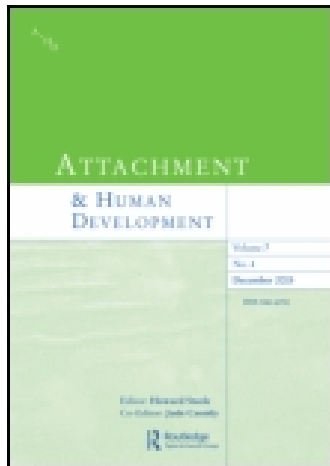


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Longitudinal associations between adult attachment states of mind and parenting quality

Rebecca J. Shlafer^{a*}, K. Lee Raby^b, Jamie M. Lawler^b, Paloma S. Hesemeyer^c and Glenn I. Roisman^b

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Much of the current evidence regarding the associations between attachment states of mind and parenting quality is based on concurrent or short-term longitudinal studies with samples of adults. Using data from the Minnesota Longitudinal Study of Risk and Adaptation, we examined the predictive significance of the coherence of participants' discourse during the Adult Attachment Interview, assessed at ages 19 and 26 years, for parenting quality measured using observations (administered when participants' children were 24 and 42 months old) and interview ratings (collected when parents were 32 years old). Results indicated that associations between AAI coherence and parenting quality varied based on when adult attachment was assessed, as well as when and how parenting quality was assessed. Coherence of mind measured at age 19 years predicted observed supportive parenting when it was assessed when participants were in their late-20s and early-30s, a developmental period when parenting can be conceptualized as a salient developmental task, but not before. In contrast, coherence of mind measured at age 26 years predicted both observed and interview-ratings of supportive parenting.

Keywords: adult attachment; states of mind; parenting quality; development; longitudinal study

Attachment theory posits that adults' childhood experiences with their primary caregivers guide their expectations for and behavior in other close relationships, especially relationships with their own children (Bowlby, 1988; Crittenden & Ainsworth, 1989; Sroufe & Fleeson, 1986). More specifically, adults' mental representations of close relationships are thought to affect the degree of sensitive and responsive care they provide to their children; this, in turn, serves as the basis for children's sense of security in the next generation (Main, Kaplan, & Cassidy, 1985; Van IJzendoorn & Bakermans-Kranenburg, 1997).

A good deal of evidence has emerged that is consistent with these ideas. For example, Van IJzendoorn's (1995) meta-analysis on the intergenerational continuity of attachment demonstrated that parents who have developed more secure states of mind with respect to attachment – as reflected by the ability to provide coherent (i.e., internally consistent and not emotionally overwrought) narratives of individuals' own childhood experiences during the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) – are more likely to be sensitive and supportive during interactions with their own children than individuals whose narratives are judged as insecure (i.e., inconsistent and incoherent narratives identified as dismissing or preoccupied). These findings appear to be robust

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and largely environmentally mediated in that such associations are observed even when the AAI is administered prior to the child's birth (Fonagy, Steele, & Steele, 1991) and among mother-child dyads that are not genetically related (Dozier, Stoval, Albus, & Bates, 2001).

Nearly all of the studies that have examined the predictive significance of adults' attachment states of mind for their parenting quality have administered the AAI with individuals who either are already parents or are currently pregnant. This has had two implications for research in this area. First, most studies have measured the AAI and parenting concurrently (e.g., Crowell & Feldman, 1988, 1991) or in a short-term longitudinal design in which the lag between the AAI and the parenting assessment was brief (e.g., Adam, Gunnar, & Tanaka, 2004; Lindhiem, Bernard, & Dozier, 2011; Phelps, Belsky, & Crnic, 1998). Second, much of the previous research has focused on samples of adults, as this is the developmentally normative age period to have children, as opposed to individuals who become parents during mid to late adolescence. A relatively small number of studies have focused exclusively on adolescent samples (e.g., Madigan, Moran, & Pederson, 2006; Tarabulsy et al., 2005; Ward & Carlson, 1995). As a result of these limitations of prior research, it is unclear whether attachment states of mind have lasting implications for parenting quality over time and whether the significance of adult attachment security for parenting quality varies based on the developmental period during which adult attachment security is assessed. The study aims to address these questions by investigating longitudinal associations between adult attachment security, assessed during late adolescence and early adulthood, and parenting quality.

