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Developmental Processes Across the First Two Years of Parenthood: Stability and Change in Adult Attachment Style

Jessica A. Stern
University of Maryland, College Park

R. Chris Fraley
University of Illinois at Urbana-Champaign

Jason D. Jones
Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

Jacquelyn T. Gross
University of Maryland, College Park

Phillip R. Shaver
University of California, Davis

Jude Cassidy
University of Maryland, College Park

The first months after becoming a new parent are a unique and important period in human development. Despite substantial research on the many social and biological changes that occur during the first months of parenthood, little is known about changes in mothers' attachment. The present study examines developmental stability and change in first-time mothers' attachment style across the first 2 years of motherhood. At Time 1, 162 economically stressed primiparous mothers (M_{age} = 23.98 years, SD = 5.18) completed measures of attachment anxiety and avoidance at five time points: when their children were 0, 6, 12, 18, and 24 months of age. Converging results of stability functions and latent growth curve models suggest that attachment styles were generally stable during the first 2 years of motherhood, even in this economically stressed sample. Furthermore, model comparisons revealed that a prototype model better characterized the developmental dynamics of mothers' attachment style than did a revisionist model, consistent with previous studies of adults and adolescents. This suggests that a relatively enduring prototype underlies mothers' attachment style and anchors the extent to which mothers experience attachment-related changes following the birth of their first child. Within this overall picture of continuity, however, some mothers did show change over time, and specific factors emerged as moderators of attachment stability, including maternal depressive symptoms and overall psychological distress, as well as sensitive care from their own mothers. Findings shed light on patterns of continuity and change in new parents' development.

Keywords: adult attachment, attachment style, parenthood, longitudinal, development

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The period following the birth of a parent's first child is a unique and important period in human development. New parents experience change at multiple levels: At the neurobiological level, oxytocin levels rise and sleep–wake patterns shift; at the interpersonal level, parents forge new bonds with their infant and negotiate coparenting relationships; and at a broader ecological level, the family system must navigate novel occupational and financial challenges (Cowan & Cowan, 2000). Moreover, few other points in adult development involve so many experiences relevant to the attachment system: New parents are tasked with serving as attachment figures for a highly dependent newborn while also meeting their own attachment-related needs for comfort, care, and advice from their romantic partner and, often, from their family of origin.

Despite substantial research on the developmental processes that occur during the first months of parenthood (e.g., Belsky, 2009; Cowan & Cowan, 2000; Nyström & Öhrling, 2004), little is known about the developmental dynamics of parents' attachment orientations. The present study examines stability and change in mothers' attachment style during the 24 months following the birth of their first child. Our goal is to characterize the developmental dynamics of attachment in new mothers, given the far-reaching implications of attachment for maternal functioning and caregiving during this important period (see Jones, Cassidy, & Shaver, 2015, for a review). Although we focus specifically on attachment across

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Jessica A. Stern, Department of Psychology, University of Maryland, College Park; R. Chris Fraley, Department of Psychology, University of Illinois at Urbana-Champaign; Jason D. Jones, Department of Child and Adolescent Psychiatry and Behavioral Sciences, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; Jacquelyn T. Gross, Department of Psychology, University of Maryland, College Park; Phillip R. Shaver, Department of Psychology, University of California, Davis; Jude Cassidy, Department of Psychology, University of Maryland, College Park.

Correspondence concerning this article should be addressed to Jessica A. Stern, Department of Psychology, University of Maryland, College Park, 4094 Campus Drive, College Park MD 20742. E-mail: jastern@umd.edu

the first years of parenthood, this study provides an example of theoretical and empirical approaches to studying the central developmental theme of continuity and change across the life span.

Attachment Theory and the Attachment System in Adulthood

Attachment theory (Bowlby, 1969/1982, 1973, 1980) proposes that humans possess a biologically based *attachment system* that evolved to keep them in proximity to a caregiver who provides protection and regulation in times of threat. Although the tendency to form attachment bonds is universal, the quality of attachments varies as a function of people's experiences in relationships with caregivers; over time, these experiences contribute to cognitive representations or *internal working models* that guide how individuals think, feel, and behave in close relationships (Bowlby, 1969/1982; Main, Kaplan, & Cassidy, 1985).

Although early work on attachment focused on young children, Bowlby viewed attachment as a lifespan construct. In the 1980s, scholars began studying adult attachment, demonstrating its importance for romantic relationships, parenting behavior, and mental and physical health (see Ainsworth, 1989; Bretherton, 1985; Cassidy, Jones, & Shaver, 2013; Hesse, 2016; Mikulincer & Shaver, 2016). In developmental research, individual differences in adult attachment have traditionally been measured with the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1987), which assesses individuals' current "state of mind with respect to attachment" (see also Hesse, 2016). In social psychological research, there exists a rich tradition of assessing adult attachment styles via self-report questionnaires about typical thoughts, feelings, and behaviors either in relation to romantic partners (sometimes in relation to a specific romantic partner) or to close relationship partners more generally (see, e.g., Shaver & Mikulincer, 2004). The most common self-report measures tap two dimensions of adult attachment, which were also described in Ainsworth, Blehar, Waters, and Wall's (1978) pioneering research with infants: Attachment *anxiety* involves preoccupation with relationship-related worries and a hyperactivating strategy of regulating negative emotion, whereas attachment *avoidance* involves downplaying or dismissing attachment-related issues and a minimizing strategy of regulating negative emotion (Shaver & Mikulincer, 2002).

Although these two research traditions have historically remained independent of each other, more recently researchers have taken a multidisciplinary approach, integrating developmental and social psychological perspectives on attachment to demonstrate, for example, the developmental processes underlying attachment style in adolescence (Jones et al., 2017), the moderating role of mothers' attachment style in parenting interventions rooted in traditional attachment theory (e.g., Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011), and the diverse implications of adult attachment style for parenting behavior (see Jones et al., 2015). These and other data have shown that interview-based and self-report measures of attachment share a number of common correlates (although they are not highly correlated with each other), and that bringing a developmental approach to attachment style—a construct that has typically been examined in a nondevelopmental way by social psychologists—is both productive and important for advancing the field. In the present paper, we take this multidisciplinary approach, examining the developmental processes at play in mothers' self-reported attachment style in relation to close relationship partners broadly (rather than toward a specific attachment figure). This approach has been used fruitfully in thousands of studies and is thought to reflect global models of the self and others in close relationships, in keeping with Bowlby's (1969/1982) notion that experiences in multiple relational contexts eventually generalize into broader working models (for further discussion see Crowell, Fraley, & Roisman, 2016; Mikulincer & Shaver, 2016).

A large body of evidence links adult attachment styles to relationship functioning, social behavior, cognitive processes, and risk for psychopathology. In romantic relationships, for example, attachment style has been linked to relationship satisfaction, dating and sexual behavior, couple conflict resolution styles, and naturalistic observations of behavior during separation (for a review see Mikulincer & Shaver, 2016). Further, self-reported attachment style has been linked to adults' ability to suppress negative thoughts about relationships, with anxiety and avoidance predicting different brain areas recruited when doing so (Gillath, Bunge, Shaver, Wendelken, & Mikulincer, 2005). Attachment style also predicts cortisol reactivity and recovery in response to relationship conflict (Powers, Pietromonaco, Gunlicks, & Sayer, 2006). Regarding psychopathology, data from a nationally representative sample of adults demonstrated positive associations between both attachment anxiety and avoidance and lifetime prevalence of mood, anxiety, and substance use disorders (Mickelson, Kessler, & Shaver, 1997).

Given the breadth and nature of these associations, it is no surprise that adult attachment style is also linked to meaningful differences in parents' emotions, cognitions, and behavior (Jones et al., 2015). Attachment avoidance, for example, has been linked to less sensitive parenting behavior, particularly in times of stress (e.g., Edelstein et al., 2004) and to reduced empathy for children's emotional experiences (Stern, Borelli, & Smiley, 2015). Echoing findings regarding psychopathology in the broader adult literature, both attachment anxiety and avoidance are associated with increased risk for perinatal and postpartum depression (McMahon, Barnett, Kowalenko, & Tennant, 2005). There is even some evidence that attachment style is useful for understanding developmental trajectories of parental functioning across the first months of parenting. For instance, Rholes, Simpson, Campbell, and Grich (2001) found that attachment anxiety was associated with declines in marital satisfaction among new parents, and both attachment anxiety and avoidance have been shown to predict increases in maternal depressive symptoms following childbirth (e.g., Bifulco et al., 2004). Thus, understanding the development of adult attachment styles in the first months of new parenthood has important implications for maternal behavior and mental health.

Developmental Dynamics: Continuity and Change

A central claim in attachment theory is that the organization of the attachment system is relatively stable but can be updated in response to environmental changes (Bowlby, 1973). Bowlby (1980) acknowledged both the possibility of change and its difficulty:

> In general, when new information clashes with established [working] models . . . an old model may become replaced by a new one. Nevertheless, much evidence exists that we undertake such replace-

> ment only very reluctantly . . . to dismantle a model which has played and is still playing a major part in our daily life and to replace it by a new one is a slow and arduous task, even when the new situation is in principle welcome. (pp. 230–231)

Bowlby viewed such developmental dynamics as evolutionarily adaptive: A stable working model of attachment provides a mental heuristic for responding efficiently to one's environment; yet when that environment changes, the plasticity of this model facilitates adaptation to new circumstances (such as those that accompany the birth of a first child).

