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Do Adolescents and Parents Reconstruct Memories about Their Conflict as a Function of Adolescent Attachment?

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Abstract

This study examined whether 17-year-old adolescents ($n = 189$) and their parents reconstruct their memory for an adolescent-parent laboratory conflict over a 6-week period as a function of adolescent (AAI) attachment organization. It also compared participants' perceptions of conflict over time to observational ratings of the conflict to further characterize the nature of the attachment-related memory biases that emerged. Secure adolescents reconstructed interactions with each parent more favorably over time, whereas insecure adolescents showed less favorable reconstructive memory. Likewise, mothers of secure girls reconstructed conflicts more favorably over time, whereas mothers of insecure boys showed less favorable reconstructive memory. Participant ratings were associated with observational ratings in theoretically consistent ways. Contrary to expectations, fathers showed no attachment-related memory biases.

Developmental researchers have shown considerable interest in understanding the nature of adolescent-parent conflict. The causes of adolescent-parent conflict, for example, have been relatively well studied, and data indicate that such conflict stems from both normative changes within the child-parent relationship (e.g., puberty-related biological changes, increasing adolescent autonomy, and adolescents' reduced social/emotional dependence on parents; Collins & Laursen, 1992; Conger & Ge, 1999; Ge, Conger, & Elder, 1996) as well as dispositional and parenting factors (e.g., temperament, maternal conflict reactions; see Eisenberg et al., 2008). The nature and extent of adolescent-parent conflict varies within families, and although conflict can emerge over issues of "critical" importance and/or urgency, disagreements over everyday "trivial" matters (e.g., chores, curfew) are often the root of adolescent-parent conflict (Smetana, 1996). Interestingly, although conflict often places stress on adolescents and their parents, researchers believe that conflict is part of an adaptive socialization process that promotes adolescent and parent development (Adams & Laursen, 2007; Collins & Laursen, 1992; Smetana, Campione-Barr, & Metzger, 2006).

Although a wealth of evidence indicates that adolescents' conflict with parents is common and developmentally significant, the social-cognitive *aftereffects* of conflict are not well

understood. For example, it is reasonable to believe that adolescents and parents remember specific conflict incidents over time, but is their memory for conflict an accurate representation of how they initially perceived the conflict, and how does it mesh with observer ratings of the conflict? A large and convergent body of literature indicates that memories may not always be accurate depictions of interpersonal experience (Baldwin, 1995; Fiske & Taylor, 1991). Thus, over time, when the memory for a conflict event degrades (i.e., as individuals forget the details of these specific interactions), how do adolescents and parents “fill in the gaps” or *reconstruct* their memory for the details of the conflict? Grotevant (1998), in his discussion of adolescent-parent relationships, has suggested that it is important to consider “the ways in which individuals frame events and reconstruct their own pasts ... even if these reconstructions are not completely faithful to history” (p. 1126). Moreover, this question about reconstructive memory for conflict has important implications for how adolescent-parent conflict is both understood and treated by researchers and practitioners.

Using Bowlby’s (1969/1982/1973) attachment theory as a conceptual framework, Feeney and Cassidy (2003) began to address novel questions about reconstructive memory for adolescent-parent conflict. They proposed that the way in which adolescents reconstruct their memory for adolescent-parent conflict is governed in part by their internal working models of attachment, which are internalized mental representations of attachment experiences forged through repeated daily secure base interactions with parents and other caregivers (Bowlby, 1973). If these models provide rules for the direction of memory for attachment-related information (as Bowlby, 1973, and Main, Kaplan, & Cassidy, 1985, claimed), then adolescents might tap into these models to reconstruct the degraded memory of their conflicts with parents. More precisely, if these internal working models are secure, adolescents should be inclined to reconstruct their memory for adolescent-parent conflict such that they remember these interactions as more positive than they did in their original perceptions (i.e., in a more positive and less negative manner), because they are relying on secure internalized attachment representations. In contrast, if these models are insecure, adolescents should reconstruct their memory for conflictual interactions, such that they will remember these interactions as more negative than their original perceptions (e.g., in a more negative and less positive manner) because they are relying on insecure attachment representations. These propositions are consistent with other theories suggesting that individuals recall events from memory in ways that reflect their views and perceptions (see Pasupathi, 2001; Tversky & Marsh, 2000), and broader theories that individuals’ mental representations mediate longitudinal connections between early experience and later functioning (see Dweck & London, 2004).

The first empirical examination of these ideas did not focus on individuals’ attachment organization (described below), but instead involved the use of adolescents’ self-reported attachment-related representations of their mothers and fathers. Feeney and Cassidy’s (2003) results from both their initial study and a replication study revealed that, as expected, adolescents reconstructed their memory of adolescent-parent conflict over time as a function of their representations of a particular parent. For example, in relation to separate laboratory-based conflict discussions with mothers and fathers, when adolescents’ perceptions of the parent were more negative (e.g., as adolescents responded to questionnaires by describing their mothers/fathers as unavailable for help when needed or as not understanding their feelings), adolescents were more likely to remember the discussion with that particular parent as *less positive* and *more negative* than reported 6 weeks earlier, just after the conflict episode.

In light of this intriguing evidence that adolescents reconstruct their memory for adolescent-parent conflict as a function of their representations of parents, the purpose of the present

investigation was to use Feeney and Cassidy's (2003) sample to extend this novel line of research in three noteworthy ways. First, Feeney and Cassidy examined adolescents' self-reported representations of each parent in relation to a conflict interaction with that particular parent (e.g., asking whether an adolescent's representation of mother is linked to the adolescent's memory for a conflict task with her). In the present investigation, instead of examining adolescents' representations of each specific parent, we examined whether and how adolescents' Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996) classifications, which were not available at the time of the Feeney and Cassidy report, were linked to adolescents' memory for conflict with parents. Our use of the AAI in this investigation is both conceptually and methodologically distinct from Feeney and Cassidy's earlier work because the AAI taps an adolescent's attachment organization (referred to as the individual's "current state of mind with respect to attachment;" Main & Goldwyn, 1998), rather than representations of individual parents. This "current state of mind" is thought to be a relatively stable global attachment organization that emerges in adolescence based on the consolidation and integration of internalized experiences with mother, father, and other attachment figures (Allen, 2008; Allen, Boykin-McElhaney, Kuperminc, & Jodl, 2004; Bretherton & Munholland, 1999, 2008; Hesse, 1999, 2008). Thus, from a theoretical perspective, the present study permits examination of one of the core propositions of attachment theory (Bowlby, 1973): the idea that a link exists between attachment and the processing of social information. This proposition is supported by considerable empirical evidence from studies of both children and adults (e.g., Belsky, Spritz, & Crnic, 1996; Kirsh & Cassidy, 1997; van Emmichoven, van IJzendoorn, de Ruiter, & Brosschot, 2003). Yet, despite the fact that this proposition is so theoretically central, researchers have examined it surprisingly little, especially during adolescence (see Dykas & Cassidy, 2007, for a review). Moreover, from a methodological perspective, the findings related to the AAI can be compared and contrasted to the many other AAI-related findings in the literature.