There are at least three possible conceptual models that may be used to make hypotheses about how adult attachment states of minds and parenting might be associated over time. First, attachment states of mind might temporally precede and organize parenting in relatively lasting and consistent ways, presumably via the stability of attachment representations across development. According to this *main effects* model, individuals' attachment states of minds are expected to predict parenting quality regardless of when these constructs are measured.

A second, *developmental tasks*, model is guided by a perspective that conceptualizes developmental adaptation in relation to a set of tasks that vary in their salience across development (McCormick, Kuo, & Masten, 2011; Sroufe, 1979). For example, forming a secure attachment relationship and successfully entering into the world of peer relationships are considered salient developmental tasks of infancy and early childhood, respectively (Sroufe, Egeland, & Carlson, 1999). Likewise, work and romantic relationships emerge as key developmental tasks during the transition to adulthood (Roisman, Masten, Coatsworth, & Tellegen, 2004). Providing sensitive and supportive care for one's children is one of the salient developmental tasks in adulthood (McCormick et al., 2011). Over the last several decades, adults in the United States have delayed childbirth, so that most become parents after age 25 (Mathews & Hamilton, 2009).

This perspective also assumes that functioning in a newly emerging developmental task is less stable, presumably because functioning has not consolidated around a set of internal or external resources (Roisman et al., 2004). Thus, a developmental tasks model explaining the association between attachment states of mind and parenting quality would anticipate that attachment states of mind predict parenting quality most strongly when parenting quality is assessed during adulthood (i.e., mid- to late-20s and early 30s), a developmental period during which parenting is conceptualized as a normative, salient developmental task, but not before. According to this model, attachment states of mind may best predict parenting quality when parenting is a salient development task, because,

at this particular point in the life course, individuals may be more likely to reflect on the role of parents in children's development, their own experiences as parents, and how these experiences relate to their internalized states of mind regarding their own childhood caregiving experiences.¹

A final, *increasing validity*, model emphasizes the timing at which attachment states of mind are assessed and suggests that the predictive significance of the AAI increases with age. Several converging lines of thinking would support this conceptualization, including the idea that adults' states of mind might be better assessed during the years of maturity than in late adolescence – before such states of mind about early caregiving experiences might stabilize and mature in light of adult experiences outside of that time (Allen & Miga, 2010; Sroufe, Egeland, Carlson, & Collins, 2005). Based on this perspective, attachment states of mind would be expected to be a stronger predictor of parenting quality when the AAI is administered during the mid- to late-20s, as opposed to assessments conducted in late adolescence or early adulthood.

Longitudinal data with multiple assessments of the AAI and measures of parenting at multiple ages are needed distinguish among these three models. To this end, the present study uses data from the Minnesota Longitudinal Study of Risk and Adaptation (MLSRA; Sroufe et al., 2005) to examine these potential models of the associations between attachment representations and parenting across adulthood. More specifically, the MLSRA contains two assessments of individuals' attachment states of mind as measured by the AAI, one during the transition to adulthood (age 19 years) and one during the mid-20s (age 26 years). In addition, observations of parent-child interactions were collected across adulthood and interview-ratings of parenting quality were completed when study participants were 32 years old. In this way, the present longitudinal study leverages data regarding attachment states of mind during two distinct developmental periods in order to examine the predictive significance of the AAI for parenting across a temporal lag that is considerably longer than that of previous longitudinal studies.

