ATTITUDES AND SOCIAL COGNITION

Attachment Orientations and Depression: A Longitudinal Study of New Parents

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In this longitudinal study, we followed a large sample of first-time parents (both partners) across the first 2 years of the transition to parenthood. Guided by attachment theory (Bowlby, 1969), we tested several predictions about how attachment anxiety and avoidance are related to the incidence, maintenance, increase, and decline of depressive symptoms in both sexes across the first 2 years of the transition. We found that (a) the association between attachment anxiety and depressive symptoms was moderated by factors related to the marital and/or romantic relationship; (b) the association between avoidance and depressive symptoms was moderated by factors related to family responsibilities; (c) styles of caregiving provided by romantic partners affected depressive symptoms differently among anxious and avoidant persons; and (d) in certain predictable situations, depressive symptoms persisted at higher levels or increased to higher levels in anxious or avoidant persons across the 2-year transition period. Important implications of these results are discussed.

Keywords: attachment, depression, marriage

The transition to parenthood, the period surrounding the birth of a couple's first child, is often stressful and can have deleterious effects on both individuals and relationships. Although the transition enhances marital well-being in some couples (Cowan et al., 1985), couples must cope with dramatic role changes, fatigue, excessive work, financial burdens, work–family conflict, and other sources of stress. As a result, many partners experience decreases in marital satisfaction, decreases in companionate activities, and greater conflict (Belsky & Pensky, 1988; Cowan & Cowan, 2000). The birth of a child also increases depressive symptoms in some people (O'hara & Swain, 1996; Simpson, Rholes, Campbell, Tran, & Wilson, 2003). In the present study, we investigated depressive symptoms in women and men during the first 2 years of the transition to parenthood. The goal of the study was to identify factors during the transition that may trigger depressive symptoms, factors that may protect against the development of depressive symptoms, and the specific time course of these effects.

Our research was guided by attachment theory (Bowlby, 1969, 1973, 1980). According to this theory, human beings are naturally endowed with an attachment behavioral system that motivates people to bond with important others in their environment and to

seek out these "attachment figures" when they become distressed. Relationships with attachment figures, particularly early relationships, contribute to the development of generalized models of the self and others. These "working models" encompass a range of cognitive and affective content, including episodic memories of past interactions with attachment figures, general expectations about how attachment figures will behave in future situations, attachment-related goals and plans, and rules for pursuing such goals and plans (Collins, Guichard, Ford, & Feeney, 2004).

In adulthood, working models give rise to coherent patterns of cognition, behavior, and affect known as attachment orientations. Adult attachment orientations are assessed along two orthogonal dimensions: anxious and avoidant attachment. Adults who score high on the anxiety dimension find it difficult to trust their attachment figures (typically marital or long-term romantic partners in adulthood). These individuals worry that their partners do not truly love them and may eventually leave them, especially when they most need care and support. This concern leads highly anxious people to be hypervigilant to signs of disloyalty or impending abandonment. It also leads them to be clingy and dependent and to repeatedly seek reassurance of their partners' love and commitment (see Mikulincer & Shaver, 2003). Adults who score high on the avoidance dimension strive to maintain psychological distance, independence, and freedom from their relationship partners. They typically distrust relationship partners and are afraid to allow themselves to become dependent on them, "in some cases to avoid the pain of being rejected and in some cases to avoid being subjected to pressure to become someone else's caretaker" (Bowlby, 1979, p. 164).

