children's competence in school and peer groups (Ducharme, Doyle, & Markiewicz, 2002; Isley, O'Neil, & Parke, 1996; MacDonald & Parke, 1984; McDowell, Parke & Wang, 2003; Mize & Pettit, 1997; Williams & Kelly, 2005). That research highlights the importance of including assessments of children's functioning in school and with peers in studies of the implications of mother- and father-child relationships for children's adaptation. Based on the extant research, we expected that father-child attachment security would be associated with children's future competence in broader ecologies of school and peer group.

The availability of parent-, observer-, and child-reported attachment data allowed us to address several secondary questions. Based on the existing research (Teti & McGourty, 1996; van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004), we expected that the concurrent assessments of security for the same parent-child relationship (mother-child or father-child) but from two different sources (parent versus observer) would cohere meaningfully.

Furthermore, for any given measure, at age 2 and at 8, we examined the concordance across the child's two relationships, a point of long-standing interest (Berlin et al., 2008; Fox, Kimmerly & Schafer, 1991; Howes & Spieker, 2008; Steele et al., 1996; van IJzendoorn & De Wolff, 1997). Overall, the extant pertinent findings remain somewhat mixed and the issue continues to be controversial. In their meta-analysis, Fox and colleagues (Fox et al., 1991) concluded that children's attachment organization, observed in Strange Situation, was

concordant across both parents. Steele and colleagues (Steele et al., 1996) reported a similar finding for security versus insecurity. But van IJzendoorn and De Wolff (1997) claimed that such concordance is very modest, and that attachment organization is more appropriately viewed as unique to the relationship (Sroufe, 1985). The absence of significant concordance has also been reported (Kochanska & Kim, 2013). Concordance, or lack thereof, has been accounted for by different conceptual models that have adopted varying views of attachment – a product of the caregiving history or an expression of biological individuality. Finally, it has been suggested that as children mature, attachment security or insecurity may become increasingly a quality of the child and less so a quality of a specific relationship, which would imply that concordance would increase with age (Thompson, 2006). Consequently, this direction was mostly exploratory, although we did expect concordance to be substantial for the self-reported measures obtained from the same child (the perceptions of the mother and the father), as indeed has been reported (Kerns et al., 2000)

Finally, for each parent-child relationship, we examined the developmental stability of the attachment measures from the toddler age to middle childhood. Generally, although findings have been somewhat mixed and occasionally questioned, attachment researchers believe that attachment organization has some degree of longitudinal stability, barring substantial changes in the family environment or the quality of care (e.g., Thompson, 2006; Waters, Weinfield, & Hamilton, 2000). Consequently, we expected to find stability, for the same parent-child relationship, from age 2 to age 8. We note, however, that the use of different response formats (Q-sort data in AQS, “some kids... other kids” in KSS) and informants (parent, observer, child) is a limitation that constrains inferences that can be drawn regarding whether any instability found may be a product of possible differences in how a child’s security organization is measured rather than of actual differences in the child’s security. This limitation is unavoidable, given the extensive developmental changes in manifestations of attachment between the toddler age and middle childhood, expected even if the underlying latent construct is stable (heterotypic continuity). Those changes preclude the use of one attachment measure to target that entire period. The challenges of assessing attachment stability over time are well known. Thompson (2008b) has provided a thoughtful analysis of those challenges, emphasizing both the variability and developmental differences in the assessment of attachment but also in the attachment construct itself, very plausible as children mature psychologically. Thompson (2008b) stated that “Taken together, these findings highlight an important challenge to attachment theory and research. While the problem of heterotypic continuity focuses on efforts to assess a consistent psychological construct in developmentally appropriate ways, these findings raise the question of whether the security of attachment is itself a psychologically changing construct as children mature. Growth in representational skills, psychological sophistication, and relational depth may transform not only the assessment of attachment but also its meaning over time” (p. 294).

Finally, we examined, in a frankly exploratory fashion, implications of the child’s cumulative *attachment history* across six years (age 2 to 8) for children’s adaptation at age 8 (Thompson, 2006). To that effect, we considered all available measures of the child’s security simultaneously, and examined the links between such cumulative index of

children's attachment histories and their behavior problems and competent functioning in expanded ecologies (school, peer group).