Because status as a biological parent is naturally confounded with age at the time of the AAI assessments (such that a higher percentage of individuals are likely to be parents when the AAI is administered later in adulthood), we also examined the potential importance of parental status at the time the AAIs were administered for understanding the associations between adults' attachment states of mind and their parenting quality. More specifically, these analyses allowed us to investigate whether age at the time of the AAI assessments (which is the focus of the *developmental tasks* model) or parenting status at the time of the AAI, moderated the associations between adults' attachment states of mind and their parenting quality.

Method

Participants

Participants were drawn from the MLSRA (Sroufe et al., 2005) an ongoing longitudinal study of development from infancy through adulthood. The original sample consisted of 267 first-time mothers who were recruited during their third trimester of pregnancy between 1976 and 1977 at public health clinics in a major Midwestern city. These low-income families were considered to be at risk at the time of the participant's birth. Approximately half of the mothers were adolescents ($M = 20.5$ years, range = 12–34 years), 41% had not completed high school, 62% were single, and many were experiencing chaotic living conditions and high levels of life stress. The participants

Table 1. Participant characteristics, by sub-sample.

	Observed Parenting Quality ($n = 96$)	Interview-Rated Parenting Quality ($n = 113$)
Age at time of assessment (in years)	$M = 26.88, SD = 4.08$	–
Sex (female)	59.4%	54%
Race (Caucasian)	65.6%	61.9%
Marital Status (married) ¹	36.5%	44.2%
Number of children at time of assessment	$M = 1.61, SD = .84$	$M = 2.55, SD = 1.59$
Education (\leq high school)	53.1%	61.1%

Note: ¹Percent married at both 24- and 42-month assessments. Two participants' marital status changed between assessments.

have been assessed at frequent intervals from birth through adulthood, including observed interactions between the participants and their own children beginning in early adulthood.

Participants were included in these analyses if they completed an observational parenting assessment when their child was a toddler ($n = 96$) or completed a parenting interview at age 32 years ($n = 113$). Attrition analyses showed no significant differences between the original sample and these subsamples with respect to the original mothers' age, education, or marital status at the time of the child's birth. Within these subsamples, approximately 64% of the participants identified themselves as Caucasian, 14% identified themselves as African American, 18% identified themselves as multiracial, and 4% were Native American, Hispanic, or Asian American. Additional descriptive statistics for the sample are presented in Table 1.

Measures

AAI

When participants were aged 19 and 26 years, their states of mind with respect to their childhood attachment experiences was assessed using the AAI (George et al., 1985; Hesse, 1999). The AAI is a semi-structured interview in which individuals are asked to provide an overall description of their attachment-related childhood experiences, provide specific memories that support these general portrayals, revisit episodes of separation and rejection, and evaluate the influence of these experiences on their development and current functioning. The central task for AAI participants is (1) to recall and freely reflect on attachment relevant memories, while simultaneously (2) maintaining coherent, collaborative discourse with the interviewer (Hesse, 2008).

Individuals' abilities to accomplish this task are captured in a set of state of mind ratings, including the coherence of mind rating, which was used in this study. Coherence of mind is commonly used as dimensional index of overall attachment security in adults (e.g., Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001). High coherence scores were given to individuals who freely evaluated their past attachment experiences and integrated those experiences into a coherent narrative. Lower scores were given to individuals who became emotionally overwrought when discussing past attachment experiences or avoided exploring their thoughts and feelings about their childhood experiences. In the current study, coherence of mind ratings were completed by a group of trained and reliable coders who demonstrated reliability with Mary Main and Erik Hesse. All coders were blind to participants' observed parenting and parenting interview

scores. Interrater reliability (intraclass correlations, ICCs) for the coherence of mind ratings was based on a sample of 48 randomly selected cases from the age 19 assessment (ICC = .77) and a sample of 44 randomly selected cases from the age 26 assessment (ICC = .85). Coherence of mind was positively correlated with coherence of transcript at age 19 ($r = .95$) and age 26 ($r = .97$).