Second, we extend the Feeney and Cassidy (2003) study by examining not only how attachment is linked to *adolescent* reconstructive memory for conflict, but also to *mothers'* and *fathers' reconstructive memory*. Researchers have shown considerable interest in understanding whether and how parental cognitions influence child functioning (e.g., Bugental & Happaney, 2002) and a central component of attachment theory is the notion that the way in which parents process attachment-related information contributes to their children's quality of attachment to them, mediated largely by parenting behavior (Bowlby, 1988; van IJzendoorn, 1995; see also George & Solomon, 2008). It is thought, for example, that parents who process information about their children in a negatively biased way will have difficulty serving as a secure base and/or safe haven for their children. This lack of a parental secure base and/or safe haven, in turn, is thought to contribute to an insecure attachment. There is considerable evidence that parents' representations of their children are related to their parenting behavior and/or their children's attachment to them (Benoit, Parker, & Zeanah, 1997; Grienenberger, Kelly, & Slade, 2005; Slade, Belsky, Aber, & Phelps, 1999; see George & Solomon, 2008, for a review), yet to our knowledge no published study has examined links between adolescent attachment and parents' reconstructive memory, or social information-processing more generally. Importantly, we note that simply the inclusion of fathers in the present investigation is in itself an advance over nearly all adolescent attachment research, which has largely focused on mothers (see Grotevant, 1998, for discussion of the importance of including fathers in developmental research).

Finally, we extend Feeney and Cassidy's (2003) previous work by investigating how memory for adolescent-parent conflict relates to the *observed behavioral quality* of the conflict as a function of adolescent attachment organization. More precisely, using observational data collected during the adolescent-parent conflict interactions, which were

not available at the time of the Feeney and Cassidy report, we were able to discern whether insecure and secure adolescents' (as well as their parents') memory for conflict became more or less attuned over time to observer ratings of behaviors exhibited in the conflict. This final research extension is of considerable theoretical interest because it lends additional insight into whether memory for adolescent-parent conflict, over time, converges or diverges from the observed behavior during the conflict interaction as a function of adolescents' attachment organization. For example, it is possible that a secure or an insecure individual could have an overly favorable or unfavorable initial memory of an event in comparison to observers that ultimately becomes more attuned to the observed quality of the event over some time period. On the other hand, it is possible that an individual's view of an event could initially match observers' perspectives on the event, but later memory could diverge from the observers' perspective.

On the basis of both attachment theory and Feeney and Cassidy's (2003) earlier findings, we examined the following two hypotheses. First, we hypothesized that the memory processes of secure and insecure adolescents differ, such that secure adolescents are more likely to have a bias to remember adolescent-parent conflictual interactions more positively and less negatively over time; in contrast, insecure adolescents were hypothesized to have a bias to remember the conflict interaction more negatively and less positively over time. Second, we hypothesized that the memory processes of parents of secure and insecure adolescents differ, such that parents of secure adolescents are more likely to have a bias to remember the adolescent-parent conflictual interactions less negatively and more positively over time; in contrast, parents of insecure adolescents, were hypothesized to show a bias to remember the conflict interaction more negatively and less positively over time. For each hypothesis, we conducted accompanying examinations to investigate an additional research question about whether insecure and secure adolescents' (and their parents') memory for conflict becomes less or more attuned over time to the coder-rated behaviors exhibited in the conflict. In each analysis, we included adolescent gender as an additional factor, given an interest in studying unique characteristics of specific parent-adolescent dyads (e.g., mother-daughter, father-son; see Russell & Saebel, 1997).

Method

Participants

Participants were 189 eleventh-grade students recruited from seven public suburban high school and their parents. (We combined the cohorts in Feeney and Cassidy's [2003] Study 1 and Study 2 to obtain greater statistical power; see Table 1 for sample demographic information.) Data reported in this investigation were gathered from a larger study of adolescents' social relationships. Because of a focus on adolescent relationships with both mothers and fathers, we recruited English-speaking participants with married parents. Adolescents were paid \$125 for participating in the larger study. Sample size varies across analyses due to missing data.

Procedure

We gathered data during three sessions spanning approximately 6 weeks. First, adolescents visited our laboratory and engaged, separately with their mother and father, in 10-minute conflict discussions. Adolescents and their parents used a checklist to rate how much they disagreed with each other about 19 topics that parents and teens frequently disagree about, such as "chores," "homework," and "talking back to parents." A research assistant chose three topics for the mother-adolescent discussion and three topics for the father-adolescent discussion, selecting topics that were rated by the parent and adolescent as high in disagreement (see Feeney and Cassidy [2003] for a further description of the generation of

adolescent-parent conflict discussions). The order in which adolescents participated in the discussions with each parent was counterbalanced and all discussions were videotaped for later coding. After each discussion, adolescents and parents completed the Emotional Response to Conflict Scale (ERCS; Cassidy, 1998; T1); adolescents also completed the vocabulary subtest of the Shipley Institute of Living Scale (Shipley, 1946) during this first session. In the second session (one month later), adolescents completed the AAI in a different university laboratory room. Finally, 6 weeks after the adolescent-parent conflict discussions, we mailed a follow-up ERCS (T2) to adolescents and their parents. Participants were asked to complete questionnaires independently and to return them via mail in the envelope provided.

Measures

Emotional Response to Conflict Scale (ERCS; Cassidy, 1998)—This 31-item scale was designed to assess individuals' emotional responses to a 10-minute laboratory conflict discussion task (Strodtbeck, 1951), both immediately afterwards, in the laboratory, and 6 weeks later at home. The items contained in this questionnaire fell into eight indices that, following Feeney and Cassidy (2003), we subsequently reduced to three summary scores (see Feeney & Cassidy, 2003, for a full description of the ERCS and for the theoretical and factor analytic basis of this data-reduction strategy). First, we created a *positive interaction* score by averaging the items in the positive discussion, own positive emotions, other positive emotions, and positive treatment indices (mean $\alpha = .87$). Second, we created a *negative interaction* score by averaging the items in the negative discussion, own negative emotions, and other negative emotions indices (mean $\alpha = .84$). Finally, we created a *hostile treatment* score by averaging the hostile treatment item ratings (mean $\alpha = .76$). For the entire sample across both time points, associations between these three summary scores ranged from $r = -.42$ (positive interaction and hostile treatment scores) to $r = .66$ (negative interaction and hostile treatment scores).