Method

Participants

Two-parent families from a Midwestern college town and surrounding areas volunteered for a longitudinal study. Families ranged in education (approximately 25% of mothers and 30% of fathers had a high school education or less, 54% of mothers and 51% of fathers had an associate or college degree, and 21% of mothers and 20% of fathers had a postgraduate education), annual family income (8% made less than \$20,000, 17% made between \$20,000 and \$40,000, 26% made between \$40,000 and \$60,000 and 49% made over \$60,000), and ethnic background (90% of mothers and 84% of fathers were White, 3% of mothers and 8% of fathers were Hispanic, 2% of mothers and 3% of fathers were African American, 1% of mothers and 3% of fathers were Asian, 1% of mothers were Pacific Islander, and 2% of mothers and fathers reported Other; at least one parent in 20% of families was non-White). All families were intact at entry to the study, but by the time children were 100 months, ten families reported that they were either divorced or separated. Among the divorced families, in seven cases, one or both parents remained in the study.

Mother-child and father-child dyads came for an approximately 2 ½ -hour laboratory sessions that encompassed multiple interactive contexts at 25 months ($N=100$, 50 girls). The contexts were scripted and standard, but naturalistic. They included situations that were relaxed and pleasurable (e.g., play, free time, opening gifts, snack), those that imposed a mild stress (e.g., toy cleanup, prohibition contexts that involved off-limit toys, an unfamiliar environment filled with unusual toys), and those that involved interacting with a friendly adult in the context of games and tasks of varying difficulty. All observations were dyadic, and only one parent (and child) were present during a session. At 100 months ($N=87$, 41 girls), there was another laboratory session, mostly focused on obtaining measures from the child, including a clinical interview.

Measures of Children's Attachment Organization with Mothers and Fathers

Attachment Organization with Each Parent at 25 Months

Parent-reported AQS: Mothers and fathers completed the AQS (Version 3; Waters, 1987) in the laboratory. Prior to starting the sort, parents were given detailed instruction by E. They were asked to sort the 90 cards into three piles (characteristic, somewhat characteristic, and uncharacteristic of their child) in order to become familiar with the cards, and then to further sort the cards into nine 10-card piles ranging from 1, "most uncharacteristic", to 9, "most characteristic" of their child. E was available to answer questions throughout the sort. Each parent's sort was correlated with a criterion sort that represents the "ideal secure child" and the final security scores were created according to the standard instructions.

Observer-reported AQS: A trained coder, blind to the parents' AQS data, having observed each dyad during the entire 2 ½ -hour laboratory session in multiple, psychologically diverse contexts, completed AQS for each mother-child and father-child dyad. Based on coding

20% of the sample, inter-observer reliability, intra-class correlation (ICC), was .85. Van IJzendoorn et al. (2004) concluded in their meta-analysis that observers' AQS can be an adequate measure of attachment, with discriminant, convergent, and predictive validity, and under some conditions, observers' ratings may even perform better than parents'. Teti and McGourty (1996) reported that mothers and observers produced significantly inter-correlated AQS data.

Attachment Organization with Each Parent at 100 Months

Child-reported KSS: Toward the end of the laboratory visit with the opposite parent, children completed the KSS (Kerns et al., 1996), a 15-item questionnaire designed to assess children's perceptions of security in their relationships with their mothers and fathers. The questionnaire was read to each child by the visit coordinator, without the parent present, and the child indicated, first, which description of each item was most like the child, and second, whether this description was "very true" or "sort of true". One item states, for example, "Some kids are really sure their mom would not leave them BUT other kids sometimes wonder if their mom might leave them". Each item is scored from 1 to 4. The scores were tallied, with higher scores indicating more perceived security. Cronbach's alphas were .67 and .68 for children's perceptions of security with mothers and fathers, respectively.