Parental status at the time of the AAI

At age 19 and 26, participants were asked whether they ever had had a biological child. As would be expected, only a small subset of participants had had a child by age 19 years. Specifically, 15% of those participants who completed an observational parenting assessment and 17% of those who completed the parenting interview were parents at age 19. In contrast, the majority of the participants were parents by age 26. Specifically, 73% of those participants who completed an observational parenting assessment and 73% of those who completed the interview-based parenting assessment were parents by age 26.

Observed parenting quality

Participants and their children completed observational assessments when their children were 24 and 42 months old. When participants' children were 24 months old, they completed a videotaped laboratory assessment consisting of a free play period, a brief clean up task, followed by a series of problem-solving tool tasks which were designed to become increasingly complex and to be too difficult for the child to complete without the support and assistance of the parent (for more details see Matas, Arend, & Sroufe, 1978). Observed parenting quality was coded from videotapes of the parent-child interaction using a series of 7-point scales, including supportive presence (warmth and encouragement provided to the child), quality of assistance (clarity of directions and timing of cues), structure and limit-setting (setting and maintaining clear standards for the child's behavior), hostility, non-responsive physical intimacy (overly stimulating physical contact or seductive behavior), and generational boundary dissolution (blurring, distortions, or role-reversal of the parent-child roles). Interrater reliabilities were based on a sample of 35 cases and were between .68 and .81 for all scales, except for non-responsive physical intimacy (ICC = .35) which was omitted from further analysis. Principal components analyses (oblimin rotation) of the remaining five parenting behavior scales indicated that a single component accounted for the data reasonably well. This component (referred to as "Supportive Parenting") included parents' supportive presence, quality of assistance, and hostility (reverse-scored). Ratings for parents' structure and limit-setting, as well as their generational boundary dissolution, did not substantially load on this component (loadings < .60) and were omitted from further analysis.

Participants also completed a series of videotaped, laboratory-based teaching interaction tasks when their children were 42 months old. In this assessment, each dyad was presented with four teaching tasks of increasing complexity. As with the 24-month observations, the tasks were designed to be too difficult for the child to solve on his own, and required the parent to guide and support the child to facilitate a successful experience (see Erickson, Sroufe, & Egeland, 1985 for a full description of the assessment). Participants were rated on several 7-point scales, including supportive presence, respect for the child's autonomy, hostility directed toward the child, quality of assistance, confidence in the parental role, non-responsive physical intimacy, and generational boundary dissolution. Interrater reliabilities (intraclass correlations) were based on a

sample of 59 cases and were between .75 and .86 for all scales. Principal components analysis (oblimin rotation) of the eight parenting quality scales indicated that a two-component structure accounted for the data reasonably well. The Supportive Parenting component included supportive presence, respect for autonomy, and hostility (reverse-scored). Parental Intrusiveness included non-responsive physical intimacy, generational boundary dissolution, and structure and limit-setting (reverse-scored). Ratings for parents' quality of assistance and confidence substantially loaded on both components (cross-loadings $<.20$) and therefore were dropped from further analysis.

The Supportive Parenting composites from the 24 and 42 month assessments were used in the current study in order to maximize the comparability with assessments of sensitive, responsive parenting used in other research on infant and adult attachment security (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Van IJzendoorn, 1995). Composite measures of supportive parenting were created at each age by averaging the relevant indicators ($\alpha = .84$ at 24 months; $\alpha = .87$ for 42 months). In light of the stability of the supportive parenting measures across the two assessments ($r = .58$) and the clear advantage of aggregating data to form a more valid and reliable index of observed parenting quality, we used the average of the 24-month and 42-month supportive parenting composites. When participants had data for only one of the two observed parenting assessments (24-month only $n = 15$; 42-month only $n = 17$), the measure of supportive parenting from the available assessment was used. When parents completed both parenting assessments with different children ($n = 7$), data for the assessment completed with the eldest child were used.