In adulthood, evidence points to substantial continuity in attachment organization when the interpersonal environment is stable, and to lawful change when it is not. Specifically, studies of self-reported attachment style generally show moderate stability across multiple years (e.g., Kirkpatrick & Hazan, 1994). Although some have called attention to low stability in categorical ratings of attachment style (e.g., Baldwin & Fehr, 1995), most studies using continuous measures of attachment anxiety and avoidance report test–retest correlations of .60–.80, depending on the domain sampled (romantic vs. parental; e.g., Fraley, Vicary, Brumbaugh, & Roisman, 2011).

Research has also demonstrated shifts in developmental trajectories of attachment across time, and many of these changes can be attributed to interpersonal experiences (e.g., Zhang & Labouvie-Vief, 2004). For example, Kirkpatrick and Hazan (1994) found that relationship break-ups were associated with decreases in security, whereas entering new relationships was linked to decreases in avoidance over a 4-year period. Clinical perspectives posit that change in adult attachment is associated with loss and other negative events that contribute to shifts toward insecurity, and conversely, with reparative experiences with romantic partners and therapists that contribute to enhanced security (Bowlby, 1988). Empirically, adults with a history of depression or trauma tend to show increases in attachment insecurity over time (Cozzarelli, Karafa, Collins, & Tagler, 2003). In contrast, psychotherapy has been shown to promote shifts toward more secure attachment styles (e.g., Travis, Bliwise, Binder, & Horne-Moyer, 2001). Together, these findings point to the importance of considering moderators of attachment stability in adulthood, particularly those related to interpersonal relationships and psychopathology.

Only three studies to date have examined stability and change in attachment style among new parents, and all examined the transition from the prenatal to postnatal period. In one study, first-time mothers' and fathers' attachment was assessed prenatally and when children were 6 months old. Moderate stability was observed when parents experienced their partner behaving in ways that were congruent with their working model of attachment (e.g., when a highly avoidant mother received low support from her partner), whereas change occurred when the partner's behavior was model-incongruent (e.g., when an avoidant mother received high support from her partner). Further, stability was observed when parents' perceptions of their own behavior were model-congruent (as when a highly avoidant mother reported seeking little support from her partner), whereas change occurred when parents perceived themselves as behaving in model-incongruent ways (as when a highly avoidant mother reported seeking greater support from her partner; Simpson, Rholes, Campbell, & Wilson, 2003). In a second study, first-time mothers' and fathers' attachment styles were assessed prenatally and at 6 weeks and 6 months postbirth. Parents' attachment was moderately stable, though stability was lower among parents than among a comparison group of childless couples (Feeney, Alexander, Noller, & Hohaus, 2003). A third study demonstrated comparable stability in mothers' and fathers' attachment from the prenatal period to 6 months and 1 year postpartum (Galdiolo & Roskam, 2017).

Although these data provide initial insight into attachment stability among new parents, it is worth noting ways in which these studies could be extended. First, in each of these studies, postnatal assessments of attachment ended at 1 year, and only one of the studies (Feeney et al., 2003) examined stability within the postnatal period. This leaves open the question of what happens as children get older, pointing to the need for additional assessments across the first years of parenthood. Second, all three studies examined majority White, middle-income samples of married couples; it is unclear whether the findings generalize to more diverse populations of parents, including those identifying as nonwhite, economically stressed, and unmarried.

One limitation of the broader research on adult attachment stability is its reliance on only two time points; although this approach provides an index of test–retest reliability, it reveals little about underlying developmental processes, or the *patterning* of correlations across multiple intervals. It is possible, for example, for a high test–retest correlation between any two time points to disguise a larger pattern of increasing instability, or for a low test–retest correlation at any two time points to mask a larger picture of stabilization (see Fraley, 2002, for extensive discussion of this issue). To address this limitation, researchers have proposed collecting multiple waves of attachment data (i.e., $\geq$3 time points) and testing alternative developmental models to address the question: Is attachment best characterized by relative stability or change?

Fraley (2002) describes two perspectives on this question: The *revisionist* perspective posits that ongoing experiences in close relationships revise and update attachment representations, such that current experiences may weaken or supersede earlier representations (e.g., Kagan, 1996; Lewis, 1997). If correct, it should become increasingly difficult to predict individuals' attachment styles based on their past attachment styles. Statistically, the revisionist model predicts that the magnitude of the test–retest correlation decreases as the test–retest interval increases, approaching zero in the limit. An alternative view, the *prototype* perspective, does not deny that ongoing experiences shape attachment representations, but assumes that a stable, enduring factor underlies stability and change in attachment style (e.g., Owens et al., 1995; Sroufe, Egeland, & Kreutzer, 1990). This underlying prototype is thought to include nonlinguistic representations, cognitive scripts, behavioral strategies, and biological regulatory processes that developed in the context of early interactions with attachment figures (Cassidy, Ehrlich, & Sherman, 2013; Fraley, 2002; Mikulincer & Shaver, 2016). If the prototype model is correct, a common source of variance (i.e., a latent prototype variable) should predict individual differences in attachment at each time point. Statistically, this model predicts that test–retest correlations may initially decline but ultimately stabilize, never approaching the zero limit.

Evidence from the broader attachment literature favors the prototype model (Fraley, 2002; Fraley et al., 2011; Jones et al., 2017). Notably, however, these developmental models have never been

tested in primiparous mothers in the months following childbirth, and few have examined these models in racially and economically diverse samples. These factors may fundamentally undermine the role of stable individual differences in attachment style—a possibility that has yet to be fully examined. Further, whereas previous work has focused on the transition to parenthood, beginning prenatally, we focus our examination beginning at birth, highlighting the developmental dynamics of mothers' attachment as they occur in the child's first months of life.

The Present Study

In the present study, we first investigate stability and change in adult attachment style across the first 24 months of new motherhood. We extend the previous literature by examining these developmental dynamics using assessments of general adult attachment style at five time points from the child's birth through age 2, and by doing so in a racially diverse, economically stressed sample of first-time mothers. Specifically, we examine stability functions for attachment anxiety and avoidance and test, for the first time, whether prototype or revisionist dynamics better characterize patterns of stability and change during this unique period of development. Based on the research summarized in the previous section, we expect the prototype model to better fit the data, indicating a stable core to a person's attachment style.

Second, we estimate the parameters of latent growth models to examine stability and change at the individual level and test factors that could moderate trajectories of attachment style. Given the limited research on this topic in new parents, we cast a wide net, exploring multiple possible moderators at different levels of analysis to reflect the multiple influences at play within parents' bioecological context. These moderators were selected a priori based on findings from previous theoretically based research, as described below.

At the individual level, we examine maternal depressive symptoms and psychological distress, given theory and research demonstrating that stressors such as psychopathology influence the attachment system (e.g., Davila, Burge, & Hammen, 1997). As reviewed above, both the presence of psychopathology and its treatment have been shown to predict change in adult attachment style over time in theoretically consistent ways (e.g., Cozzarelli et al., 2003; Travis et al., 2001), suggesting that psychological symptomatology bears meaningfully on attachment trajectories. We also examine maternal age, in light of evidence that attachment style tends to become more stable with age (Jones et al., 2017). Because data were drawn from a parenting intervention study, we examine intervention status as an additional potential moderator to test whether intervention and control groups differed in their attachment trajectories.

At the dyadic level, we examine relationship status and measures of caregiver and partner relationship quality, focusing specifically on a mother's relationship with her own mother and with her current romantic partner (typically the baby's father) as potential moderators. This examination is based on the theoretical perspective that adult attachment styles are influenced by the nature of individuals' relationships with caregivers and romantic partners (Mikulincer & Shaver, 2016), as well as on the empirical literature reviewed above suggesting that relationship status is a salient predictor of adult attachment trajectories (e.g., Kirkpatrick & Hazan, 1994).

At the social group level, we examine social support more broadly as a moderator of attachment stability, given research showing that social support can help new mothers fare better (e.g., Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983). It is possible, for example, that high levels of social support could buffer new mothers against potential increases in attachment avoidance by challenging attachment-avoidant views of others as rejecting. Although previous work has examined the interaction between attachment style and social support on parenting behavior (Green, Furrer, & McAllister, 2007), no study to our knowledge has examined social support as a moderator of adult attachment stability.

Finally, at the child level, we examine infants' temperamental irritability as a potential moderator, in light of research demonstrating that child temperament can elicit different emotional and behavioral responses from parents (e.g., Clark, Kochanska, & Ready, 2000; Putnam, Sanson, & Rothbart, 2002). For example, it is possible that highly irritable infants arouse higher levels of negative emotions in new parents, which over time contribute to increases in attachment anxiety and avoidance. Although the selection of moderators was done a priori based on theory and research as described above, the analyses of these moderators are intentionally exploratory; we therefore made no specific hypotheses about how these factors might moderate attachment stability.