Attachment theory was originally developed to account for psychopathology (Bowlby, 1973, 1980). Indeed, many studies have linked attachment insecurities to a wide range of emotional and behavioral disorders. Insecure (i.e., both the anxious and avoidant) attachment orientations, for example, have been linked to various dissociative disorders, posttraumatic stress disorder, conduct disorders, and eating disorders (see Mikulincer & Shaver, 2007). However, the link between attachment and depression is particularly well documented, and this link was the focus of Bowlby's (1980) third major volume. Several studies have found that persons who are high in anxious and/or avoidant attachment are significantly more vulnerable to depression and depressive symptoms. In a nationally representative survey, for instance, Mickelson, Kessler, and Shaver (1997) found that people who score higher on avoidance and/or anxiety, compared with those who score relatively low, also tend to score higher on a *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–III*; American Psychiatric Association, 1980) measure of depression. Another study assessing a regionally representative sample showed that depressive symptoms are highest among more anxious individuals, next highest among more avoidant persons, and lowest among more secure individuals (Cooper, Shaver, & Collins, 1998). A number of other studies have also documented fairly strong associations between insecure attachment orientations and depressive symptoms (e.g., Burge et al., 1997; Carnelley, Pietromonaco, & Jaffe, 1994; Hammen et al., 1995; Simpson et al., 2003; Wei, Heppner, & Mallinckrodt, 2003).

The connection between insecure attachment and depressive symptoms is likely to be mediated by several psychological processes. Less secure individuals may, for example, be more vulner-

able to depressive symptoms because they use ineffective methods of coping with stress. Indeed, highly anxious and highly avoidant individuals do cope less well than their secure peers, in part because they tend to be less ego-resilient, more pessimistic, and lower in self-efficacy (Klohnen, Weller, Luo, & Choe, 2005; Mayseless, 2004; Myers & Vetere, 2002; Wei et al., 2003). Highly anxious people also tend to appraise stressful events as more threatening than do less anxious people (Berant, Mikulincer, & Shaver, 2008), and they often use less effective coping strategies, relying heavily on emotion-focused coping strategies (Mikulincer & Florian, 1998; Mikulincer & Shaver, 2007). Although highly avoidant people do not "overperceive" the threat potential of distressing situations, they also use ineffective coping strategies. For example, they are less likely to seek social support (Simpson, Rholes, & Nelligan, 1992), and they utilize avoidance, denial, distraction, and repression as modes of coping (Feeney, 1998; Gjerde, Onishi, & Carlson, 2004; Vetere & Myers, 2002).

Anxious Attachment

Insecure individuals may also be more vulnerable to depressive symptoms because they harbor unmet needs that stem from past experiences with unreliable or unresponsive attachment figures. Among highly anxious people, attachment concerns, worries, and fears tend to be interpersonal in nature, centering on the inadequacy of close relationship partners. Because they do not fully trust their partners, highly anxious people are motivated to remain in close contact with their partners, and they interact with them in a clingy, hypervigilant manner designed to prevent abandonment.

It is not surprising, therefore, that relationship events and interactions heavily influence the well-being of anxious individuals. When they perceive that their partners are not able or willing to provide either the quality or the amount of support that they desire, highly anxious persons should become distressed, making them even more vulnerable to depressive symptoms. In fact, more anxious individuals who perceive that their relationship partners are more supportive tend to be more satisfied with their spouses 6 months after childbirth (Rholes, Simpson, Campbell, & Grich, 2001). However, when highly anxious women perceive that their spouses are not meeting their needs for support, they report greater dissatisfaction (Rholes et al., 2001), more anger (Rholes, Simpson, & Oriña, 1999), and more depressive symptoms (Simpson et al., 2003). Unfortunately, highly anxious people also underperceive the amount of support that may actually be available to them (Collins & Feeney, 2004; Rholes et al., 2001). As a result, the greater depressive symptoms typically found in highly anxious people may stem, at least in part, from a perceptual bias that prevents them from recognizing and acknowledging the support that may actually be available. In the present study, we tested whether and how attachment anxiety interacts with perceived relationship closeness, perceived supportiveness of the partner, and negative social exchange between partners in predicting changes in depressive symptoms during the first 2 years of the transition to parenthood.