Parental age at the time of the observational assessments

Target participants' ages at the time of the 24-month observational parenting assessment ranged from 21 to 37 years ($M = 27.4$, $SD = 4.1$). Participants' ages at the time of the 42-month parenting assessment ranged from 21 to 36 years ($M = 27.3$, $SD = 3.8$). In order to parallel the measure of observed parenting quality, we calculated the average of the participants' age at the time of the two observational parenting assessments. If participants had only completed one observational parenting quality assessment (either when their child was 24 months or 42 months), the parents' age at the time of that assessment was used. When parents completed both assessments with different children, information for the assessment completed with the eldest child was used.

Interview rated parenting quality

At age 32, participants completed a semi-structured interview designed by the researchers to assess individuals' parenting attitudes, beliefs, and practices. Participants were asked to describe the ideal parent-child relationship and then supply examples of their own parenting behaviors to support their stated views. Participants also were specifically asked to describe their own parenting experiences providing support and affection, and setting limits. Each interview was audio recorded and lasted approximately an hour. Parenting quality was assessed from the parenting interviews using six, 7-point rating scales, including Positive Emotional Connectedness (warmth toward children and pleasure in being a parent), Parental Investment/Involvement (belief in the importance of being a parent and a clear commitment to parenting), Parental Confidence (sense of efficacy in the parental role), Hostile Parenting (derogation or rejection of children), Parent-Child Boundary Dissolution (role-reversal in the parent-child relationship), and Coherence of

Parenting Philosophy (organization and consistency of the parents' various parenting beliefs and practices). In addition, coders assigned a summary rating of adults' overall effectiveness in the parental role using a 5-point scale. Coders listened to the entire recorded interview and read the interviewer's notes prior to assigning scores. Ratings for all participants were completed by at least two independent coders, and interrater reliabilities (ICCs) for all scales ranged from .81 to .93. Disagreements between coders were discussed until a consensus was reached.

A principal components analysis of the parenting interview ratings indicated that a two-component structure accounted for the variability in the parenting interview ratings reasonably well. Supportive Parenting included positive emotional connectedness, parental investment/involvement, and coherence of parenting philosophy ($\alpha = .88$) and Negative Parenting included hostile parenting and parent-child boundary dissolution ($\alpha = .49$). Parental confidence significantly cross-loaded ($<.20$ difference in loadings) and was therefore dropped from further analysis. In addition, the rating for overall parenting quality was not included in the principal components analysis as it was designed to be summary rating and was subsequently dropped from further analysis. Supportive parenting was selected as the primary outcome variable for this study due to the conceptual similarity to the observational supportive parenting measure. Indeed, the observational and interview-based supportive parenting measures were significantly correlated: $r(86) = .38, p < .001$.

Missing data

Participants were included in these analyses if they completed observational assessments when their child was a toddler ($n = 96$) or if they completed a parenting interview assessment at age 32 years ($n = 113$). Among these subsamples, approximately 10% were missing AAI data at age 19 ($n = 8$ for observed parenting analyses; $n = 12$ for analyses involving the interview-based parenting measure) and approximately 6% were missing AAI data at age 26 ($n = 4$ for observed parenting analyses; $n = 8$ for analyses involving the interview-based parenting measure). To address missing data, all analyses used full-information maximum likelihood with raw case-level analytic data as input, which produces less biased and more efficient and consistent parameter estimates than techniques such as pairwise or listwise deletion for missing data (Little & Rubin, 1987). All statistical analyses were carried out using *Mplus* (Muthén & Muthén, 1998–2011).

Results

The *main effects* model explaining the association between attachment states of mind and parenting quality suggests that the AAI predicts parenting quality regardless of when these constructs are measured. To address this model, we examined the bivariate correlations between AAI coherence of mind (assessed separately at ages 19 and 26) and supportive parenting (assessed with observations during young adulthood and interview ratings at age 32). AAI coherence of mind at age 19 was not significantly associated with observed or interview ratings of supportive parenting ($r = .18, p = .11$ and $r = .12, p = .24$, respectively). In contrast, AAI coherence of mind at age 26 was associated with observed and interview-interview ratings of supportive parenting ($r = .26, p = .01$ and $r = .31, p < .001$, respectively).