Adolescent-Parent Conflict Interaction Coding System (Ziv, Cassidy, & Ramos-Marcuse, 2002)—We used this coding system, based in part on an earlier system developed by Kobak and colleagues (Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993), to assess adolescent and parent verbal and non-verbal (e.g., facial) behavior during a 10-minute laboratory discussion task. In this study, we analyzed scales assessing adolescent *secure base use* (i.e., the degree to which the adolescent maintained "secure relatedness" during the discussion through the demonstration of relationship-maintaining behaviors even when under the stress of discussing a disagreement) and parents' *secure base provision* (i.e., the degree to which the parent was sensitive, responsive, and available to the adolescent throughout the conflict discussion). We also analyzed separate scales for adolescents and their parents that assessed each individual's *avoidance of discussing disagreement* (i.e., the overall degree to which the individual actively disengaged from the discussion of conflict) and *hostility* (i.e., the overall degree to which the individual engaged in sarcastic/contemptuous comments or smiles, dysfunctional anger, disgust and/or aggressive posturing). Finally, we analyzed the *open communication* dyadic scale that assessed the overall degree to which the adolescent-parent dyad demonstrated comfort and openness in discussing their thoughts, feelings, and emotions during the conflict in a mutually cohesive and fluid manner. All of these scales were based on a 7-point rating system (with appropriate behavioral anchors); six highly trained coders, blind to additional data regarding the participants, independently rated videotaped discussions. Agreement was assessed continuously throughout the coding period and at least two coders coded a randomly selected 17% of adolescent-mother interactions ($n = 32$) and 16% of father-adolescent interactions ($n = 31$). Sufficient reliability emerged for this group of coders: Intraclass correlation coefficients (ICCs) ranged from .76 on mothers' secure base provision to .84 on

adolescents' hostility towards father. Disagreements were conferenced and consensus scores were used in all analyses.

Because high correlations emerged within and between the adolescent and parent behavior scale score sets (r s ranging from $-.22$ to $.81$), we conducted principal component analyses (PCAs) to combine these data. (We conducted separate PCAs for behaviors rated in the adolescent-mother conflict and for the behaviors rated in the adolescent-father conflict. We did not include participants' behavioral hostility scores in these PCAs because they corresponded directly to the hostile treatment scores derived from the ERCS.) In the PCA for adolescent-mother conflict, all behaviors loaded onto a single factor explaining 68.7% of the variance (eigenvalue = 2.75). Similarly, in the PCA for adolescent-father conflict, all behaviors loaded onto a single factor explaining 64.1% of the variance (eigenvalue = 2.56). On the basis of these two PCAs and the positively scaled factor loadings, we computed standardized factor scores based on the factor loadings, which we labeled *positive adolescent-mother dyadic conflict behavior* scores and *positive adolescent-father dyadic conflict behavior* scores.

Adult Attachment Interview (AAI; George et al., 1996)—We used this well-known semistructured interview to assess adolescents' "current state of mind with respect to attachment," focusing principally on memories of attachment-related experiences during childhood (see Hesse, 1999, 2008, for full descriptions of the AAI). Interviews lasted approximately 1 hour and were audiotaped for later verbatim transcription. We made minor modifications to this interview to make some of the questions more appropriate for an adolescent population (Allen, Moore, Kuperminc, & Bell, 1998). The psychometric properties of the AAI have been well-established (see Hesse, 1999, 2008, for reviews). Although the AAI was originally developed to assess adult attachment, a wealth of research indicates that the AAI is a valid measure of adolescents' attachment representations as well (see Allen, 2008, for a review). Moreover, the AAI has shown considerable test-retest reliability in several short-term and long-term longitudinal studies (see Hesse, 1999, 2008), and Allen et al. (2004) reported that AAI attachment security is stable across adolescence. Following Allen (2008), we assumed that all adolescents in this study possessed a "current state of mind with respect to attachment" that could be assessed using the AAI.

Using Main and Goldwyn's (1998) classification system, coders rated each transcript on a series of 9-point scales. Coders used inferred experience scales to rate the likely quality of adolescents' childhood attachment-related experiences, and "state of mind" scales (e.g., coherence of mind) to assess adolescents' current state of mind with respect to attachment. Based on an integrated consideration of both the adolescent's inferred experiences and state of mind, coders assigned one of four principal classifications to the transcript. Adolescents classified as secure/autonomous coherently described various childhood experiences, valued attachment relationships, and considered attachment-related experiences as important to personal development. Adolescents classified in any of the three insecure groups demonstrated an inability to describe their childhood attachment-related experiences coherently. Specifically, adolescents classified as insecure/dismissing were derogatory about the importance of attachment and/or dismissed the impact that early negative experiences had on personal development and on attachment relationships. Adolescents classified as insecure/preoccupied demonstrated an excessive, confused/passive, and nonobjective preoccupation with attachment relationships and/or experiences. Adolescents classified as insecure/unresolved revealed lapses in the monitoring of reasoning or discourse when discussing loss or trauma. When transcripts could not be placed into any other category, they were labeled "insecure/cannot classify."

Four coders who were trained and certified as reliable by Mary Main and Erik Hesse (developers of and/or experts on the AAI and classification system) coded the AAI transcripts. All four coders were blind to additional information regarding participants. Interrater reliability among these coders was assessed continuously throughout coding; a randomly selected 29% of cases ($n = 55$) were coded by at least two coders (78% agreement, $\kappa = .61, p < .05$). All disagreements were resolved by a fifth independent coder who coded no additional data.

Shipley Institute of Living Scale (Shipley, 1946)—This 40-item vocabulary subtest, in which adolescents were asked to select the correct synonym from a list of four possibilities, was used to assess adolescents' verbal knowledge (to determine whether it was related to adolescents' AAI group classifications). The psychometric properties of this measure are well established (Kirk & Rattan, 1992).

Results

Descriptive Statistics

Adult Attachment Interview (AAI) classifications—The distribution of the adolescent AAI classifications was: 126 secure/autonomous (67%), 44 insecure/dismissing (23%), 10 insecure/preoccupied (5%), 6 unresolved (3%), and 2 insecure/cannot classify (1%). (Scheduling difficulties prohibited one adolescent from completing the AAI.) This distribution is similar to distributions obtained in other studies of low-risk adolescents (e.g., Ammaniti, van IJzendoorn, Speranza, & Tambelli., 2000; Bakermans-Kranenburg & van IJzendoorn, 2009; Scharf, 2001). Because there were few adolescents in the insecure groups, we combined these groups into one insecure group and examined secure vs. insecure AAI group differences. Adolescents' AAI group classifications were not linked to their Shipley vocabulary scores, $t(173) = 1.56, p = .12$.

Emotional Response to Conflict Scale (ERCS) and Conflict Behavior scores—We present descriptive statistics for participants' initial and follow-up ERCS scores in Table 2.

Test of Hypotheses Related to Reconstructive Memory for Adolescent-Parent Conflict

To test our hypotheses about attachment-related differences in reconstructive memory for adolescent-parent conflict, we conducted a series of general linear mixed model analyses using the Proc Mixed procedure in SAS 9.1. In these analyses, the repeated factor was participants' T1 and T2 ERCS summary scores. The fixed factors were the time at which participants completed the ERCS (i.e., ERCS Time; 2 levels: T1 vs. T2), Reporting Family Member (4 levels: adolescent reporting about teen-mother conflict, adolescent reporting about teen-father conflict, mother, and father), Adolescent Gender (2 levels: boy vs. girl), and Adolescent AAI Group (2 levels: secure vs. insecure). We also added a "family" random effect in our analyses to account for any correlations among ERCS scores obtained from participants within the same family. We included all main effects and first-order, second-order, and third-order interactions in our analyses.