Avoidant Attachment

Compared with highly anxious individuals, highly avoidant persons should be less concerned about the degree of social sup-

port and events transpiring within their relationships. One of the primary goals of highly avoidant people is to maintain psychological and emotional independence. One way to accomplish this goal is to not depend on or provide much care to relationship partners. Thus, highly avoidant people should not experience greater depressive symptoms in response to lower perceived partner support, less relationship closeness, or higher levels of negative social exchange in the relationship. Still, highly avoidant people are more vulnerable to depression than less avoidant people (Mickelson et al., 1997). For this reason, it is important to identify the conditions that trigger depressive symptoms in highly avoidant people, particularly across significant life transitions. Given that their desire to be independent from attachment figures coexists with their desire to avoid being caregivers (Bowlby, 1979), highly avoidant people may experience more depressive symptoms when their independence is threatened or compromised. This threat may be especially salient as they enter their new role as parents.

The literature on parenting and avoidance suggests that caring for children is difficult and aversive, particularly for highly avoidant persons. For example, several studies have documented that highly avoidant people are less interested in being parents (Rholes, Simpson, & Blakely, 1995; Rholes, Simpson, Blakely, Lanigan, & Allen, 1997), and they believe that parenting young children is likely to be stressful and not personally satisfying (Rholes, Simpson, & Friedman, 2006). Highly avoidant mothers report feeling more emotionally detached from their young children than do less avoidant mothers (Rholes et al., 1995). Highly avoidant persons also endorse harsher methods of punishment and expect their children to be independent at earlier ages (Rholes et al., 1997). Finally, highly avoidant mothers provide less support to their children (rated by observers) when trying to teach them challenging tasks (Rholes et al., 1995). Viewed together, these findings are consistent with Bowlby's claim that avoidant people are reluctant to become caregivers. In the present study, we examine how the addition of a baby affects perceived independence and depressive symptoms. If highly avoidant individuals perceive that their child (or caring for their child) interferes with their independence (e.g., limiting their freedom to engage in outside activities such as work or recreation), this should result in increased stress and elevated depressive symptoms across the transition to parenthood. Similarly, highly avoidant people may also experience greater depressive symptoms if they perceive that their infants are somehow interfering with their relationship with their spouse.

Caregiving Styles

In addition to examining the role specific stressors play in generating depressive symptoms in new parents, we also examined the influence of caregiving styles adopted by relationship partners. Recipients of social support do not always benefit from it; sometimes, in fact, they are less well off after receiving support (Bolger, Foster, Vinokur, & Ng, 1996; Bolger, Zuckerman, & Kessler, 2000). Several explanations have been offered for this finding. Support providers may be unskilled, may provide support in ways that undermine the recipient's self-esteem, or may offer a type of support that does not fit the needs of support recipients. Simpson, Winterheld, Rholes, and Oriña (2007), for example, observed couples that were engaged in a stressful lab task. They found that

secure individuals (as assessed by the Adult Attachment Interview; Main, Kaplan, & Cassidy, 1985) were calmed when their partners gave them more emotional support, whereas dismissive (avoidant) people were more calmed when they received more instrumental support (see also Mikulincer & Florian, 1997). Using a self-report measure of attachment, DeFronzo, Panzarella, and Butler (2001) found that more avoidant persons who were experiencing depressive symptoms responded more positively when their partners encouraged them to attribute stressors to external, specific, and unstable causes. Together, these findings suggest that the type of caregiving offered by partners should be related to susceptibility to depressive symptoms and that some types of support may be more effective for highly avoidant and highly anxious persons than other types.

Kunce and Shaver (1994) outlined four dimensions of caregiving style. Individuals may perceive that their partners provide care through physical and psychological proximity or through sensitivity to one's signals (verbal or nonverbal) of needs for support. Partners may also provide care by cooperating to support individuals' efforts to solve their own problems, without controlling the situation. Additionally, partners may become overinvolved in providing care, which may cause the care receiver to feel smothered. On the basis of the earlier discussion of attachment anxiety and avoidance, we expected more anxious individuals to benefit more from caregiving that increases perceptions of physical and psychological proximity. In contrast, more avoidant individuals should respond better to caregiving that they perceive as supporting their autonomy and their own problem solving efforts.