Measures of Children's Socio-emotional Outcomes at 100 Months

Child-Reported Behavior Problems (Dominic-R)—During the laboratory visit, children completed the Dominic-R interview, administered by the visit coordinator in an interactive computerized format, according to the instructions (Arseneault, Kim-Cohen, Taylor, Caspi, & Moffitt, 2005; Bergeron et al., 2000; Breton, Bergeron, Valla, Berthiaume, & Gaudet, 1999; Shojaei et al., 2009; Valla, Bergeron, Bérubé, Gaudet, & St-Georges, 1994; Valla, Bergeron, & Smolla, 2000). Ninety-one short vignettes featuring Dominic/Dominique, depicting specific behavior problems, are presented, e.g., "Do you often refuse to do what adults tell you, like Dominic/Dominique?"; "Do you feel sad and depressed most of the time?". The child indicates if he or she is like the protagonist (yes or no). The interview produces behavior problem scores designed to map onto *DSM-IV* disorders. Valla et al. (2000) reported Cronbach's alpha for the scales corresponding to the specific disorders (e.g., ADHD, ODD) as ranging from .64 to .83, and as .89 for more general scores of internalizing and externalizing symptoms. Because the internalizing and externalizing problems scores correlated very highly, $r(86) = .82, p < .0001$, we used the overall sum of total problems.

Child-Reported Competence in Broader Ecologies of School and Peer Group (Dominic-R)—Ten items comprise a scale that targets the child's adaptive functioning at school and with peers, e.g., "Do you feel good at school, like Dominic/Dominique?", "Do you often have fun with your friends, like Dominic/Dominique?". The final score was the sum of the child's answers.

Parent-Reported Competence in Broader Ecologies of School and Peer Group (Health Behavior Questionnaire, HBQ, Essex et al., 2002)—Mothers and fathers completed HBQ. Three scales were selected to represent the child's competence in the

ecologies of school and peer group. Those were as follows (Cronbach's alphas for mothers first, fathers second): *School Engagement* (8 items, $\alpha = .85$ for both parents, e.g., "To what extent does your child seem interested in school?" (rated from 1, not at all, to 4, quite a bit), *Peer Acceptance-Rejection* (8 items, $\alpha = .87$ and $.83$; e.g., "Over the course of the year, your child has lots of friends at school" (rated from 1, not at all like your child, to 4, very much like your child). *Prosocial Behavior* (20 items, $\alpha = .90$ for both, e.g., "Can work easily in a small peer group", "Comforts a child who is crying or upset" (rated from 1, rarely applies, to 3, certainly applies).

All six scores were standardized and averaged into one overall parent-rated score of competent, adaptive functioning in school and peer ecologies. That score was sufficiently coherent ($\alpha = .71$), and there was no item whose deletion would improve the internal consistency. Descriptive data for all measures are reported in Table 1.

Results

Preliminary Analyses

First, we examined the correlations among the measured constructs. Those are in Table 2.

The correlations address the secondary questions of this study. At age 2, the assessments of security for the same relationship from two different sources (parent versus observer) were significantly related for both mother-child and father-child dyads. As well, for any given measure, at ages 2 and at 8, the security scores were significantly concordant across the child's two relationships. Finally, for each relationship, the toddler-age attachment security measure (observer-rated AQS only) significantly predicted the measure in middle childhood (KSS).

Children's toddler-age security scores, regardless of informant, were by and large positively although modestly associated with parent-reported child competence in school and with peers, but not with behavior problems, in middle childhood. On the other hand, children's security scores in middle childhood were negatively associated with their concurrent reports of behavior problem and positively with their reported competence in school and with peers.

Multivariate Analyses of Links between Children's Security with Both Parents and Socio-emotional Outcomes (Behavior Problems and Competence in Broader Ecologies of School and Peer Group)

We conducted hierarchical multiple regression for each of the child's socio-emotional outcomes (child self-reported behavior problems and self- and parent-reported competence in school and with peers). For each of the three outcomes, we examined three equations: One using parent-reported AQS, one using observer-reported AQS, and one using child-reported KSS. Child gender (0=girl, 1=boy) was entered in Step 1; mother- child and father-child security scores were entered in Step 2; the interaction term of mother- child and father-child security scores was entered in Step 3. Table 3 presents standardized regressions coefficients for the final Step 3 for all nine equations.

Predicting Child Self-Reported Behavior Problems—There were two significant interaction effects (security with mother x security with fathers), both for the AQS measures (parent- and observer reported). We examined them using simple slope analyses (Aiken & West, 1991), depicted in Figure 1 A and B.