The results of interest in these mixed model analyses were whether the ERCS Time \times Attachment Group interactions (and accompanying post-hoc analyses examining T1/T2 differences) were significant for each reporting family member and whether different patterns of gender-related results emerged with regard to adolescent boys and/or girls. To obtain these particular results, we tested the simple interaction effects of ERCS Time \times Adolescent Attachment Group within both the three-way ERCS Time \times Adolescent Attachment Group \times Reporting Family Member interactions and the four-way ERCS Time \times

Adolescent Gender \times Adolescent Attachment Group \times Reporting Family Member interactions. Then, when significant simple ERCS Time \times Adolescent Attachment Group interaction effects emerged and subsequent post-hoc tests provided evidence that change did indeed occur (i.e., significant attachment-related differences emerged between participants' T1 and T2 ERCS scores) we plotted participants' ERCS scores and conducted accompanying *t*-tests to describe *how*, on average, family members' perceptions of conflict changed over a span of 6 weeks as a function of adolescent AAI group and/or adolescent gender.

Moreover, for each of these examined significant interactions, we conducted further follow-up analyses to determine how participants' perceptions of the conflict converged or diverged from the behavioral ratings of the adolescent-parent conflict interactions over the 6 week period. These follow-up analyses mirrored the mixed model analyses described above, except that the repeated factor was two difference scores that represented the difference between participants' ERCS summary scores and our behavioral rating scores (one score for T1 perceptions and another for T2 perceptions). We calculated these difference scores by first standardizing participants' ERCS summary scores and behavioral hostility scores (behavioral conflict scores had already been standardized during the PCAs). We then subtracted each participant's behavior scores from his/her corresponding ERCS summary scores (i.e., ERCS positive interaction score - positive adolescent-mother/father dyadic conflict behavior scores; ERCS negative interaction score - positive adolescent-mother/father dyadic conflict behavior scores [reverse scored]; ERCS hostile treatment score - behavioral hostility score). Thus, for positive interaction, a positive (i.e., non-negative) difference score demonstrated that the reporting family member perceived the conflict more favorably than did observers, and a negative (i.e., non-positive) difference score demonstrated that the reporting family member perceived the conflict in a less favorable way than did observers. In contrast, for negative interaction and hostile treatment, a positive (i.e., non-negative) difference score demonstrated that the reporting family member perceived the conflict less favorably than did observers, and a negative (i.e., non-positive) difference score demonstrated that the reporting family member perceived the conflict in a more favorable way than did observers. Using these mixed model analyses and accompanying *t*-tests, we were able to determine whether (a) difference scores were significantly different from zero (i.e., a significant difference score indicated that the reporting family members' perceptions and our behavioral ratings were significantly different), and (b) whether corresponding T1- and T2-related *difference scores* differed significantly (i.e., a significant difference in the difference scores indicated that there was a significant change in the degree to which the T2 and T1 scores diverged from observer ratings provided at T1). In the next two sections, we present our results by hypothesis.¹

Hypothesis 1: Adolescent attachment security is linked to more positively and less negatively biased adolescent reconstructive memory for adolescent-parent conflict over time, whereas adolescent attachment insecurity is linked to less positively and more negatively biased memory over time—

With respect to adolescent-mother conflict, a significant ERCS Time \times Attachment simple interaction effect emerged for adolescents' ERCS negative interaction scores, $F(3, 701) = 5.23, p < .01$ (but not ERCS positive interaction, $F(3, 699) = 1.90, p = .12$ or hostile treatment scores, $F(3, 767) = 1.61, p = .18$): Secure adolescents showed a significant decrease in their

¹In light of Roisman, Fraley, and Belsky's (2007) recent suggestions that individual differences in the Adult Attachment Interview should also be examined continuously, we examined whether and how adolescents' reliable AAI coherence of mind scores were linked to adolescent and parent reconstructive memory for conflict. As expected, these results (which are available from the first author) were substantively similar to the AAI group classification results reported in this manuscript.

propensity to remember the conflict as negative ($M_{T1-T2} = .21$, $SE = .06$, $t_{T2-T1}[611] = 3.70$, $p < .001$, $g = .14$; for this t-test and all other t-tests reported in this section, the degrees of freedom were derived from the omnibus mixed model analysis. Moreover, the measure of effect size is reported as Hedge's g ; see Cooper & Hedges, 1994), whereas insecure adolescents' memory for the negative features of the conflict remained stable during the 6-week period ($M_{T1-T2} = .03$, $SE = .08$, $t_{T2-T1}[598] = .37$, $p = .71$, $g = .02$; see Figure 1). Inspection of the difference scores between secure adolescents' T1 and T2 ERCS negative interaction scores and their reverse-scored positive adolescent-mother dyadic conflict behavior scores indicated that secure adolescents' perceptions of the negative features of the conflict were initially significantly less negative than the observed behavioral ratings at T1 ($M_{Diff\ T1} = -1.41$, $SE = .10$, $t[503] = -13.39$, $p < .001$, $g = .63$) and continued to diverge significantly and become even less negative than the behavioral ratings 6 weeks later at T2 ($M_{Diff\ T2} = -1.73$, $SE = .11$, $t[499] = -15.31$, $p < .001$, $g = .70$; $M_{DiffT1-DiffT2} = .32$, $SE = .08$, $t_{T1-T2}[572] = 3.74$, $p < .001$, $g = .17$). Insecure adolescents' perceptions of the negative features of the conflict were also initially significantly less negative than the behavioral ratings at T1 ($M_{Diff\ T1} = -1.59$, $SE = .15$, $t[503] = -10.65$, $p < .001$, $g = .47$) and T2 ($M_{Diff\ T2} = -1.63$, $SE = .16$, $t[476] = -10.38$, $p < .001$, $g = .47$), but did not diverge significantly from our behavioral ratings over the 6-week period ($M_{DiffT1-DiffT2} = .04$, $SE = .12$, $t_{T1-T2}[562] = .36$, $p = .72$, $g = .01$).

With respect to *adolescent-father conflict*, a significant ERCS Time \times Attachment simple interaction effect emerged for both adolescents' ERCS positive interaction scores, $F(3, 707) = 3.49$, $p < .05$, and ERCS negative interaction scores, $F(3, 709) = 4.91$, $p < .01$, but not for adolescents' ERCS hostile treatment scores, $F(3, 773) = .20$, $p = .90$. Regarding adolescents' positive interaction scores, secure adolescents' memory remained stable during the 6-week period ($M_{T1-T2} = .03$, $SE = .06$, $t_{T1-T2}[633] = .45$, $p = .65$, $g = .02$), whereas insecure adolescents showed a significant decrease in their propensity to remember the conflict as positive ($M_{T1-T2} = .21$, $SE = .09$, $t_{T1-T2}[620] = 2.46$, $p < .05$, $g = .09$; see Figure 2). Inspection of the difference scores between secure adolescents' T1 and T2 ERCS positive interaction scores and their positive adolescent-father dyadic conflict behavior scores indicated that secure adolescents' perceptions of the positive features of the conflict did not differ from the observed behavioral ratings at T1 ($M_{Diff\ T1} = -.01$, $SE = .10$, $t[508] = -.05$, $p = .96$, $g = .01$) or T2 ($M_{Diff\ T2} = -.05$, $SE = .11$, $t[502] = -.44$, $p = .66$, $g = .02$), and did not diverge from the behavioral ratings over time ($M_{DiffT1-DiffT2} = .04$, $SE = .08$, $t_{T1-T2}[617] = .58$, $p = .56$, $g = .02$). Insecure adolescents' perceptions of the positive features of the conflict also did not differ significantly from the observed behavioral ratings at T1 ($M_{Diff\ T1} = .20$, $SE = .15$, $t[502] = 1.36$, $p = .17$, $g = .06$) or T2 ($M_{Diff\ T2} = -.06$, $SE = .16$, $t[472] = -.39$, $p = .70$, $g = .02$), but there was a significant change in insecure adolescents' perceptions with respect to the behavioral ratings over time. More precisely, insecure adolescents' ratings shifted from being more positive to less positive over the 6-week period compared to the behavioral ratings ($M_{DiffT1-DiffT2} = .26$, $SE = .10$, $t_{T1-T2}[607] = 2.55$, $p < .01$, $g = .11$).