Method

Participants

The original sample comprised 174 economically stressed, primiparous mothers of irritable infants (45% female infants) recruited for an intervention study (for details see Cassidy et al., 2011).[1] Of these 174, 162 provided attachment data at the first time point. Mothers ranged in age from 18 to 39 years (M_{age} = 23.98 years, SD = 5.18), and the majority (80%) were in a committed relationship at the time of the first assessment. Mothers were considered economically stressed if they (a) earned <$41,000 or (b) if living with the baby's father, reported a combined income <$45,000.[2] The sample was racially diverse, with 43% of mothers identifying as African American/Black, 27% White, 20% Hispanic, 4% Asian, and 6% multiracial/other. Most mothers (76%) did not have a college degree.

[1] The sample was drawn from a randomized controlled trial of a parenting intervention designed to promote secure attachment in irritable infants. Participants were recruited at birth from 14 hospitals within a large metropolitan area and randomly assigned to intervention or control groups. Infants were considered irritable if their combined irritability composite scores on the Neonatal Behavioral Assessment Scale placed them in the top 20% of a larger cohort screened for eligibility (see Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011).

[2] These figures reflected a small portion of the population for the Washington, DC metro area, which was at the time of recruitment one of the top three most expensive places in the country to live. In prestudy interviews, participants reported experiencing financial stress.

Procedure

Data were collected at five time points: when infants were newborns and at 6, 12, 18, and 24 months. During the newborn phase, dyads were visited in their homes twice in the infant's first month. The Neonatal Behavioral Assessment Scale (NBAS; Brazelton & Nugent, 1995) was administered at both visits, and mothers provided demographic information and completed self-report measures of attachment style, perceived caregiving from their own mother, perceived caregiving from their romantic partner, romantic relationship quality, social support, and overall psychological distress. When infants were 6 months old, mothers were mailed a questionnaire packet that included these same self-report measures, plus a measure of depressive symptoms. At 12 months, mother–infant dyads came to the lab, where mothers again completed questionnaires assessing attachment style, perceived receipt of caregiving from their own mother, depressive symptoms, and overall psychological distress, as well as additional measures not relevant to the present study. At 18 months, dyads returned to the lab, and mothers completed the same measures included in the previous assessment, as well as a measure of romantic relationship quality. When infants were 24 months old, dyads returned for their final lab visit, where mothers again reported on their attachment style, perceived caregiving from their romantic partner, romantic relationship quality, social support, depressive symptoms, and overall psychological distress. Mothers who were single at the time of a particular assessment were instructed not to respond to questionnaires inquiring about specific romantic partners (i.e., measures of romantic relationship quality and perceived caregiving from a romantic partner). Participants were compensated for their participation. All procedures were approved by the University of Maryland College Park IRB (approval no. 00556, "At-Risk Irritable Infants").

Measures

Descriptive statistics are summarized in Table 1.

Attachment style. At each time point, mothers completed the general form of the Experiences in Close Relationships scale (ECR; Brennan, Clark, & Shaver, 1998), which taps attachment style in relationships generally (i.e., items refer to thoughts about "close relationships" and behavior toward "other people"), rather than focusing on romantic relationships specifically. The general ECR is a widely used, 36-item self-report measure of adult attachment style, with 18 items tapping attachment avoidance (e.g., "I prefer not to show people how I feel deep down") and 18 items tapping attachment anxiety (e.g., "I worry a fair amount about losing close relationships"). Respondents rate each item on a Likert scale from 1 (*disagree strongly*) to 7 (*agree strongly*). Extensive research has established the measure's strong psychometric properties (e.g., Brennan et al., 1998; Crowell et al., 2016; Fraley, Waller, & Brennan, 2000). In the present study, Cronbach's alpha ranged from .86–.89 for avoidance and from .91–.94 for anxiety across the five time points.

Perceived caregiving from romantic partner. Mothers rated the quality of care received from their romantic partner on the Caregiving Questionnaire (Kunce & Shaver, 1994). Mothers completed six items from the Sensitivity versus Insensitivity subscale (e.g., "My partner is very good at recognizing my needs and feelings") and six items from the Proximity versus Distance subscale (e.g., "My partner feels comfortable holding me when I need physical signs of support and reassurance"). Respondents rated each item on a scale from 1 (*disagree strongly*) to 6 (*agree strongly*). Studies using the Caregiving Questionnaire support its validity and psychometric properties (Bouaziz, Lafontaine, Gabbay, & Caron, 2013; Kunce & Shaver, 1994). Cronbach's alpha for Sensitivity ranged from .86–.90; for Proximity: .76–.82.

Perceived caregiving from own mother. In order to assess the quality of care mothers perceived receiving from their own mother, we created a parallel version of the Caregiving Questionnaire described above (Kunce & Shaver, 1994) by replacing *my partner* with *my mother*. Respondents rate each item on a scale from 1 (*disagree strongly*) to 6 (*agree strongly*). This adapted version of the Caregiving Questionnaire demonstrated good internal consistency, with Cronbach's alpha for Sensitivity: .86–.91; Proximity: .84–.89.

Romantic relationship quality. Mothers rated the quality of their romantic relationships on the Dyadic Adjustment Scale–Revised (Busby, Christensen, Crane, & Larson, 1995). This widely used instrument includes three subscales: Consensus (6 items) taps how often partners experience agreement or disagreement in domains of decision making, values, and affection; Satisfaction (4 items) taps the level of stability and conflict in the relationship, including how often couples quarrel; and Cohesion (4 items) taps the frequency with which partners engage in activities and discussions together. Each subscale includes a corresponding response scale from 0 to 5, with higher scores indicating greater frequency of a behavior or greater agreement with a statement (e.g., 0 = *always disagree*; 5 = *always agree* for agreement items). An overall index of dyadic adjustment was obtained by summing the 14 items. The measure demonstrates good reliability and validity across diverse samples (Busby et al., 1995; Graham, Liu, & Jeziorski, 2006). In the present sample, Cronbach's alpha was .76–.83.

Social support. A short version of the Social Support Questionnaire (SSQ; Sarason, Levine, Basham, & Sarason, 1983) was

Table 1
Descriptive Statistics for Moderators Across All Time Points

Moderator	Grand mean	*SD*
Perceived caregiving from own mother (CQ-M)		
Sensitivity	25.06	6.96
Proximity	28.24	6.34
Perceived caregiving from romantic partner (CQ-P)		
Sensitivity	24.63	5.97
Proximity	28.31	5.43
Romantic relationship quality (DAS)	48.29	8.63
Social support (SSQ)		
Number	28.57	12.92
Satisfaction	47.70	7.18
Depressive symptoms (BDI)	7.85	6.77
Overall psychological distress (BSI)	28.80	27.58
Infant irritability (NBAS)	5.80	1.01

Note. CQ-M = Caregiving Questionnaire–Mother; CQ-P = Caregiving Questionnaire–Partner; DAS = Dyadic Adjustment Scale; SSQ = Social Support Questionnaire; BDI = Beck Depression Inventory; BSI = Brief Symptom Inventory; NBAS = Neonatal Behavioral Assessment Scale.

used to assess both the number of supports in mothers' lives and their satisfaction with these supports. Respondents are asked to list individuals on whom they rely for support in a variety of circumstances (e.g., "Whom can you really count on to be dependable when you need help?") and then rate their satisfaction with the support they have in each circumstance from 1 (*very dissatisfied*) to 6 (*very satisfied*). In this study, nine items were presented, and the number of individuals listed for each item was summed to yield the total number of supports. Satisfaction ratings were summed to create a total satisfaction score. Research using the original and short form SSQ has shown good test–retest reliability, factor structure, and concurrent validity with a structured interview measure of social support (Sarason et al., 1983; Sarason, Sarason, Shearin, & Pierce, 1987; Sarason, Shearin, Pierce, & Sarason, 1987). In the present sample, Cronbach's alpha for satisfaction ratings ranged from .93–.96.

Depressive symptoms. Mothers rated their depressive symptoms on the widely used Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Respondents rate the severity of 21 symptoms on a scale from 0 to 3, with higher scores indicating greater symptom severity (e.g., sadness: 0 = *I do not feel sad*, 3 = *I feel so sad I cannot stand it*). Scores are summed, with total scores between 13 and 19 indicating mild depressive symptoms and scores exceeding 29 indicating clinical levels of depressive symptoms. Extensive research has established the measure's high internal consistency and construct validity (for a review see Beck, Steer, & Carbin, 1988). Cronbach's alpha was .86–.90 in this sample.

Overall psychological distress. The Brief Symptom Inventory (BSI; Derogatis, 1993) was administered to assess mothers' self-reported psychological distress. This standardized, 53-item measure asks respondents to rate how distressed they were by psychiatric symptoms (e.g., nervousness or shakiness; temper outbursts) in the previous week. Responses range from 0 (*not at all*) to 4 (*extremely*) and are summed across the 53 items to derive a total distress score. The measure demonstrates good internal consistency and convergent validity with other symptom checklists (e.g., Derogatis & Melisaratos, 1983). Cronbach's alpha was .96–.98.