The second, *developmental tasks*, model posits that attachment states of mind predict parenting quality when parenting quality is developmentally salient, but not before. To test

this model, we examined whether adults' ages at the time of the parenting assessments moderated the associations between AAI coherence of mind ratings completed at age 19 and 26 and the observational ratings of supportive parenting. The interview-based ratings of supportive parenting were not included in these analyses as these ratings were only completed at age 32 years.

First, observed supportive parenting was regressed onto age 19 AAI coherence of mind, the parents' ages at the time of the parenting assessments, and the interaction between age 19 AAI coherence of mind and parents' age. Results indicated that the association between age 19 AAI coherence of mind and observed supportive parenting was significantly moderated by the adults' ages at the time of the parenting assessments ($\beta = .25$, $SE = .11$, $p = .02$). As shown in Figure 1, AAI coherence of mind at age 19 predicted observed supportive parenting for adults who completed the parenting assessments later in adulthood (1 *SD* above the mean), $\beta = .42$, $t(92) = 2.96$, $p = .004$. In contrast, the simple slope for parents who completed the parenting assessments during early adulthood (1 *SD* below the mean) was not significantly different from zero: $\beta = -.09$, $t(92) = 0.67$, $p = .51$. Analysis of the regions of significance with respect to *Z* (see Roisman et al., 2012 for a discussion of this technique) revealed that age 19 AAI coherence predicted observed supportive parenting for individuals who were approximately 27.4 years or older at the time of the observational parenting assessments.

Next, observed supportive parenting was regressed onto age 26 AAI coherence of mind, the parents' ages at the time of the parenting assessments, and the interaction between age 26 AAI coherence of mind and parents' age. Results indicated that adults' ages at the time of the parenting assessments did not significantly moderate the positive association between AAI coherence of mind at age 26 and observed supportive parenting ($\beta = .13$, $SE = .10$, $p = .20$).

The third, *increasing validity*, model already had descriptive support in the analyses presented above (see especially results from the *main effects* model). However, Steiger's *Z*-test (1980) was used to determine whether the predictive validity of AAI coherence of mind for supportive parenting was *significantly* larger in magnitude when the AAI was administered during adulthood (age 26) compared to late adolescence (age 19). Results indicated that, compared to age 19 AAI coherence of mind, AAI coherence of mind

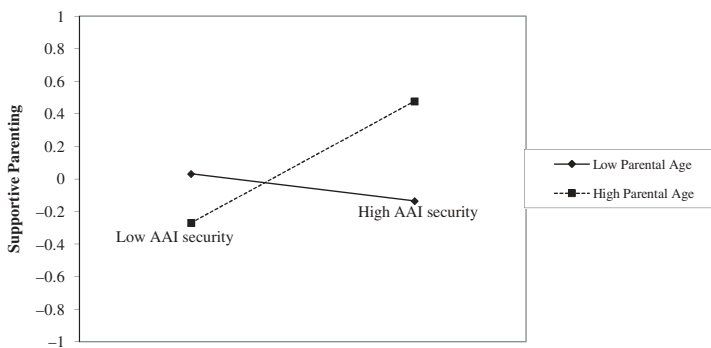


Figure 1. Observed supportive parenting as a function of coherence of mind during the Adult Attachment Interview (AAI) at age 19 and adults' age at the time of the parenting assessments.

Note: One standard deviation above the parental age mean is approximately 30.94 years and one standard deviation below the mean is approximately 22.83 years.

ratings at age 26 was not a significantly stronger predictor of the observational or interview-based measures of supportive parenting (Steiger's $Z = 0.73$, $p = .47$ and Steiger's $Z = 1.77$, $p = .08$, respectively).