Regarding adolescents' ERCS negative interaction scores for father, secure adolescents showed a significant decrease in their propensity to remember the conflict with their fathers as negative ($M_{T1-T2} = .17$, $SE = .06$, $t_{T1-T2}[617] = 2.96$, $p < .01$, $g = .11$), whereas insecure adolescents' memory for the negative features of the conflict remained stable during the 6-week period ($M_{T1-T2} = .15$, $SE = .08$, $t_{T1-T2}[601] = 1.92$, $p = .06$, $g = .08$; see Figure 3). Inspection of the difference scores between secure adolescents' T1 and T2 ERCS negative interaction scores and their reverse-scored positive adolescent-father dyadic conflict observed behavior scores indicated that secure adolescents' perceptions of the negative features of the conflict were significantly less negative than the behavioral ratings at T1 ($M_{Diff\ T1} = -1.53$, $SE = .11$, $t[515] = -14.23$, $p < .001$, $g = .61$), and later diverged

significantly and became even less negative than the behavioral ratings 6 weeks later at T2 ($M_{\text{Diff T2}} = -1.77$, $SE = .12$, $t[517] = -15.36$, $p < .001$, $g = .65$; $M_{\text{DiffT1-DiffT2}} = .24$, $SE = .09$, $t_{T1-T2}[578] = 2.80$, $p < .01$, $g = .11$). Insecure adolescents' perceptions of the negative features of the conflict were also initially significantly less negative than the observed behavioral ratings at T1 ($M_{\text{Diff T1}} = -1.73$, $SE = .15$, $t[510] = -11.46$, $p < .001$, $g = .51$) and T2 ($M_{\text{Diff T2}} = -1.94$, $SE = .16$, $t[485] = -12.21$, $p < .001$, $g = .55$), but did not diverge significantly further from the behavioral ratings over time ($M_{\text{DiffT1-DiffT2}} = .21$, $SE = .12$, $t_{T1-T2}[565] = 1.80$, $p = .07$, $g = .07$).

Hypothesis 2: Adolescent attachment security is linked to more positively and less negatively biased parental reconstructive memory for adolescent-parent conflict over time, whereas adolescent attachment insecurity is linked to more negatively and less positively biased parental memory over time—

With respect to mothers, a pair of contrasting gender-related ERCS Time \times Attachment simple interaction effects emerged for mothers' ERCS positive interaction and hostile treatment scores, but not for mothers' ERCS negative interaction scores, $F(3, 700) = 2.08$, $p = .10$. With respect to mothers' ERCS positive interaction scores, a significant ERCS Time \times Attachment simple interaction effect emerged for mothers of boys only, $F(3, 698) = 2.75$, $p < .05$: Whereas mothers of secure boys' memory for the positive features of the conflict remained stable during the 6-week period ($M_{T1-T2} = -.05$, $SE = .10$, $t_{T1-T2}[627] = -.49$, $p = .63$, $g = .02$), mothers of insecure boys showed a decrease in their propensity to remember the conflict as positive ($M_{T1-T2} = .37$, $SE = .13$, $t_{T1-T2}[620] = 2.82$, $p < .01$, $g = .11$; see Figure 4). Inspection of the difference scores between mothers of secure boys' T1 and T2 ERCS positive interaction scores and their positive adolescent-mother dyadic conflict behavior scores indicated that secure boys' mothers' perceptions of the positive features of the conflict did not differ significantly from the behavioral ratings at T1 ($M_{\text{Diff T1}} = -.22$, $SE = .16$, $t[494] = -1.33$, $p = .18$, $g = .06$) or T2 ($M_{\text{Diff T2}} = -.15$, $SE = .17$, $t[479] = -.86$, $p = .39$, $g = .04$), and did not change over time in reference to the behavioral ratings ($M_{\text{DiffT1-DiffT2}} = -.07$, $SE = .12$, $t_{T1-T2}[611] = -.57$, $p = .57$, $g = .02$). Insecure boys' mothers' perceptions of the positive features of the conflict also did not differ significantly from observed behavioral ratings at T1 ($M_{\text{Diff T1}} = .12$, $SE = .23$, $t[494] = .51$, $p = .61$, $g = .02$) or T2 ($M_{\text{Diff T2}} = -.33$, $SE = .24$, $t[464] = -1.35$, $p = .18$, $g = .06$), but the change in insecure boys' mothers' perceptions of the conflict – from more to less positive – over the 6-week period was significant compared to the behavioral ratings ($M_{\text{DiffT1-DiffT2}} = .44$, $SE = .16$, $t_{T1-T2}[606] = 2.79$, $p < .01$, $g = .11$).

In contrast, with respect to mothers' ERCS hostile treatment scores, a significant ERCS Time \times Attachment simple interaction effect emerged for mothers of girls only, $F(3, 698) = 2.75$, $p < .05$: Mothers of secure girls showed a decrease in their propensity to remember being treated with hostility by their daughters during the conflict ($M_{T1-T2} = .15$, $SE = .06$, $t_{T1-T2}[645] = 2.36$, $p < .05$, $g = .10$), whereas mothers of insecure girls' memory for being treated with hostility during the conflict remained stable during the 6-week period ($M_{T1-T2} = -.02$, $SE = .09$, $t_{T1-T2}[639] = -.22$, $p = .83$, $g = .01$; see Figure 5). Inspection of the difference scores between mothers of secure girls' T1 and T2 ERCS hostile treatment scores and their daughters' hostile behavioral scores indicated that although these mothers' perceptions of being treated with hostility did not differ from the observed behavioral ratings of daughter hostility at T1 ($M_{\text{Diff T1}} = .11$, $SE = .12$, $t[767] = .87$, $p = .38$, $g = .03$) or T2 ($M_{\text{Diff T2}} = -.14$, $SE = .13$, $t[740] = -1.09$, $p = .27$, $g = .04$), the change from perceiving receiving more hostility to less hostility compared to our observations over time was significant ($M_{\text{DiffT1-DiffT2}} = .25$, $SE = .11$, $t_{T2-T1}[623] = 2.32$, $p < .05$, $g = .09$). Insecure girls' mothers' perceptions of being treated with hostility by their daughters did not differ from the behavioral ratings at T1 ($M_{\text{Diff T1}} = .30$, $SE = .18$, $t[781] = 1.67$, $p = .10$, $g = .06$) or T2 ($M_{\text{Diff T2}} = .34$, $SE = .18$, $t[709] = 1.84$, $p = .07$, $g = .07$), and did not change over time in

reference to the behavioral ratings ($M_{DiffT1-DiffT2} = -.04$, $SE = .15$, $t_{T1-T2}[619] = -.27$, $p = .79$, $g = .01$).