Infant irritability. Newborns' behavior was observed in the NBAS (Brazelton & Nugent, 1995), a 20-min structured assessment that includes 28 behavioral items and 18 reflex items. Irritability scores from the two assessments were averaged to create a single score for each child. Four research assistants certified as reliable by the Brazelton Institute administered the NBAS. A randomly selected 96 NBAS exams were double coded for reliability. Coders were blind to all other information about participants. Interrater reliability was high (ICC $>$ .90, $p < .001$). Disagreements were resolved by conference among the four trained coders.

Results

Descriptive Statistics and Attrition

Table 2 includes descriptive statistics and correlations among the two attachment style dimensions across the five assessment waves (means for attachment avoidance ranged: 3.04–3.11; means for attachment anxiety: 2.69–2.96). Three mothers dropped out of the study after the newborn assessment and thus provided no attachment style data beyond the first assessment. With the exception of age, the mothers who dropped out of the study did not differ from the mothers who remained in the study on any of the variables included in the present study (e.g., attachment style, intervention status). The mothers who dropped out were slightly older, on average, than the mothers who remained in the study, $t(172) = -2.05$, $p < .05$.

Stability Functions

We created stability functions for attachment avoidance and anxiety to illustrate the patterns of test–retest correlations across the five assessment waves spanning the first 2 years of motherhood (see Figure 1). The newborn stability function (left panel of Figure 1) shows that the test–retest correlations for avoidance ranged from .64 to .77 and the test–retest correlations for anxiety ranged from .71 to .77. Overall, the mean test–retest correlation was .72. An important observation is that, although stability was lower between more distal assessments, stability did not appear to decrease continuously as the time between any two assessments increased (as would be expected under the revisionist model). For example, the test–retest correlation between mothers' attachment

Table 2
Means, Standard Deviations, and Correlations Among Attachment Style Dimensions

	Avo 0	Anx 0	Avo 6	Anx 6	Avo 12	Anx 12	Avo 18	Anx 18	Avo 24	Anx 24
Avo 0	—									
Anx 0	.27	—								
Avo 6	.77	.22	—							
Anx 6	.24	.77	.30	—						
Avo 12	.76	.21	.76	.22	—					
Anx 12	.35	.72	.28	.74	.35	—				
Avo 18	.68	.34	.72	.32	.79	.38	—			
Anx 18	.19	.71	.19	.73	.37	.85	.37	—		
Avo 24	.64	.26	.65	.30	.73	.33	.76	.32	—	
Anx 24	.25	.73	.27	.76	.32	.82	.41	.80	.35	—
Mean (*SD*)	3.06 (.89)	2.80 (1.14)	3.11 (.87)	2.96 (1.19)	3.11 (.97)	2.96 (1.16)	3.08 (.97)	2.87 (1.17)	3.04 (.95)	2.69 (1.34)
N	162	162	150	149	118	118	135	134	130	130

Note. All correlations significant at $p < .05$. Assessments occurred at 6-month intervals beginning at newborn (0). Avo = attachment avoidance. Anx = attachment anxiety.

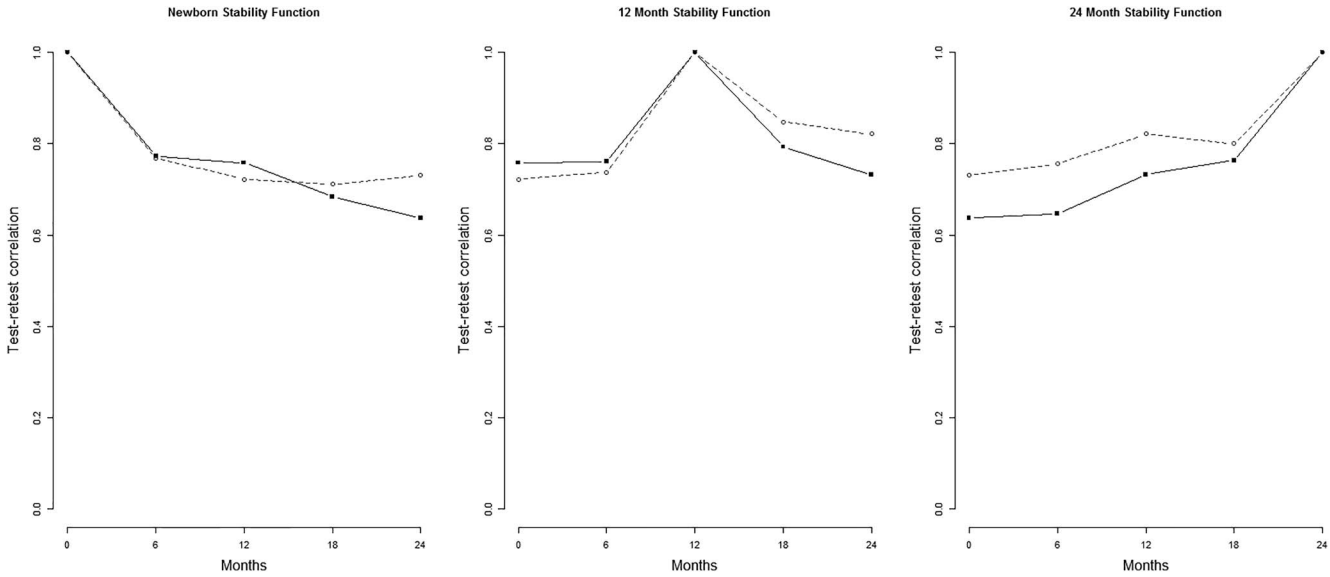

Figure 1. Stability functions for attachment avoidance (solid line) and anxiety (hashed line). The left panel illustrates the newborn stability function—the correlation between attachment at the newborn assessment and all subsequent waves. The middle panel illustrates the 12-month stability function—the correlation between attachment at the 12-month assessment and all waves prior to it and all waves following it. The right panel illustrates the 24-month stability function—the correlation between attachment at the 24-month assessment and all waves prior to it.

anxiety at birth and 12 months postbirth was approximately the same as that between birth and 24 months postbirth, in line with predictions from the prototype model.

Comparisons of Prototype and Revisionist Models

We compared the fit indices of the prototype and revisionist models to determine which better characterizes patterns of stability and change in participants' attachment style (for details, see online supplemental material). The revisionist model is nested within the prototype model; therefore, the relative fit of the two models can be evaluated via change in chi-square tests. For both avoidance and anxiety, the models that included the prototype component fit significantly better than models that did not (see Table 3). In summary, although the transition to parenthood is one that could create opportunities for the reorganization of attachment patterns, there was strong evidence for enduring patterns of stability in attachment across the five waves of this study.

Latent Growth Models

We estimated the parameters of latent growth models (LGM) to examine trajectories of attachment across the first 2 years of motherhood. Specifically, we estimated the extent to which mothers' attachment changed across time and what factors might moderate that change.

Basic models. To examine stability and change at the individual level, we estimated the parameters separately for avoidance and anxiety. We began with a basic, unconditional LGM, allowing both the intercepts and slopes to be random rather than fixed. The loadings for the latent slopes were scaled such that the intercept corresponded to the initial assessment wave (shortly after child-

Table 3
Comparisons of Prototype and Revisionist Models of Stability and Change in Mothers' Attachment Style

Model	Model statistics							Model comparisons		
	χ^2	*df*	*p*	CFI	RMSEA	Prototype (95% CI)	SDZ	$\Delta\chi^2$	*df*	*p*
Avoidance										
Prototype	9.06	7	.25	1.00	.04	562 (.413, 710)	.60			
Revisionist	45.10	9	<.001	.93	.16			36.04	2	<.001
Anxiety										
Prototype	15.59	7	.03	.99	.08	.888 (.672, 1.103)	.72			
Revisionist	69.84	9	<.001	.88	.21			54.25	2	<.001

Note. Prototype = estimate of the latent prototype on measurements of attachment across waves; SDZ = the standardized estimate of the latent prototype on measurements of attachment across waves.

birth). For simplicity, we limited our investigation to linear trajectories.

The average mother was moderately avoidant at childbirth (average intercept = 3.106, *SE* = .066). Moreover, there were significant individual differences in avoidance at childbirth (*VAR* = .630, *SE* = .083). The average slope value was −.009 (*SE* = .016), which was not significantly different from zero, providing evidence of stability in mothers' attachment avoidance. Thus, the average mother in the sample did not systematically change in avoidance across time. There were, however, significant individual differences in the slope estimates (*VAR* = .019, *SE* = .005), suggesting that some mothers changed more than would be expected if the slopes were fixed. A similar pattern of findings obtained for attachment anxiety. The average mother had a score of 2.902 (*SE* = .084). Although the average slope was not significantly different from zero (average slope = −.013, *SE* = .020), there were significant individual differences in the slope estimates (*VAR* = .018, *SE* = .008).