In addition, a set of analyses was conducted in order to evaluate whether the results described above were due participants' status as parents at the time the AAIs were administered. Parenting status at age 19 did not predict the observational ratings of supportive parenting, and the interaction between parenting status and AAI coherence at age 19 was not significant when predicting the observational ratings of supportive parenting. Although parenting status at age 19 did significantly moderate the association between age 19 AAI coherence and the interview ratings of supportive parenting, this interaction was driven by a counter-intuitive, negative association between age 19 AAI coherence and the interview measure of supportive parenting ($r = -.57$, $p = .02$) among the very small subsample who were parents at age 19 ($n = 19$). Parenting status at age 26 was not significantly associated with observed supportive parenting, but it was concurrently associated with lower AAI coherence at age 26 ($r = -.21$, $p < .01$) and was negatively correlated with the interview-based measure of supportive parenting ($r = -.34$, $p < .01$). However, linear regression analyses indicated that parenting status at age 26 did not account for the positive association between AAI coherence at age 26 and the interview ratings of supportive parenting at age 32 years. Specifically, AAI coherence and parenting status at age 26 uniquely predicted supportive parenting ($\beta = .25$, $p < .01$ and $\beta = -.30$, $p < .01$). In addition, parenting status at age 26 years did not moderate the associations between AAI coherence and the observational or interview ratings of supportive parenting.

Discussion

Previous research has consistently demonstrated positive associations between the security of adults' attachment states of minds and their parenting quality (Van IJzendoorn, 1995). However, much of the evidence is based on concurrent or short-term longitudinal investigations of samples of adults. In the current study, we sought to extend the existing research on the predictive significance of the AAI for adults' parenting outcomes over a period of time that was considerably longer than previous studies had permitted (e.g., Adam et al., 2004; Phelps et al., 1998). In doing so, we tested three conceptual models that may explain how adult attachment states of minds and parenting quality are associated over time. In the first, *main effects*, model, individuals' attachment states of minds were expected to predict parenting quality regardless of when these constructs were measured. The second, *developmental tasks*, model posited that attachment states of mind would predict parenting quality when parenting quality was assessed during a developmental period during which parenting is conceptualized as a normative, salient developmental task, but not before. The third, *increasing validity*, model anticipated that attachment states of mind would be expected to be a stronger predictor of parenting quality when the AAI was administered during the mid- to late-20s when internal models might be more stable, as opposed to assessments conducted in late adolescence or early adulthood. To assess these three models, we tested the longitudinal associations between individuals' coherence of mind assessed by the AAI at ages 19 and 26 years, and parenting quality assessed via observations during young adulthood when participants' children were 24 and 42 months of age and interview-ratings when parents were 32 years old.

Overall, results from this study provided partial support for each of the three models, and indicated that the association between AAI coherence and parenting varies based on

when adult attachment and parenting quality are assessed. Although AAI coherence of mind at age 26 was associated with both measures of parenting quality, AAI coherence of mind at age 19 was not significantly associated with observed or interview ratings of supportive parenting, a result that is inconsistent with the *main effects* model.

We found some support for the *developmental tasks* model. Although there was not a significant main effect of age 19 AAI coherence on later parenting quality, this association was moderated by participants' age at the time of the parenting assessment. Specifically, coherence of mind during the AAI at age 19 predicted more supportive parenting, but only for participants who were older than approximately 27 years at the time of their observational assessment. This finding is consistent with the developmental tasks model, which anticipates that adults' attachment states of mind are most strongly associated with parenting quality during a developmental period when parenting can be conceptualized as a normative, salient developmental task (i.e., mid- to late-20s). That said, there was not robust support for this model, as AAI coherence at age 19 did not predict supportive parenting from the age 32 parenting interview and AAI coherence at age 26 was not significantly moderated by the parents' age at the time of the observational assessments.