For *fathers*, contrary to expectations, no significant ERCS Time \times Attachment simple interaction effects or accompanying significant post-hoc analyses examining T1/T2 differences emerged for adolescents' ERCS positive interaction, negative interaction, or hostile treatment scores (all post-hoc ps range from $p = .06$ to $p = .58$).

Discussion

Given the importance of adolescent-parent conflict and evidence that memory for interpersonal experiences can lack accuracy over time (Baldwin, 1995; Fiske & Taylor, 1991), we examined attachment-related differences in the "reconstructions" of memory for adolescent-parent conflict and the ways in which these memory reconstructions were related to observer reports of the interactions. We found evidence that adolescents and their mothers, but not their fathers, reconstruct their perceptions of adolescent-parent conflict over time as a function of adolescent attachment, and we identified ways in which these reconstructions do and do not mesh with coder-rated observations of the conflict interaction.

First, findings suggest that when the memory for a specific adolescent-parent conflict degrades over a 6-week period, adolescents reconstruct their memories for the event as a function of their attachment organization. Thus, insecure adolescents, compared to secure adolescents, may have reported less favorable interactions over time because they were drawing on an insecure state of mind with respect to attachment to piece together the nature of these interactions. Overall, these attachment-related reconstructive memory biases fit well with and extend those that Feeney and Cassidy (2003) reported. However, unlike Feeney and Cassidy, we did not find links between our measure of attachment representations (the AAI) and every aspect of reconstructive memory for conflict with both mothers and fathers (i.e., positive interaction, negative interaction, and hostile treatment). Feeney and Cassidy, however, reported on links of adolescents' representations of a specific parent with memory about an interaction with that specific parent. We, on other hand, present findings indicating that a generalized, internal attachment organization (that is thought to be a consolidation of representations of mother, father, and other attachment figures; see Allen, 2008) relates to certain aspects of adolescents' memory for conflict with mother or father.

Moreover, in cases for which we found attachment-related memory biases, our analyses of difference scores between observer ratings and participant ratings of the interaction showed that secure adolescents had an initial bias to perceive their interactions with both mothers and fathers as *less* negative than observed scores, and this bias only grew stronger over time. These findings are particularly interesting because they suggest that secure adolescents are either not perceiving or not encoding the amount of negative content in their interactions with parents that observers perceive, and over time, this reporting bias is intensified because of their reliance on secure internal working models to aid memory recall. Insecure adolescents, on the other hand, showed a different pattern in their reports compared to observed scores of conflict. Insecure adolescents' initial ratings, like those of secure adolescents, were less negative than observer ratings, but there was no significant change over time in their ratings. Thus, although insecure adolescents perceived (or encoded) less negativity than did observers initially, they appeared to lack the protective memory bias that secure adolescents had that would allow them over time to recall the interaction as less negative. These findings illustrate the importance of considering comparisons between observers' assessments of behavior and self-reports over time in order to characterize the nature of attachment-based memory differences between secure and insecure adolescents.

It is interesting to note that although, as expected, relative to one another secure and insecure adolescents showed significantly distinct patterns of reconstructive memory, post-hoc tests revealed findings that were not always expected. For instance, as expected, secure adolescents recalled their interactions with their mothers as less negative over time, yet contrary to expectation, insecure adolescents showed no significant change (rather than remembering their conflict interactions with their mothers as *more* negative over time). Research has shown that individuals tend to forget affect associated with unpleasant events more quickly than affect associated with pleasant events (Walker, Skowronski, & Thompson, 2003), and to minimize the affective experience of negative events (Taylor, 1991). The present results suggest that perhaps rather than having an overtly negative memory bias with respect to conflict interactions with mothers, insecure adolescents simply lack the normal protective memory process that secure adolescents use. (A similar lack of protective forgetting of negative affect emerged for insecure individuals in a study of counseling clients' memory for naturally occurring, in-session negative emotion: Specifically, clients high in attachment anxiety showed lower reductions in negative affect over the course of one week than did clients low in attachment anxiety [Woodhouse & Gelso, 2008].) In contrast to their interactions with their mothers, insecure adolescents *did* demonstrate a significant negative memory bias for interactions with their fathers, recalling the interaction as less positive than they had reported initially 6 weeks earlier. Secure adolescents, on the other hand, showed no significant change over time in their ratings of interaction with fathers. Moreover, the finding that secure vs. insecure differences in adolescent reconstructive memory processes emerged in relation to negative emotion for mothers and positive emotion for fathers may indicate that reconstructive memory involves the salient emotional characteristics of these relationships (i.e., negativity is more frequent in adolescent-mother dyads, and positivity is more frequent in adolescent-father dyads; see Larson & Richards, 1994; Montemayor & Hanson, 1985; Smith & Forehand, 1986).

From an attachment perspective, attachment-related differences in reconstructive memory likely emerge because attachment organization serves as a structure through which new attachment-related information is processed rapidly and efficiently. These differences also likely stem from the proclivity of an individual's attachment organization to remain stable in the face of new information, especially information that would be inconsistent with previously obtained attachment-related knowledge (Bowlby, 1973). These notions are consistent with other theories in the social cognition literature, which state that internalized cognitive structures function to process social information in the most rapid and efficient ways possible, and in ways that are congruent with pre-existing knowledge structures (Baldwin, 1992; Fiske & Taylor, 1991).

An additional important finding to emerge from this study was that adolescent AAI attachment security was linked not only to *adolescents'* reconstructive memory but also to *mothers'* reconstructive memory for conflict such that compared to mothers of secure adolescents, mothers of insecure adolescents reconstructed aspects of the conflict interaction less favorably. Moreover, our follow-up analyses of how mothers of secure and insecure adolescents remembered their conflict interactions revealed expected patterns: Compared to mothers of secure boys, mothers of insecure boys typically remembered conflict interactions more negatively over time. Specifically, mothers of insecure boys initially rated the interaction no differently from the behavioral raters at T1 and T2; nevertheless, their memory for the positive aspects of the interaction became significantly less positive over time. Mothers of secure boys, on the other hand, likewise rated the positive aspects of the interaction no differently from the behavioral raters both at T1 and T2, yet did not show the significant decrease in their ratings of positivity that the mothers of insecure boys showed.

For mothers of girls, a somewhat different yet converging picture emerged. Mothers of secure girls reported less hostility over time as compared to mothers of insecure girls. Although neither T1 nor T2 ratings of daughters' hostility made by mothers of secure girls differed significantly from observer ratings of daughter hostility, there was a significant reduction in perceptions of hostility for mothers of secure girls. Mothers of insecure girls, on the other hand, likewise rated the hostile aspects of the interaction no differently from the behavioral raters both at T1 and T2, yet did not show the significant decrease in their ratings of hostility that the mothers of secure girls showed. Thus, mothers of insecure girls appeared to lack a protective "forgetting" of their daughters' hostility that mothers of secure girls seemed to demonstrate (although it is important to note that despite exhibiting an apparent protective "forgetting," mothers of secure girls did not ultimately remember significantly less hostility than rated by observers).