These results suggest that, on average, mothers did not become more or less insecure across time. However, there was evidence of individual differences in change: Some mothers did become more avoidant, for example. Thus, in the next section we examine some potential moderators of individual-level stability and change.

Moderators of attachment trajectories. Some of the potential moderators were assessed at multiple time points. To simplify our analyses and the presentation of results, for each moderator that was assessed at multiple time points, we created a single composite that represents that variable across all measurement occasions (see Table 1). We then used this between-persons factor as a predictor of (a) attachment intercepts (i.e., attachment styles at the newborn assessment) and (b) slopes (i.e., linear change in attachment styles over the 2 years following childbirth). Each potential moderator was examined in a separate analysis; given the relatively small sample size, we did not want to include all moderators in a single analysis.

To evaluate whether our decision to create aggregate scores for the moderator variables was defensible, we estimated latent growth models to examine whether the moderators changed significantly across time. With the exception of depressive symptoms and the number of people who provided social support, the variances of the slopes of the moderator variables were not statistically significant, supporting the use of aggregate variables. For social support, the model would not appropriately converge unless the slopes were constrained to zero. Thus, we elected to use the composite measure of social support. For depressive symptoms, the average mother became less depressed across time (*b* = −.60, *SE* = .203) and there were individual differences in those trajectories such that some mothers exhibited fewer depressive symptoms at a faster rate than others. These random effects were not statistically significant, however (*VAR* = 2.31, *SE* = 1.189, *p* = .052). Given that depressive symptoms were decreasing across time, we report both "static" and "dynamic" analyses (i.e., those in which the fixed slope is modeled and deviations from that are examined in relation to deviations from trajectories in anxiety and avoidance).

The moderation results are summarized in Tables 4 (avoidance) and 5 (anxiety). With respect to the intercepts for avoidance, mothers reporting more caregiving from their own mothers, and mothers with larger social support networks were less avoidant at baseline. Mothers reporting more overall psychological distress and depressive symptoms were more avoidant at baseline. With respect to the intercepts for anxiety, mothers reporting higher romantic relationship quality, more caregiving from their romantic partners, and more caregiving from their own mothers (sensitivity only) were less anxious at baseline. Mothers reporting more overall psychological distress and depressive symptoms were more anxious at baseline.

Importantly, some of these factors also moderated the degree of change that mothers experienced. With respect to avoidance, mothers who were more depressed became more avoidant over the first 2 years of motherhood. This result, however, did not survive corrections for multiple testing and should be viewed as tentative. None of the other potential moderators were significantly related to the slopes for avoidance. Regarding anxiety, mothers who reported more overall psychological distress and more depressive symptoms became more anxious over the first 2 years of motherhood. In addition, mothers reporting more sensitive care-

Table 4
Parameter Estimates for Latent Growth Curve Analyses of Attachment Avoidance

Predictor	Intercept	*SE*	*p*	Slope	*SE*	*p*
Intervention group	−.046	.131	.727	−.028	.032	.379
Age	−.011	.013	.368	−.003	.003	.335
Relationship status	−.327	.161	.042	−.037	.040	.349
Romantic quality	−.016	.009	.080	−.003	.002	.251
Partner sensitivity	−.024	.012	.052	.000	.003	.919
Partner proximity	−.023	.014	.096	.002	.003	.600
Mother sensitivity	**−.041**	**.009**	**<.001**	−.003	.002	.246
Mother proximity	**−.032**	**.010**	**.002**	−.004	.003	.150
Number of social supports	**−.020**	**.005**	**<.001**	−.002	.001	.244
Satisfaction with social support	.004	.009	.668	−.006	.002	.012
Psychological distress	**.010**	**.002**	**<.001**	.001	.001	.062
Depressive symptoms	**.041**	**.009**	**<.001**	.006	.002	.011
Infant irritability	−.085	.065	.188	.002	.016	.886

Note. The coefficients represent the regressions of the intercepts and slopes for avoidance on the predictors (e.g., relationship status). Estimates in bold are significant after correcting for multiple comparisons using the Benjamini-Hochberg (1995) procedure. The analyses for Romantic Quality, Partner Sensitivity, and Partner Proximity are based on a subsample of 137 women who were in relationships at the time of birth.

Table 5
Parameter Estimates for Latent Growth Curve Analyses of Attachment Anxiety

Predictor	Intercept	*SE*	*p*	Slope	*SE*	*p*
Intervention group	.289	.166	.082	−.008	.038	.823
Age	.001	.016	.947	−.005	.004	.216
Relationship status	.037	.208	.857	−.015	.047	.749
Romantic quality	**−.027**	**.011**	**.014**	−.003	.003	.261
Partner sensitivity	**−.044**	**.015**	**.004**	−.005	.004	.199
Partner proximity	−.035	.017	.046	−.001	.004	.753
Mother sensitivity	**−.036**	**.012**	**.002**	−.006	.003	.019
Mother proximity	−.012	.013	.373	−.004	.003	.195
Number of social supports	−.006	.007	.395	−.001	.002	.681
Satisfaction with social support	−.012	.012	.311	−.002	.003	.473
Psychological distress	**.020**	**.003**	**<.001**	**.002**	**.001**	**.005**
Depressive symptoms	**.076**	**.011**	**<.001**	**.010**	**.003**	**<.001**
Infant irritability	.021	.083	.801	−.008	.019	.667

Note. The coefficients represent the regressions of the intercepts and slopes for avoidance on the predictors (e.g., relationship status). Estimates in bold are significant after correcting for multiple comparisons using the Benjamini-Hochberg (1995) procedure. The analyses for Romantic Quality, Partner Sensitivity, and Partner Proximity are based on a subsample of 137 women who were in relationships at the time of birth.

giving from their own mothers became less anxious over the first 2 years of motherhood. This latter result, however, was not statistically significant after corrections for multiple testing (see Table 4).

Based on prior work (Bifulco et al., 2004; Rholes et al., 2011), one could raise questions about the direction of effects related to moderation by depressive symptoms. That is, perhaps more insecure mothers become more depressed over the first 2 years of motherhood instead of the other way around. We performed follow-up analyses to explore this possibility. The results of multivariate latent curve models with structured residuals (LCM-SR; Curran, Howard, Bainter, Lane, & McGinley, 2014) further supported our findings. The models revealed that depressive symptoms had a prospective effect on insecurity (i.e., avoidance and anxiety), but not vice versa. See the online supplemental material for additional details about these analyses.

Discussion

The first months of new parenthood are characterized by numerous physical, social, and emotional changes (Cowan & Cowan, 2000). New mothers become more reliant upon support from others, particularly those to whom they are attached, while assuming a new role as attachment figure for an entirely dependent newborn. Theorists have long hypothesized that mechanisms of attachment change are best examined during challenging life transitions (e.g., Bowlby, 1988), yet little is known about attachment stability and change during new parenthood. In the present study, we examined longitudinal trajectories of attachment style among first-time mothers, and tested, for the first time, alternative models of developmental change in attachment in this group. Below, we discuss major findings and directions for future research.

Stability of Mothers' Attachment Style

Evidence from the latent growth models and stability functions indicated that, in general, attachment styles were stable during the first 2 years of motherhood. On the one hand, this average stability is surprising, given that mothers were undergoing a major life transition. Further, this sample comprised economically stressed, predominantly non-White first-time mothers of irritable infants. Each of these characteristics—economic stress, discrimination and marginalization associated with racial minority status, first-time parenthood, and irritable infant temperament—are sources of stress that have the potential to disrupt preexisting attachment organization (Fraley & Brumbaugh, 2004). On the other hand, this general stability is consistent with theory and existing research with new parents (e.g., Feeney et al., 2003): A central claim of attachment theory is that individuals form adaptive attachment organizations early in development, which become difficult to change (Bowlby, 1980). Attachment working models accommodate as well as assimilate new information; they are malleable in response to changing circumstances, but also process incoming information to be consistent with existing models (e.g., by influencing an individual's attention to, interpretation of, and memory for, attachment-related experiences; see Dykas & Cassidy, 2011). To illustrate, an avoidant first-time mother may experience an influx of care and support from her own attachment figures that might reduce her avoidance, but if she is unable to accept the support or interpret the gestures as well intentioned, her attachment style may be unaffected. Together, findings from this study and previous research suggest that although becoming a parent is an important developmental transition, new parenthood per se does not undermine the stability of mothers' attachment security.

Test of Prototype and Revisionist Models

A principal goal of this research was to address the question: Is attachment best characterized by a prototype model or a revisionist model? In support of our hypothesis, and consistent with prior studies of adults and adolescents (Fraley et al., 2011; Jones et al., 2017), the prototype model better fit the data. This suggests that there is an enduring prototype underlying attachment style that anchored the extent to which mothers experienced changes in attachment. Importantly, the present study extends previous research by demonstrating that prototype dynamics characterize primiparous mothers during the transformative, stressful period of new parenthood—a period during which changes in attachment are thought to be more likely, given the multiple changes that often

occur in mothers' social lives, close relationships, and individual levels of stress (Feeney et al., 2003). Thus, our findings highlight the robustness of an underlying attachment prototype, even during relatively tumultuous or transitional times.