We parsed the effect in the manner analogous to the approach in Kochanska and Kim (2013), examining first, security with the mother as the moderator and security with the father as the independent variable. For *parent-reported security scores*, the simple slope for children whose security with their mothers had been low (-1 SD below the mean) was significant (Figure 1A). For those children, the increase in security with their fathers was associated with a decrease in behavior problems; a combination of low security with both parents resulted in the highest level of behavior problems. The simple slope for children whose security with their mothers had been high ($+1$ SD above the mean) was not significant. Second, we examined the interaction using security with the father as the moderator and that with the mother as the independent variable. Neither slope was significant.

For *observer-reported security scores*, when security with the mother was the moderator and security with the father was the independent variable, the simple slope for children whose security with their mothers had been low (-1 SD below the mean) was significant (Figure 1 B). For those children, the increase in security with their fathers was associated with a decrease in behavior problems; a combination of low security with both parents resulted in the highest level of behavior problems. The simple slope for children whose security with their mothers had been high ($+1$ SD above the mean) was not significant. Second, we examined the interaction using security with the father as the moderator and that with the mother as the independent variable. Neither slope was significant. Thus, the findings paralleled those for parent-reported AQS.

Predicting Child Self-Reported Competence in Broader Ecologies of School and Peer Group—There was one simple effect: Children who had been rated by observers as more secure with their fathers reported higher competence.

Predicting Parent-Reported Competence in Broader Ecologies of School and Peer Group—There was an interaction effect for mother-reported x father-reported AQS. The results of the simple slope analyses (Aiken & West, 1991) are depicted in Figure 2 A and B.

First, security with the mother was the moderator and security with the father was the independent variable (Figure 2 A). The simple slope for children whose security with their mothers had been low (-1 SD below the mean) was significant. For those children, the increase in security with their fathers was associated with an increase in competence; a combination of low security with both parents resulted in the lowest level of competence. The simple slope for children whose security with their mothers had been high ($+1$ SD above the mean) was not significant.

Second, we examined the interaction using security with the father as the moderator and that with the mother as the independent variable (Figure 2 B). The findings mirrored the previous analysis: Again, for children low on security with their fathers (-1 SD), the simple slope was significant, and the increase in their security with their mothers was associated with an increase in competence. The simple slope for children highly secure with their fathers ($+1\text{ SD}$) was not significant.

There was also one simple effect for observer-rated security. Children who had been rated by observers as more secure with their fathers were rated as more competent by their parents.

Overall Attachment Trajectory from Toddler Age to Middle Childhood: Links with Behavior Problems and Competence in Broader Ecologies of School and Peer Group

In those frankly exploratory analyses, we adopted two strategies to examine the links between the history of the child's attachment to both parents, assessed at two different times and using different methodologies, and their socio-emotional outcomes. First, we conducted an overall multivariate multiple regression to test the significance of the impact of the set of all six attachment scores (mother- and father-rated AQS, observer-rated AQS for mother-child and father-child dyads, and the child's KSS for the mother and the father) on the set of all three outcome measures (self-reported behavior problems, self-reported and parent-reported competence in school and peer group). That effect (Pillai's test) was significant: $F(18,231) = 2.18, p < .01$.

Second, we devised an approach to integrate the measures from multiple informants and sources, a common goal in clinical psychology (Bird, Gould, & Staghezza, 1992; de Los Reyes & Kazdin, 2005). For each security measure, the child received 1 point if his or her score was in the lowest $1/3^{\text{rd}}$ of the distribution, 2 points if the score was between the lowest $1/3^{\text{rd}}$ and the highest $1/3^{\text{rd}}$, and 3 points if the score was in the highest $1/3^{\text{rd}}$ (thus, the final scores ranged from 6 to 18; $M = 12.02, SD = 3.19$). We then used this cumulative score reflecting the attachment trajectory as a predictor of each socio-emotional outcome in middle childhood in regressions where child gender was entered first and the cumulative attachment history score second. That score significantly predicted child-reported behavior problems, $Beta = -.27, p < .025, B = -1.15, SE = .63, 95\% \text{ CI } [-2.73, -.23]$, parent-reported competence in school and peer group, $Beta = .25, p < .05, B = .05, SE = .02, 95\% \text{ CI } [.01, .10]$, and marginally child self-reported competence in school and peer group, $Beta = .22, p < .10, B = .05, SE = .03, 95\% \text{ CI } [-.00, .10]$.