These findings of maternal memory biases are noteworthy because they support attachment theorists' claims that parents' information-processing patterns are linked to their children's attachment security (see George & Solomon, 2008). It is striking that not only did we find compelling evidence with adolescents that is consistent with the idea that one's own state of mind with respect to attachment may guide one's memory (as predicted by attachment theory; Bowlby, 1969/1982; Main, Kaplan, & Cassidy, 1985), we also found notable evidence of a link between one person's state of mind with respect to attachment and the social information processing of *another* person. If a mother has a memory bias that leads her to remember interactions less favorably over time, it is likely that she may feel differently about her adolescent child than she otherwise would. The adolescent's experience of having a mother who typically remembers interactions as more negative over time and feels more negatively about the adolescent may be a painful one. Moreover, such a negative maternal memory bias may lead the mother to feel, think, and act in ways that would interfere with the adolescent's tendency to view her as a secure base. Such a reduction in secure base experiences could contribute to the adolescent's overall insecure state of mind with respect to attachment. On the other hand, because the present study does not allow us to be certain about the direction of effects, it is important to consider that insecure adolescents might behave in ways that would make the mother less likely to remember positive aspects of the interaction. Regardless of the direction of the effect, it is notable that only mothers, and not fathers, showed a memory bias as a function of adolescent AAI. This finding is consistent with previous research suggesting that mothers may be more emotionally linked with their children than fathers (Larson & Richards, 1994; Montemayor, 1983; Youniss & Smollar, 1985). Further research will be necessary to better understand differences in the links between mother and father social information-processing and adolescent attachment. Additionally, replication studies are needed to more fully understand the adolescent gender differences that emerged. For instance, mothers of secure adolescents reconstructed perceptions of girls' hostility as a function of girls' attachment, but did not do the same with regard to boys' hostility. In most previous attachment research, gender has not moderated attachment-related findings (see Cassidy & Shaver, 2008, for reviews). It may be that hostility is more salient in mother-daughter relationships than in mother-son relationships, given empirical evidence that girls tend to engage in both greater conflict (as well as greater intimacy) with parents, particularly mothers, than do boys (Larson & Richards, 1994; Montemayor, 1983).

Although this study provides new insights into attachment-related memory processes, the reported findings should be considered within the context of the study's limitations. One limitation of the present study is that we were unable to examine links between parents' AAI classifications and reconstructive memory, an examination that might provide clues into possible pathways by which security of attachment can be transmitted within families across generations (see van IJzendoorn, 1995). It may be, for instance, that parental information

processing mediates a (hypothesized) link between parent and adolescent attachment, such that once parent attachment is considered as a predictor of parental memory, the link between adolescent attachment and parental memory would be weakened (or no longer emerge). In other words, it may be that differences in mothers' attachment representations are driving differences in mothers' memory, mothers' behavior with the adolescent, and adolescent attachment.

Another limitation is that all families were maritally intact, limiting generalizability. Nevertheless, an important goal of the study was to examine memory biases for interactions occurring within relationships that adolescents have with both parents (see Collins & Russell, 1991, for a discussion of the importance of understanding the different contributions of mothers and fathers to development). Relatedly, our sample was non-clinical, relatively low-risk, and relatively homogeneous with respect to socioeconomic status; memory processes may work differently in different kinds of samples. It is also important to note that our findings might have differed had we examined reconstructive memory over a different time span (e.g., over 6 months rather than 6 weeks); further, we cannot rule out the possibility that the quality of adolescent-parent interactions after the laboratory visit contributed to how participants remembered the laboratory conflicts. An additional limitation is that we examined only secure versus insecure AAI group differences; future research (with samples containing larger numbers of insecure adolescents) is needed to reveal how adolescents with different AAI insecure classifications reconstruct memories for conflicts with parents. Finally, our results are correlational and do not allow us to determine causal relations. Although our interpretation of the data is consistent with attachment theory, the links that emerged in this investigation may have emerged for other reasons (e.g., insecurity may be associated with negative mood, and a wealth of data indicates that negative mood is linked to memory biases; see Haaga, Dyck, & Ernst, 1991).

In addition to addressing these limitations, future researchers could also examine reconstructive memory processes outside the context of adolescent-parent conflict (e.g., in contexts involving secure base support and safe haven provision; see Roisman, 2009, for discussion of the importance of consideration of context when examining links with attachment), in other periods of development (e.g., childhood), and in relation to underlying psychophysiological processes (e.g., secure and insecure adolescents may employ different prefrontal emotion regulatory strategies when recalling past conflicts with parents). From a clinical perspective, these findings could have important implications for how adolescent-parent conflict is addressed during treatment. Instead of focusing solely on what occurs during an adolescent-parent conflict, clinicians might focus on how conflict is remembered over time as a function of adolescents' attachment security. By focusing on the attachment-related aftereffects of conflict, clinicians may be more resourceful in helping high-conflict adolescent-parent dyads overcome their difficulties.

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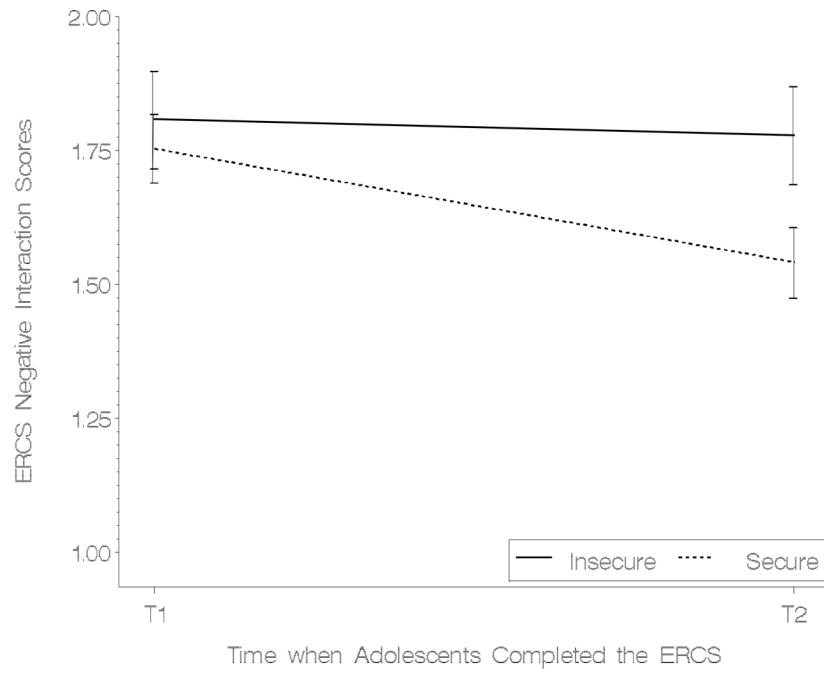


Figure 1. AAI-related changes in adolescents' ERCS negative interaction scores for their conflict discussions with mother.