Moderators of Individuals' Attachment Trajectories

Another central study goal was to explore moderators of mothers' attachment trajectories. Results suggested that within the overall picture of stability, some mothers did show change over time. Moreover, specific factors emerged as moderators of attachment stability: depressive symptoms, psychological distress, and sensitive care from mothers' own mothers. Additionally, several factors were associated with baseline levels of attachment insecurity: romantic relationship status and quality, caregiving from participants' own mothers and from romantic partners, social network size, and maternal depressive symptoms and psychological distress. Here, we discuss findings relating to moderators at each level of analysis: individual-level factors, relational factors, and child characteristics. We note the important caveat, however, that these analyses were exploratory, and results should be regarded as preliminary.

Individual-level factors. Maternal age predicted neither baseline levels of, nor changes in, attachment style, consistent with an overall picture of attachment stability in adulthood. Further, maternal intervention status was not related to baseline levels of attachment anxiety or avoidance, nor did intervention status moderate attachment trajectories, suggesting that participating in a parenting intervention did not significantly affect mothers' attachment style.

Instead, psychological stressors appeared to play a role in the developmental dynamics of mothers' attachment. Mothers reporting greater depressive symptoms not only entered the newborn period with elevated attachment anxiety and avoidance, but they also became more anxious and avoidant over time. Similarly, those reporting greater psychological distress began with initially higher insecurity, and became more anxious, but not more avoidant.

Ample previous research indicates that adult attachment style is associated with both depressive symptoms and distress among new parents (Feeney et al., 2003; McMahon et al., 2005; Mikulincer & Florian, 1998; Rholes et al., 2011), and findings from the present study support the generalizability of these links to more diverse populations. Only one other study has investigated change in new parents' attachment as a function of depressive symptoms (and none as a function of distress): Feeney et al. (2003) report increasing avoidance, but not anxiety, among more depressed mothers; they speculated that depressive symptoms lead to emotional withdrawal, which over time can result in discomfort with interpersonal closeness, a hallmark of attachment avoidance. In our economically stressed sample, in contrast to the Feeney et al. sample, it is possible that depressive symptoms led mothers to worry more about losing close relationship partners on whom they may rely for financial as well as emotional support, thereby increasing attachment anxiety (as well as attachment avoidance) over time.

Theoretically, stressors such as depressive symptoms and psychological distress influence the attachment system by biasing the quality and quantity of interpersonal interactions, which inform working models of the self in relation to others; in addition, the negative emotions and cognitions accompanying these symptoms may lead to more negative perceptions in ways that inform attachment patterns (see Davila et al., 1997). Thus, initially high levels of these factors can contribute to a cycle of increasing insecurity over time. The implications for new parents are concerning, considering the consequences of postpartum depression and feelings of social isolation for maternal well-being and infant care (Murray & Cooper, 1997). Moreover, a path from heightened depressive symptoms or distress to increased insecurity in new mothers is problematic, given substantial evidence that mothers' insecure attachment negatively impacts parenting and infant development in a variety of ways (see Jones et al., 2015).

Relational factors. Consistent with previous work (Feeney et al., 2003; Rholes et al., 2011; Simpson et al., 2003), our findings suggest that markers of relational functioning, such as perceived care from attachment figures, are associated with baseline levels of attachment insecurity. Specifically, romantic relationship quality and caregiving from one's partner were negatively associated with attachment anxiety, but not avoidance, at the newborn assessment, suggesting that the quality of one's relationships was particularly relevant to attachment anxiety. In addition, social support network size and relationship status were related to baseline avoidance, but not anxiety, suggesting that the presence of social relationships may be more relevant to avoidance. Thus, highly avoidant mothers appear to have fewer interpersonal connections to draw on during this vulnerable period. This is consistent with defining features of avoidant attachment, including excessive self-reliance and rejection of others' support.

With regard to change in attachment style, only one relational factor emerged as a significant predictor: Participants' perceptions of their own mothers' sensitive caregiving predicted decreasing attachment anxiety, but not avoidance, over time (though this finding did not survive Benjamini-Hochberg (1995) alpha corrections and should be viewed as tentative). Some evidence suggests that the transition to motherhood is an important time for the mother–daughter relationship, involving renegotiation of relational patterns (Stern & Bruschweiler-Stern, 1998). Cross-culturally and throughout history, grandmothers have supported new mothers by providing guidance and instrumental support (Hawkes, 2014). Given that mothers in our sample were quite young (M_{age} = 24 years), they may have been particularly reliant on their own mothers' care. Times of heightened vulnerability and need (such as birth of a first child) activate the attachment system (Bowlby, 1969/1982), providing opportunities for new information about the availability and responsivity of caregivers to update existing working models of attachment (Bowlby, 1980). If new mothers are spending more time with or relying more heavily upon their own mothers during this period, then changes in attachment style may be more closely tied to their mothers' behavior than their partners' (which was not associated with attachment changes). In addition, having a first child can rekindle attachment-related memories from mothers' own childhood, in which the grandmother was the primary attachment figure. Notably, sensitivity, but not proximity, of grandmothers' caregiving predicted changes in participants' attachment. This preliminary finding suggests that grandmothers' ability to provide attuned emotional support, rather than physical closeness, may be more influential for new mothers' attachment style.

Notably, none of the romantic partner variables predicted changes in attachment. This is surprising, given theory and evidence that partner behavior and availability are associated with attachment

security in adults, including new parents (Simpson et al., 2003). Previous studies, however, did not measure partner care as a predictor of change over multiple time points following childbirth; thus, the differences observed here could reflect different relational dynamics emerging during new motherhood. For example, perhaps the influence of grandmothers' care on new mothers' functioning is unique for the reasons described above.

Child characteristics. Child temperament was not associated with changes in new mothers' attachment over time (or initial levels of attachment at the newborn assessment), consistent with previous research (Feeney et al., 2003). The fact that infant irritability did not precipitate increasing insecurity among participants has positive implications for irritable infants, who are at risk for poor developmental outcomes due in part to the negative responses they elicit from parents (e.g., Clark et al., 2000; Putnam et al., 2002), and who may be more susceptible to the effects of early experience (Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2007). Thus, there is no indication that this vulnerable group is at additional risk for the negative parenting associated with mothers' increasing attachment insecurity (Jones et al., 2015). This finding must be interpreted with caution, however, as the sample consisted exclusively of mothers whose newborns fell within the top 20% of irritability; this restricted range limits the generalizability of this finding. It is possible that in a sample of infants unselected for infant irritability, infant temperament might play a moderating role, and future research should explore this possibility.

Study Limitations and Future Directions

There are several limitations of this research. First, the sample of primarily African American, economically stressed mothers with irritable infants limits generalizability. However, this population is underrepresented in research, and samples living with multiple stressors—including marginalization due to racial minority status, and economic hardship—are ideal for studying attachment change processes (e.g., Vaughn, Egeland, Sroufe, & Waters, 1979). Second, the lack of a comparison group (e.g., childless adults or multiparous mothers) limits the ability to address whether these relations are specific to new motherhood. Future research that directly compares attachment stability between new parents and comparison groups can provide a more complete picture of attachment during this period (see Feeney et al., 2003, for evidence of differences between new mothers and childless married women). Third, correlational studies cannot establish causal effects. Given previous literature, it is likely that the relations between attachment and the predictors of change are bidirectional. For example, Feeney and Noller (1996) found reciprocal relations between attachment style and romantic relationship status, and Simpson et al. (2003) reported bidirectional effects between new parents' attachment insecurity and perceptions of spousal support, leading to a cycle of increasing insecurity. Additionally, evidence indicates that attachment insecurity is not only a consequence of elevated depressive symptoms and distress in new parents, but also a precursor (Bifulco et al., 2004; Feeney et al., 2003; Rholes et al., 2011). Notably, follow-up analyses in this sample suggested a unidirectional, prospective effect in which depressive symptoms led to increasing insecurity but not the reverse. Future studies should examine the dynamic interplay between attachment and other factors, including models of bidirectional influence.

These considerations point to a number of avenues for future research. First, we have interpreted the stable component of attachment as reflecting stable individual differences in working models. It is possible, however, that the stable component underlying attachment styles represents stable components of personality and psychopathology, stable ecological conditions, or stable genetic factors. To date, however, there is little evidence for specific genes related to adult attachment (see Fraley, Roisman, Booth-LaForce, Owen, & Holland, 2013). Although the present work is valuable for illuminating patterns of stability and change in attachment, future research is needed to shed light on the mechanisms that give rise to these patterns, with particular attention to potential genetic contributions (see Main, 1999, for the long-held view of the importance of considering genetic influences). Second, this study extended the timeframe of previous work to include the first 2 years after birth. Future studies may benefit from beginning assessments in pregnancy and extending assessments into the child's early years, to illuminate more long-term processes in new parents. Third, future work should include fathers as well as mothers to reveal how patterns of stability and change differ in men, or how one partner's attachment style moderates changes in the other partner's attachment (see Simpson et al., 2003, for evidence in the first 6 months of new parenthood). Fourth, it is likely that moderators of attachment stability also interact with each other, and future studies with greater statistical power could explore such interactions. Relatedly, because the analytic sample varied in minor ways from analysis to analysis, one should be cautious about making comparisons between analyses about which moderators might be more important than others. Finally, other potential moderators of stability in new parents' attachment style merit exploration, particularly those found to influence the developing attachment system in children, such as negative life events and trauma (Booth-LaForce et al., 2014).