Discussion

This study makes several useful contributions to the growing body of research on the role of the parent-child attachment security for developmental adaptive and maladaptive developmental pathways. Very few studies have utilized measures of attachment security with both parents over time, from the toddler age to middle childhood. One of the strengths of our approach is the fact that most of the examined relations are not subject to concerns about shared method variance, because the measures of security and children's outcomes were produced by independent informants. The only exceptions were the links between

children's self-reported security in KSS and self-reported problems and competence in school and with peers in Dominic-R, so those findings should be treated with caution.

Organization and mechanisms of impact of security with mothers versus fathers remain poorly understood. There was evidence of positive main effects of children's security with their fathers on children's competence in broader ecologies of school and peer group, consistent with the extant research. Observer-reported security with fathers at age 2 predicted children's higher competence six years later, both self-reported by the child in the clinical interview and described by parents (even though the latter two measures were unrelated). It was interesting that no parallel findings emerged for security with mothers (although note that the patterns of univariate correlations between security and outcomes were similar for mothers and fathers). Several dovetailing literatures suggest that mother-child and father-child relationships may influence differentially various aspects of socio-emotional development (Berlin et al., 2008; Bretherton, 2010; Parke & Buriel, 2006; Thompson, 2006). Note that the effects of security with the father did not emerge for the measure of behavior problems, but only for the measures of competence in school and peer group, supporting such views. Mother-child relationships may be more central in infancy, when low-key, comforting, soothing interactions that characterize mother-infant dyads are most adaptive (Maccoby, 1990). Father-child relationships may increase in importance at older ages, starting with toddlerhood. Compared to children's relationships with mothers, those with fathers comprise a higher proportion of play, and play has been implicated as key in the development of children's social competence with peers (MacDonald & Parke, 1984; McDowell & Parke, 2009).

Additionally, the patterns of findings highlight the validity of recent calls to make distinctions between measures of psychopathology and measures of competence. Although those are typically negatively correlated, competence is not simply a lack of dysfunction and vice versa. Substantial differences between negative (problems, dysfunctions) versus positive outcomes (competence, subjective well-being) have been recognized in both developmental (Belsky & Pluess, 2009) and clinical psychology (Frisch, Cornell, Villanueva, & Retzlaff, 1992).

Additionally, the study contributes to our understanding of several perennial questions in attachment research. The children's security was concordant across his or her relationships with both parents. This is a relatively typical finding that has often been reported (Berlin et al., 2008). This issue continues to receive attention, because in some studies, particularly those that have relied on the Strange Situation, concordance has not been found (as in this sample in infancy, Kochanska & Kim, 2013, or in Main & Weston, 1981), and because interpretations of the reasons for the presence or absence of concordance vary. In case of child-reported security, one obvious reason for concordance is the fact that data come from the same informant. Our findings are fully comparable with similar studies in the literature in which children's direct reports about the two parents were used (e.g., El-Sheikh & Buckhalt, 2003; Kerns et al., 2000), although note that concordance has not necessarily been found for child-produced semi-projective stories (Verschueren & Marcoen, 1999).

However, we found significant modest concordance also for parent-reported security measures, and robust concordance for observer-reported measures. Multiple interpretations of those findings are possible. One, mothers' and fathers' childrearing practices often converge, and this may have been particularly true for low-risk, well-functioning families, like those in our sample.

Two, our coders observed the child in multi-context sessions that were scripted in a parallel manner for both parents, and those situational constraints may have increased similarity in the child's behavior across the two observed occasions. It is entirely possible that when observed under conditions that are standard and comparable for both parents (as was the case in our laboratory sessions), children's patterns of attachment-related behavior with the mother and the father may become more concordant than when the measures are derived from parents' sorts. In contrast, each parent likely has had a chance to see the child in some circumstances that the other parent has not witnessed. Additionally, of course, professional coders undergo rigorous training to achieve a standard understanding of AQS constructs, whereas parents do not. We believe that all those factors may have contributed to the high concordance for the observers' ratings.