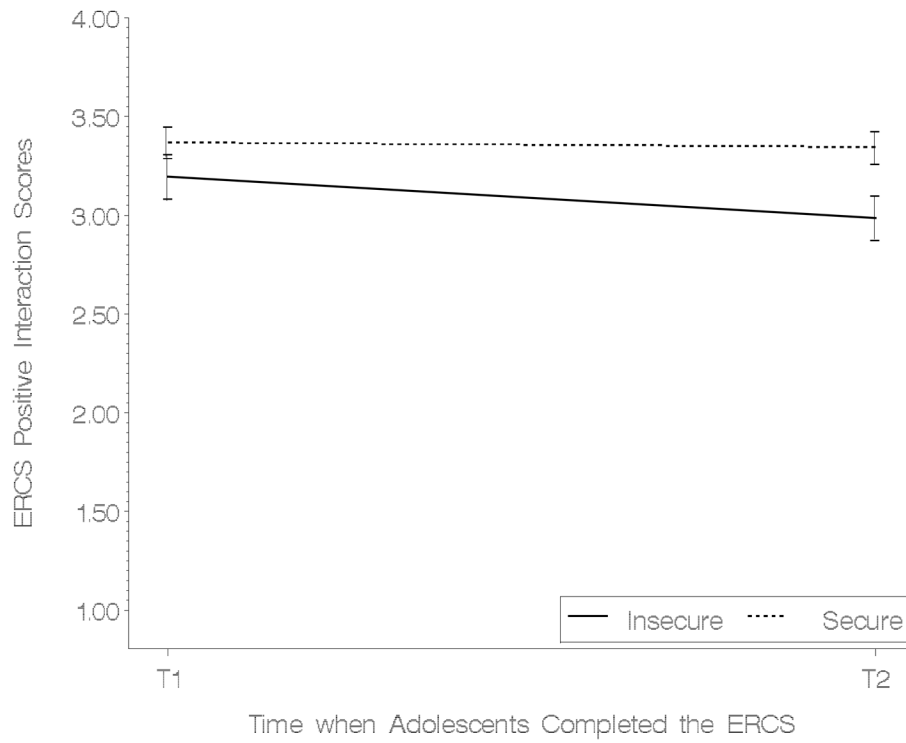


Figure 2. AAI-related changes in adolescents' ERCS positive interaction scores for their conflict discussions with father.

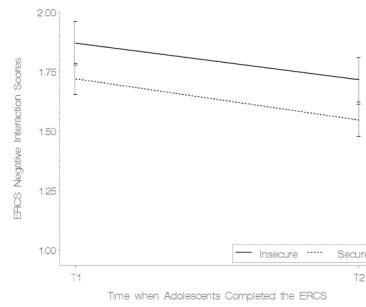


Figure 3. AAI-related changes in adolescents' ERCS negative interaction scores for their conflict discussions with father.

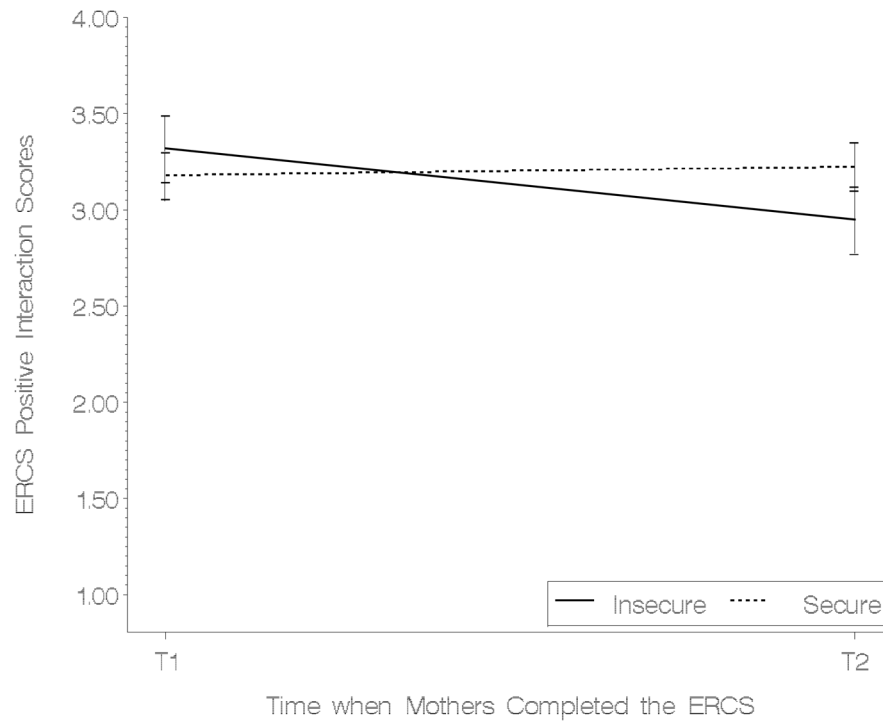


Figure 4. AAI-related changes in mothers' ERCS positive interaction scores for their conflict discussions with sons.

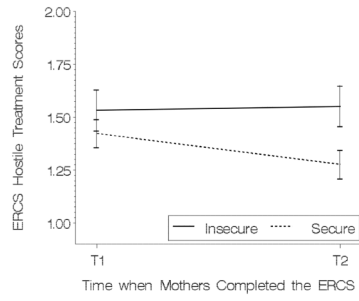


Figure 5. AAI-related changes in mothers' ERCS hostile treatment scores for their conflict discussions with daughters.

Table 1

Sample Characteristics

	Total (<i>n</i> = 189)
Adolescent gender	
Male	38%
Female	62%
Family race	
White/Caucasian	73%
Black/African American	14%
Asian	10%
Hispanic	3%
Annual household income	
–\$60,000	15%
\$61,000+	85%
Mother education	
High school	23%
College/graduate degree	77%
Father education	
High school	18%
College/graduate degree	82%
Adolescent Shipley scores	<i>M</i> = 29, <i>SD</i> = 4.8

Table 2

Descriptive Statistics for Adolescents' and Parents' ERCS Scores

Variable	Initial (T1)		Follow-Up (T2)	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
Adolescent ERCS scores for adolescent-mother conflict				
Positive interaction	3.36	(.94)	3.32	(.80)
Negative interaction	1.79	(.76)	1.65	(.68)
Hostile treatment	1.29	(.57)	1.27	(.51)
Adolescent ERCS scores for adolescent-father conflict				
Positive interaction	3.29	(.83)	3.25	(.83)
Negative interaction	1.78	(.68)	1.60	(.67)
Hostile treatment	1.27	(.41)	1.26	(.44)
Mother ERCS scores for adolescent-mother conflict				
Positive interaction	3.24	(.90)	3.23	(.83)
Negative interaction	1.67	(.73)	1.67	(.70)
Hostile treatment	1.41	(.73)	1.38	(.63)
Father ERCS scores for adolescent-father conflict				
Positive interaction	3.37	(.79)	3.31	(.73)
Negative interaction	1.65	(.66)	1.65	(.59)
Hostile treatment	1.39	(.66)	1.41	(.61)

Note. ERCS Initial (T1) *n*'s range from 180 to 189. ERCS Follow-Up (T2) *n*'s range from 151 to 160.