Conclusion

This study offers the first evidence of attachment stability and change during the first 2 years of new motherhood, a time of heightened emotional vulnerability and social upheaval. Unlike previous studies of attachment stability, this study focuses on economically stressed, majority non-White women—a population underrepresented in psychology research. In addition, examining five time points allowed us to test two alternative models of parents' attachment. We found support for the prototype model, in which enduring internal working models shape interpersonal dynamics across the life span. Further, this study is first to examine moderators of stability and change at multiple levels of analysis, paving the way for future research on moderation processes. Findings shed light on developmental processes at play for new mothers and help to bridge the gap between developmental and social psychology perspectives on adult attachment. Given the challenges faced by new mothers and the role of attachment in shaping parenting, characterizing the developmental dynamics of attachment in new parents is important for understanding and promoting maternal and infant well-being.

References

Ainsworth, M. D. S. (1989). Attachments beyond infancy. *American Psychologist, 44,* 709–716. http://dx.doi.org/10.1037/0003-066X.44.4.709

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Hillsdale, NJ: Erlbaum.

Baldwin, M. W., & Fehr, B. (1995). On the instability of attachment style ratings. *Personal Relationships, 2,* 247–261. http://dx.doi.org/10.1111/j.1475-6811.1995.tb00090.x

Beck, A. T., Steer, R. A., & Carbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8,* 77–100. http://dx.doi.org/10.1016/0272-7358(88)90050-5

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4,* 561–571. http://dx.doi.org/10.1001/archpsyc.1961.01710120031004

Belsky, J. (2009). Transition to parenthood. In H. T. Reis & S. Sprecher (Eds.), *Encyclopedia of human relationships* (Vol. 3, pp. 1204–1207). Thousand Oaks, CA: Sage. http://dx.doi.org/10.4135/9781412958479.n389

Belsky, J., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2007). For better and for worse: Differential susceptibility to environmental influences. *Current Directions in Psychological Science, 16,* 300–304. http://dx.doi.org/10.1111/j.1467-8721.2007.00525.x

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B, Methodological, 57,* 289–300.

Bifulco, A., Figueiredo, B., Guedeney, N., Gorman, L. L., Hayes, S., Muzik, M., . . . the TCS-PND Group. (2004). Maternal attachment style and depression associated with childbirth: Preliminary results from a European and U.S. cross-cultural study. *The British Journal of Psychiatry, 184*(46), s31–s37. http://dx.doi.org/10.1192/bjp.184.46.s31

Booth-LaForce, C., Groh, A. M., Burchinal, M. R., Roisman, G. I., Owen, M. T., & Cox, M. J. (2014). V. Caregiving and contextual sources of continuity and change in attachment security from infancy to late adolescence. *Monographs of the Society for Research in Child Development, 79,* 67–84. http://dx.doi.org/10.1111/mono.12114

Bouaziz, A. R., Lafontaine, M. F., Gabbay, N., & Caron, A. (2013). Investigating the validity and reliability of the caregiving questionnaire with individuals in same-sex couple relationships. *Journal of Relationships Research, 4,* e2. http://dx.doi.org/10.1017/jrr.2013.2

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation–Anxiety and anger*. New York, NY: Basic Books.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss, sadness and depression*. New York, NY: Basic Books.

Bowlby, J. (1982). *Attachment and loss: Vol. 1. Attachment* (2nd ed.). New York, NY: Basic Books. (Original work published 1969)

Bowlby, J. (1988). *A secure base*. New York, NY: Basic Books.

Brazelton, T. B., & Nugent, J. K. (1995). *Neonatal Behavioral Assessment Scale* (3rd ed.). London, UK: Mac Keith Press.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult romantic attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). New York, NY: Guilford Press.

Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research in Child Development, 50,* 3–35. http://dx.doi.org/10.2307/3333824

Busby, D. M., Christensen, C., Crane, D. R., & Larson, J. H. (1995). A revision of the Dyadic Adjustment Scale for use with distressed and nondistressed couples: Construct hierarchy and multidimensional scales. *Journal of Marital and Family Therapy, 21,* 289–308. http://dx.doi.org/10.1111/j.1752-0606.1995.tb00163.x

Cassidy, J., Ehrlich, K. B., & Sherman, L. J. (2013). Child-parent attachment and response to threat: A move from the level of representation. In M. Mikulincer & P. R. Shaver (Eds.), *Nature and development of social connections: From brain to group* (pp. 125–144). Washington, DC: American Psychological Association.

Cassidy, J., Jones, J. D., & Shaver, P. R. (2013). Contributions of attachment theory and research: A framework for future research, translation, and policy. *Development and Psychopathology, 25,* 1415–1434. http://dx.doi.org/10.1017/S0954579413000692

Cassidy, J., Woodhouse, S. S., Sherman, L. J., Stupica, B., & Lejuez, C. W. (2011). Enhancing infant attachment security: An examination of treatment efficacy and differential susceptibility. *Development and Psychopathology, 23,* 131–148. http://dx.doi.org/10.1017/S0954579410000696

Clark, L. A., Kochanska, G., & Ready, R. (2000). Mothers' personality and its interaction with child temperament as predictors of parenting behavior. *Journal of Personality and Social Psychology, 79,* 274–285. http://dx.doi.org/10.1037/0022-3514.79.2.274

Cowan, C. P., & Cowan, P. A. (2000). *When partners become parents: The big life change for couples*. Mahwah, NJ: Erlbaum.

Cozzarelli, C., Karafa, J. A., Collins, N. L., & Tagler, M. J. (2003). Stability and change in adult attachment styles: Associations with personal vulnerabilities, life events, and global construals of self and others. *Journal of Social and Clinical Psychology, 22,* 315–346. http://dx.doi.org/10.1521/jscp.22.3.315.22888

Crnic, K. A., Greenberg, M. T., Ragozin, A. S., Robinson, N. M., & Basham, R. B. (1983). Effects of stress and social support on mothers and premature and full-term infants. *Child Development, 54,* 209–217. http://dx.doi.org/10.2307/1129878

Crowell, J., Fraley, R. C., & Roisman, G. I. (2016). Measurement of individual differences in adult attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical implications* (3rd ed., pp. 598–637). New York, NY: Guilford Press.

Curran, P. J., Howard, A. L., Bainter, S. A., Lane, S. T., & McGinley, J. S. (2014). The separation of between-person and within-person components of individual change over time: A latent curve model with structured residuals. *Journal of Consulting and Clinical Psychology, 82,* 879–894. http://dx.doi.org/10.1037/a0035297

Davila, J., Burge, D., & Hammen, C. (1997). Why does attachment style change? *Journal of Personality and Social Psychology, 73,* 826–838. http://dx.doi.org/10.1037/0022-3514.73.4.826

Derogatis, L. R. (1993). *Brief Symptom Inventory: Administration, scoring, and procedures manual*. Minneapolis, MN: National Computer Systems.

Derogatis, L. R., & Melisaratos, N. (1983). The brief symptom inventory: An introductory report. *Psychological Medicine, 13,* 595–605. http://dx.doi.org/10.1017/S0033291700048017

Dykas, M. J., & Cassidy, J. (2011). Attachment and the processing of social information across the life span: Theory and evidence. *Psychological Bulletin, 137,* 19–46. http://dx.doi.org/10.1037/a0021367

Edelstein, R. S., Alexander, K. W., Shaver, P. R., Schaaf, J. M., Quas, J. A., Lovas, G. S., & Goodman, G. S. (2004). Adult attachment style and parental responsiveness during a stressful event. *Attachment & Human Development, 6,* 31–52. http://dx.doi.org/10.1080/14616730310001659584

Feeney, J., Alexander, R., Noller, P., & Hohaus, L. (2003). Attachment insecurity, depression, and the transition to parenthood. *Personal Relationships, 10,* 475–493. http://dx.doi.org/10.1046/j.1475-6811.2003.00061.x

Feeney, J. A., & Noller, P. (1996). *Adult attachment* (Vol. 14). Thousand Oaks, CA: Sage. http://dx.doi.org/10.4135/9781452243276

Fraley, R. C. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review, 6,* 123–151. http://dx.doi.org/10.1207/S15327957PSPR0602_03

Fraley, R. C., & Brumbaugh, C. C. (2004). A dynamical systems approach to conceptualizing and studying stability and change in attachment security. In W. S. Rholes & J. A. Simpson (Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 86–132). New York, NY: Guilford Press.