And finally, three, the child's temperamental individuality may be in part implicated in concordance of attachment organization between the two parents. Child temperament may be reflected in his or her emotion regulation, which may be in part captured by AQS. As well, child temperament, for example difficulty or anger proneness, may engender similar childrearing practices from both parents (Bates, Schermerhorn, & Peterson, 2012). Because a host of temperament data and some genetic data were available in our overall research program, we were able to examine, in post-hoc analyses, whether the concordance between mother-child and father-child attachment measures would remain significant if such measures were covaried. Those additional analyses that included several temperament measures that most clearly captured negative and positive emotions (proneness to anger and to joy) and measures of 5-HTTLPR polymorphism (*ss/sl*, *ll*), also often associated with emotionality, revealed that this was indeed the case, for all attachment measures, regardless of the assessment method.

An additional contribution of this study is to confirm that trained coders, based on observations of the parent-child dyads in lengthy laboratory sessions, were able to produce good quality security scores using AQS. Their scores were robustly correlated with the parents' security scores, and, perhaps more impressively, significantly predicted children's self-reported security with mothers and fathers six years later. Knowing that experienced coders can produce valid security scores based on a representative sample of young children's behavior is useful for attachment researchers. We note, however, that for this approach to be successful, a sufficiently extensive and varied sample of observational material is needed to assure that a range of the child's and the parent's behaviors and emotions is elicited. In this study, the parent and child were observed in a variety of contexts, including pleasurable, relaxed situations, such as free time, play time, or snack; mildly stressful situations, such as multiple chores, contexts when several competing tasks were present, challenging discipline contexts, or unfamiliar environment, and times in which a stranger or a visitor were present.

This study replicated, by and large, Kochanska and Kim's (2013) findings that children whose security scores with both parents were low were at the greatest risk for behavior problems. Such patterns were found for both parent-reported and observer-coded AQS. Additionally, we also found that high security with one parent could effectively offset risks due to low security with the other parent, although the findings were not fully symmetrical for mothers and fathers. Our study is consistent with the recent growing literature that recognizes potential different roles of mothers' and fathers' as attachment figures and their complementary or compensatory influences (Bretherton, 2010).

Finally, the exploratory findings with regard to the child's cumulative history of security from age 2 to 8 were promising. Both directions of analyses that integrated children's security scores at both time points, with both parents, and using several methodologies revealed significant links between a cumulative history of security and positive adaptation.

This study has several limitations. The measures of child-reported security and of the socio-emotional outcomes were concurrent, and therefore, it is more appropriate to refer to them as being associated rather than causally predictive. The families and children represented a low-risk community population, generally well-functioning families, and typically developing children. Consequently, in that sample, children's level of behavior problems was relatively low, their perceived security at age 8 quite high, and their competence in school and peer group relatively robust. As well, the parents' caregiving practices may have been congruent, which could partially account for concordance in security with mothers and fathers. The families were relatively diverse in income and education, but their ethnic diversity was limited (although we note that 20% included at least one non-White parent). Consequently, future replications, with more developmental time points and with more diverse, higher-risk populations of parents and children are desirable.

In spite of these limitations, this study makes useful contributions. In terms of methodology, it supports the validity of security measures produced by trained observers in standard observational contexts. It targets a relatively long-term trajectory of attachment, from toddler age to middle childhood, the period that has received increasing scrutiny (Kerns & Seibert, in press). It highlights how the trajectories of the child's attachment to both mother and father from toddlerhood to middle childhood, in their interplay, may influence several aspects of adaptive functioning. This is particularly significant, given societal transformations in the roles of mothers and fathers. Future research, deploying a broader range of security measures that capture heterotypic continuity of the attachment construct (behavioral observations, parents' and observers' ratings, attachment narratives, children's direct reports and implicit security scripts, etc.) will further contribute to our understanding of adaptive and maladaptive developmental pathways.

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Figure 1.

- A. Mother-reported security (AQS) at 25 months moderates the effect of father-reported security (AQS) at 25 months on the child's self-reported behavior problems (Dominic-R) at 100 months. Solid line represents significant simple slope; dashed line represents nonsignificant simple slope.
- B. Observer-reported security with mother (O-AQS with mother) at 25 months moderates the effect of the observer-reported security with father (O-AQS with father) at 25 months on the child's self-reported behavior problems (Dominic-R) at 100 months. Solid line represents significant simple slope; dashed line represents nonsignificant simple slope.

Figure 2.

A. Mother-reported security (AQS) at 25 months moderates the effect of father-reported security (AQS) at 25 months on the child's parent-reported competence (HBQ) at 100 months. Solid line represents significant simple slope; dashed line represents nonsignificant simple slope.