The Present Study

In the present longitudinal study, we investigated changes in depressive symptoms in a sample of couples during the first 2 years of their transition to parenthood.[1] Data were collected in five waves, starting approximately 6 weeks before the birth of each couple's first child and continuing through four postnatal waves at 6, 12, 18, and 24 months postpartum. At each phase, couples completed self-report measures of attachment orientations, perceptions of relationship closeness, perceptions of spousal support, and perceptions of negative social exchanges with the partner. We also measured the degree to which children were perceived as interfering with (a) outside life activities and (b) the parents' romantic relationship with each other. We tested the following hypotheses:

Hypotheses Related to Anxious Attachment

Hypothesis 1: More anxious individuals should report more intense and persistent depressive symptoms to the extent that they perceive their partners are less willing or able to provide support.

Hypothesis 2: More anxious individuals should report more intense and persistent depressive symptoms to the extent that

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[1] A subset of the present authors has published a short-term (6 months) longitudinal study that also dealt with the relationship of attachment styles to depressive symptoms during the transition to parenthood. The present study extends this research by including new measures, covering a longer time period, and examining men's depression in detail.

they perceive more negative social exchanges involving their partner's undesirable behaviors toward them.

Hypothesis 3: More anxious individuals should report more intense and persistent depressive symptoms if they perceive themselves as less close to their partners.

Hypothesis 4: More anxious persons should report less intense and less persistent depressive symptoms to the extent that they perceive that their partner's caregiving style emphasizes closeness and physical contact (i.e., more proximal care). Other caregiving styles should not predict depressive symptoms for highly anxious persons.

Hypotheses Related to Avoidant Attachment

Hypothesis 5: More avoidant parents should report more intense and persistent depressive symptoms to the extent that they perceive that their child interferes with their romantic relationship.

Hypothesis 6: More avoidant individuals should report more intense and persistent depressive symptoms if they perceive that their child restricts their freedom and independence by interfering with outside interests and activities.

Hypothesis 7: More avoidant persons should report less intense and persistent depressive symptoms to the extent that they perceive that their partners' caregiving style promotes their autonomy and helps them solve their problems independently (i.e., more cooperative caregiving). Other types of caregiving should be unrelated to symptom levels for highly avoidant persons.

Method

Participants

At Time 1, participants included 192 couples (194 women and 193 men) who lived in a southwestern U.S. city (i.e., there were 192 couples in which both the husband and wife participated, 2 couples in which only the wife participated, and 1 couple in which only the husband participated). Both partners were living together and expecting their first child. There were 165 couples (169 women and 168 men) at Time 2, 153 couples (157 women and 153 men) at Time 3, 151 couples (154 women and 151 men) at Time 4, and 137 couples (144 women and 137 men) at Time 5. Of the 55 couples who dropped out during the study, 33 couples stopped responding to our repeated attempts to contact them. Each couple was contacted at least three times after their first nonresponse and then contacted a final time after their second nonresponse before being dropped from the study. In the Results section, we discuss differences between individuals who completed the study and those who were dropped.

Couples were recruited from childbirth preparation classes offered by a local hospital. Approximately 45% of the couples who were approached agreed to participate. Ethnic backgrounds were Caucasian (82%), Asian (9%), and Hispanic (9%). All but 6% (4% women) of participants had at least some college education. Many

participants had a bachelor's degree (45% overall, 24% women), and an additional 25% (12% women) had a postbaccalaureate degree. Household income was moderate; 16% of the sample earned an annual household income under $25,000, 46% earned $25,000–$55,000 per year, 38% earned more than $55,000 annually, and 6% earned over $100,000 a year. At Time 1, the mean ages of women and men were 26.7 ($SD = 4.1$) years and 28.4 ($SD = 4.4$) years, respectively. At Time 1, 5% of couples were living together but not married. Unmarried couples had been cohabiting for a mean of 1.85 years ($SD = 2.19$), and married couples had been married for a mean of 3.3 years ($SD = 2.6$).