Fraley, R. C., Roisman, G. I., Booth-LaForce, C., Owen, M. T., & Holland, A. S. (2013). Interpersonal and genetic origins of adult attachment styles: A longitudinal study from infancy to early adulthood. *Journal of Personality and Social Psychology, 104,* 817–838. http://dx.doi.org/10.1037/a0031435

Fraley, R. C., Vicary, A. M., Brumbaugh, C. C., & Roisman, G. I. (2011). Patterns of stability in adult attachment: An empirical test of two models of continuity and change. *Journal of Personality and Social Psychology, 101,* 974–992. http://dx.doi.org/10.1037/a0024150

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78,* 350–365. http://dx.doi.org/10.1037/0022-3514.78.2.350

Galdiolo, S., & Roskam, I. (2017). Development of attachment orientations in response to childbirth: A longitudinal dyadic perspective. *Personality and Individual Differences, 108,* 136–143. http://dx.doi.org/10.1016/j.paid.2016.12.016

George, C., Kaplan, N., & Main, M. (1987). *The adult attachment interview*. Unpublished manuscript, University of California, Berkeley.

Gillath, O., Bunge, S. A., Shaver, P. R., Wendelken, C., & Mikulincer, M. (2005). Attachment-style differences in the ability to suppress negative thoughts: Exploring the neural correlates. *NeuroImage, 28,* 835–847. http://dx.doi.org/10.1016/j.neuroimage.2005.06.048

Graham, J. M., Liu, Y. J., & Jeziorski, J. L. (2006). The dyadic adjustment scale: A reliability generalization meta-analysis. *Journal of Marriage and Family, 68,* 701–717. http://dx.doi.org/10.1111/j.1741-3737.2006.00284.x

Green, B. L., Furrer, C., & McAllister, C. (2007). How do relationships support parenting? Effects of attachment style and social support on parenting behavior in an at-risk population. *American Journal of Community Psychology, 40,* 96–108.

Hawkes, K. (2014). Primate sociality to human cooperation. Why us and not them? *Human Nature, 25,* 28–48. http://dx.doi.org/10.1007/s12110-013-9184-x

Hesse, E. (2016). The adult attachment interview: Protocol, method of analysis, and empirical studies: 1985–2015. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 553–597). New York, NY: Guilford Press.

Jones, J. D., Cassidy, J., & Shaver, P. R. (2015). Adult attachment style and parenting. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and research: New directions and emerging themes* (pp. 234–260). New York, NY: Guilford Press.

Jones, J. D., Fraley, R. C., Ehrlich, K. B., Stern, J. A., Lejuez, C. W., Shaver, P. R., & Cassidy, J. (2017). Stability of attachment style in adolescence: An empirical test of alternative developmental processes. *Child Development*. Advance online publication. http://dx.doi.org/10.1111/cdev.12775

Kagan, J. (1996). Three pleasing ideas. *American Psychologist, 51,* 901–908. http://dx.doi.org/10.1037/0003-066X.51.9.901

Kirkpatrick, L. A., & Hazan, C. (1994). Attachment styles and close relationships: A four-year prospective study. *Personal Relationships, 1,* 123–142. http://dx.doi.org/10.1111/j.1475-6811.1994.tb00058.x

Kunce, L. J., & Shaver, P. R. (1994). An attachment-theoretical approach to caregiving in romantic relationships. In K. Bartholomew & D. Perlman (Eds.), *Attachment processes in adulthood* (pp. 205–237). London, UK: Kingsley.

Lewis, M. (1997). *Altering fate: Why the past does not predict the future*. New York, NY: Guilford Press.

Main, M. (1999). Epilogue. Attachment theory: Eighteen points with suggestions for future studies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 845–888). New York, NY: Guilford Press.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development, 50,* 66–104. http://dx.doi.org/10.2307/3333827

McMahon, C., Barnett, B., Kowalenko, N., & Tennant, C. (2005). Psychological factors associated with persistent postnatal depression: Past and current relationships, defence styles and the mediating role of insecure attachment style. *Journal of Affective Disorders, 84,* 15–24. http://dx.doi.org/10.1016/j.jad.2004.05.005

Mickelson, K. D., Kessler, R. C., & Shaver, P. R. (1997). Adult attachment in a nationally representative sample. *Journal of Personality and Social Psychology, 73,* 1092–1106. http://dx.doi.org/10.1037/0022-3514.73.5.1092

Mikulincer, M., & Florian, V. (1998). The relationship between adult attachment styles and emotional and cognitive reactions to stressful events. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 143–165). New York, NY: Guilford Press.

Mikulincer, M., & Shaver, P. R. (2016). *Attachment in adulthood: Structure, dynamics, and change* (2nd ed.). New York, NY: Guilford Press.

Murray, L., & Cooper, P. J. (1997). Postpartum depression and child development. *Psychological Medicine, 27,* 253–260. http://dx.doi.org/10.1017/S0033291796004564

Nyström, K., & Öhrling, K. (2004). Parenthood experiences during the child's first year: Literature review. *Journal of Advanced Nursing, 46,* 319–330. http://dx.doi.org/10.1111/j.1365-2648.2004.02991.x

Owens, G., Crowell, J. A., Pan, H., Treboux, D., O'Connor, E., & Waters, E. (1995). The prototype hypothesis and the origins of attachment working models: Adult relationships with parents and romantic partners. *Monographs of the Society for Research in Child Development, 60,* 216–233. http://dx.doi.org/10.2307/1166180

Powers, S. I., Pietromonaco, P. R., Gunlicks, M., & Sayer, A. (2006). Dating couples' attachment styles and patterns of cortisol reactivity and recovery in response to a relationship conflict. *Journal of Personality and Social Psychology, 90,* 613–628. http://dx.doi.org/10.1037/0022-3514.90.4.613

Putnam, S. P., Sanson, A. V., & Rothbart, M. K. (2002). Child temperament and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 1. Children and parenting* (2nd ed., pp. 255–277). Mahwah, NJ: Erlbaum.

Rholes, W. S., Simpson, J. A., Campbell, L., & Grich, J. (2001). Adult attachment and the transition to parenthood. *Journal of Personality and Social Psychology, 81,* 421–435. http://dx.doi.org/10.1037/0022-3514.81.3.421

Rholes, W. S., Simpson, J. A., Kohn, J. L., Wilson, C. L., Martin, A. M., III, Tran, S., & Kashy, D. A. (2011). Attachment orientations and depression: A longitudinal study of new parents. *Journal of Personality and Social Psychology, 100,* 567–586. http://dx.doi.org/10.1037/a0022802

Sarason, B. R., Shearin, E. N., Pierce, G. R., & Sarason, I. G. (1987). Interrelations of social support measures: Theoretical and practical implications. *Journal of Personality and Social Psychology, 52,* 813–832. http://dx.doi.org/10.1037/0022-3514.52.4.813

Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology, 44,* 127–139. http://dx.doi.org/10.1037/0022-3514.44.1.127

Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships, 4,* 497–510. http://dx.doi.org/10.1177/0265407587044007

Shaver, P. R., & Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment & Human Development, 4,* 133–161. http://dx.doi.org/10.1080/14616730210154171

Shaver, P. R., & Mikulincer, M. (2004). What do self-report attachment

measures assess? In W. S. Rholes & J. A. Simpson (Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 17–54). New York, NY: Guilford Press.

Simpson, J. A., Rholes, W. S., Campbell, L., & Wilson, C. L. (2003). Changes in attachment orientations across the transition to parenthood. *Journal of Experimental Social Psychology, 39,* 317–331. http://dx.doi.org/10.1016/S0022-1031(03)00030-1

Sroufe, L. A., Egeland, B., & Kreutzer, T. (1990). The fate of early experience following developmental change: Longitudinal approaches to individual adaptation in childhood. *Child Development, 61,* 1363–1373. http://dx.doi.org/10.2307/1130748

Stern, D. N., & Bruschweiler-Stern, N. (1998). *The birth of a mother: How the motherhood experience changes you forever*. New York, NY: Basic Books.

Stern, J. A., Borelli, J. L., & Smiley, P. A. (2015). Assessing parental empathy: A role for empathy in child attachment. *Attachment & Human Development, 17,* 1–22. http://dx.doi.org/10.1080/14616734.2014.969749

Travis, L. A., Bliwise, N. G., Binder, J. L., & Horne-Moyer, H. L. (2001). Changes in clients' attachment styles over the course of time-limited dynamic psychotherapy. *Psychotherapy: Theory, Research, Practice, Training, 38,* 149–159. http://dx.doi.org/10.1037/0033-3204.38.2.149

Vaughn, B., Egeland, B., Sroufe, L. A., & Waters, E. (1979). Individual differences in infant–mother attachment at twelve and eighteen months: Stability and change in families under stress. *Child Development, 50,* 971–975. http://dx.doi.org/10.2307/1129321

Zhang, F., & Labouvie-Vief, G. (2004). Stability and fluctuation in adult attachment style over a 6-year period. *Attachment & Human Development, 6,* 419–437. http://dx.doi.org/10.1080/1461673042000303127

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