B. Father-reported security (AQS) at 25 months moderates the effect of mother-reported security (AQS) at 25 months on the child's parent-reported competence (HBQ) at 100 months. Solid line represents significant simple slope; dashed line represents nonsignificant simple slope.

Table 1

Descriptive Data for all Measures

	N	Minimum	Maximum	M	SD
At 25 months					
Mother-reported AQS	100	-.20	.80	.37	.20
Father-reported AQS	100	-.13	.76	.34	.20
Observer-reported AQS (with Mother)	100	-.46	.79	.29	.24
Observer-reported AQS (with Father)	100	-.25	.77	.28	.22
At 100 months					
Child self-reported KSS (with Mother)	86	30.00	60.00	52.10	5.66
Child self-reported KSS (with Father)	84	35.00	60.00	50.58	6.16
Child self-reported behavior problems, Dominic-R	86	0.00	93.00	24.55	17.68
Child self-reported competence, Dominic-R	86	6.00	10.00	9.62	.71
Parents-reported child competence, HBQ ^a	87	-2.19	1.14	-.01	.67

AQS = Attachment Q-Set, KSS = Kerns Security Scale, HBQ = Health Behavior Questionnaire.

^aMean of standardized constituent variables (mother- and father-rated child social acceptance, prosocial behavior, and school engagement)

Table 2

Correlations Among Measures

	C Security Measures				C Socio-emotional Outcome Measures			
	With M	With F	With M	With F	Behavior Problems	Competence in School, with Peers	C Report Dominic-R	MF Report HBQ
	M Report AQS	F Report AQS	O Report AQS	O Report AQS	C Report KSS	C Report Dominic-R		
C Security, AQS, 25 Mo.								
With M, M Report	---	.27***	.43****	.39****	-.01	-.03	.05	.18 ⁺
With F, F Report		---	.32***	.55****	.07	-.08	.02	.21 ⁺
With M, O Report			---	.72****	.29****	-.12	.00	.27**
With F, O Report				---	.25**	-.17	.17	.36****
C Security, KSS, 100 Mo.								
With M, C Report				---	.66****	-.37****	.27**	.15
With F, C Report					---	-.37****	.34****	.11
C Outcomes, 100 Mo.								
C Behavior Problems								
C Report						---	-.36****	-.19 ⁺
C Competence							---	
C Report								-.04

⁺ $p < .10$.

* $p < .05$.

** $p < .025$.

*** $p < .01$.

**** $p < .001$.

M = Mother, F = Father, O = Observer, C = Child, AQS = Attachment Q-Set, KSS = Kerns Security Scale, HBQ = Health Behavior Questionnaire.

Table 3

Child Security with Mother and with Father (Parent— and Observer—Reported AQS at 25 Months, Child—Reported KSS at 100 Months) as Predictors of Children's Behavior Problems and Competence in Broader Ecologies of School and Peer Group at 100 Months

Security Measures as Predictors:	Child Outcomes at 100 Months									
	Behavior Problems					Competence in School, with Peers				
	Self-Reported Dominic-R					Parent-Reported Health Behavior Questionnaire				
	Parent ^a Report	Observer ^a Report	Child ^b Report	Parent ^a Report	Observer ^a Report	Child ^b Report	Parent ^a Report	Observer ^a Report	Child ^b Report	Parent ^a Report
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Child Gender	-.09	-.13	-.08	-.04	.01	.01	-.14	-.08	-.21 ⁺	
Security w/Mother	-.05	.05	-.16	.05	-.28 ⁺	.18	.16	.00	-.01	
Security w/Father	-.08	-.27 ⁺	-.25 ⁺	-.01	.39 ^{**}	.27 ⁺	.09	.34 [*]	.03	
Security w/Mother x Security w/Father	.23 [*]	.25 ^{**}	.06	-.04	-.12	.15	-.23 [*]	-.10	-.20	

^a At 25 months

^b At 100 months.

⁺ $p < .10$.

^{*} $p < .05$.

^{**} $p < .025$.

^{***} $p < .01$.

AQS=Attachment Q-Set. Predictors entered as follows: Step 1, child gender, Step 2, security with mother and security with father, Step 3, security with mother x security with father. Betas from the final equations (Step 3) are presented.