Regarding the *increasing validity* model, AAI coherence at age 26 years was in fact more consistently associated with observed and interview-based assessments of parenting than was AAI coherence measured at age 19 years. However, the differences in the magnitude of these effects were not themselves significant, although the result for the parenting interview at age 32 was marginally significant.

Despite mixed evidence in support of the three potential models, findings from the current study do extend the existing literature on the associations between attachment states of mind and parenting quality in two key ways. First, the current study provides evidence for the predictive significance of the AAI for parenting quality across a temporal lag that is considerably longer than that of previous longitudinal studies. Indeed, for participants who were older at the time of the observational assessments, AAI security at age 19 predicted supportive parenting conducted up to 15 years later. In addition, AAI security at age 26 predicted the interview-based measure of parenting conducted 6 years later as well as observational assessments of supportive parenting conducted up to 8 years later. These findings indicate that attachment states of mind during adulthood may have long-term predictive effects for parenting quality. In addition, the current study indicates that AAIs completed during the transition to adulthood may have a different pattern of associations than AAIs completed later in adulthood, at least with respect to their predictive significance for supportive parenting. In this way, these findings contribute to our understanding of the meaning of attachment states of mind during different points in the life course.

There are a small number of studies that have investigated the associations between attachment security and parenting when both constructs are measured during adolescence (e.g., Tarabulsky et al., 2005; Ward & Carlson, 1995). These studies have generally reported that secure attachment states of mind predict more supportive, responsive caregiving among adolescent mothers, a finding that is consistent with the main effects model. In the current study we did not find significant associations between attachment states of mind in late adolescence and supportive parenting. It should be noted, however, that unlike previous studies with adolescent parents (e.g., Madigan et al., 2006; Tarabulsky et al., 2005; Ward & Carlson, 1995), very few of the participants in the current study were parents at the time of the age 19 assessment. That said, our follow-up analyses indicated that AAI coherence at age 19 was not a significantly stronger predictor of supportive parenting later among the subsample of participants who were parents at the time of the

age 19 AAI. Moreover, parenting status at age 26 years was not significantly associated with observed supportive parenting and did not moderate the associations between AAI coherence and the observational or interview ratings of supportive parenting. Altogether, these analyses indicate parenting status at age 19 and age 26 did not account for the previously described results involving AAI coherence and supportive parenting outcomes. However, these findings suggest the value of additional empirical inquiry. In particular, future longitudinal research is needed to determine the extent to which attachment states of mind help organize parenting behavior across adolescence and adulthood and how these associations vary for individuals who become parents at different points in the life course.

Data for this study were drawn from a larger study of low-income families that were considered to be high risk at the time of the child's birth. Thus, results from this study may not be generalizable to lower-risk samples. Although we chose to use coherence of mind scores, research examining specific components of security – particularly with high-risk samples in which unresolved discourse may be more common – is a valuable area for future inquiry.

The sample size and potential selection effects may further limit results from this study. Recent empirical evidence (Haltigan et al., 2014) suggests that levels of preoccupation and unresolved loss may vary by ethnicity. In the current study, most of the participants identified as Caucasian, thus limiting our ability to examine this issue. Future research would benefit from examining the role of ethnicity in associations between attachment states of mind and parenting. Further, fewer than half of the original participants completed the assessments of interest in the present study. Although we found no differences between the original sample and the subset of participants in this study on a number of demographic characteristics, we cannot rule out selection effects as a result of differential attrition. Despite these limitations, this study utilizes a unique dataset that includes longitudinal data with multiple measures of the AAI and parenting quality. Future studies leveraging multiple assessments of AAI security across adulthood and multiple assessments of parenting over time will be valuable in testing the models outlined here, as well as identifying potential alternative models to explain the associations between attachment security and parenting quality over time.

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Note

1. An alternative hypothesis – not explored in the current study because too few participants became parents as adolescents – is that attachment states of mind may be especially relevant for individuals who become parents at earlier ages, given that their attachment systems may be activated by feelings of vulnerability that may result from becoming a parent earlier than one's peers.

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