Procedures

Couples were recruited from childbirth classes at local hospitals and through the distribution of fliers at hospitals. At an early meeting of the childbirth classes, an experimenter explained the study, and couples were enlisted. In order to participate, participants had to be married or living together with their partner, and both partners had to be expecting their first child. Approximately 6 weeks prior to their expected due date (Time 1), each romantic partner was mailed a set of self-report measures in a separate envelope, which was to be completed privately and independently. Partners then returned their completed questionnaires in separate envelopes addressed to the study coordinator (i.e., women's and men's packets were returned separately). Each partner received the postnatal self-report measures at approximately 6 months (Time 2), 12 months (Time 3), 18 months (Time 4), and 24 months (Time 5) after the baby's birth date.[2] At 6 months postpartum (Time 2), both partners received the questionnaires after a laboratory session during which they participated in discussion tasks (these behavioral data are not discussed here). For all other assessment waves, an experimenter mailed the questionnaires to each partner. During each wave, partners were instructed to complete their questionnaires privately and independently, and they returned their completed packets to the experimenter in separate envelopes. Participants were explicitly instructed not to talk to or consult with their partners when completing the surveys. Couples were paid $50 for completing each of the Time 1, Time 2, and Time 3 questionnaires. To minimize attrition, payment was increased to $75 per couple for completing the Time 4 and Time 5 questionnaires. Couples in which both partners completed and returned their questionnaires from each phase of the study were then entered into a random drawing for two $500 cash rewards.

Measures

All participants completed the following measures at each assessment wave.

Depressive symptoms. The Center for Epidemiologic Studies—Depression Scale measured the frequency of depressive symptoms within the last week (Radloff, 1977). This 20-item scale was developed for use with nonclinical populations. It includes items such as "I had crying spells," "I felt that everything I did was an effort," and "I was bothered by things that usually don't bother

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[2] A short questionnaire was also administered to participants 2 weeks following childbirth. These data have already been discussed elsewhere (see Wilson et al., 2007) and are not relevant to the current analyses.

me." Items were answered on a 4-point scale, from 0 (*rarely or none of the time* [less than 1 day]) to 3 (*most or all of the time* [5–7 days]). Cronbach alphas ranged from .88 to .92 for men and from .88 to .92 for women. Scores could range from 0 to 60, with higher scores indicating more depressive symptoms.

Attachment orientations. Attachment avoidance and anxiety were measured using an adapted version of the Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998). The 36-item scale asked participants to rate how well each item described their feelings toward romantic partners and/or relationships in general. Each item was answered on a 7-point scale, from 1 (*strongly disagree*) to 7 (*strongly agree*). Eighteen items assessed avoidance (e.g., "I prefer not to show partners how I feel deep down"), and 18 items assessed anxiety (e.g., "My desire to be very close sometimes scares people away"). For avoidance, Cronbach alphas at each phase ranged from .84 to .94 for men and from .87 to .96 for women. For anxiety, alphas ranged from .89 to .92 for men and from .84 to .94 for women. For both dimensions, higher scores indicated greater attachment-related avoidance or anxiety.

Perceived social support available from partner. The Social Support Questionnaire (SSQ; Sarason, Levine, Basham, & Sarason, 1983) measured perceptions of the amount of social support that was available from one's partner. The scale contains seven items (e.g., "How much can you count on your partner/spouse to make you feel more relaxed when you are under pressure?"). Items were answered on a 7-point scale, from 1 (*not at all*) to 7 (*very much*). Cronbach alphas ranged from .91 to .94 for men and from .90 to .95 for women. Mean scores were computed across items, with higher scores indicating that more social support was perceived to be available.

Negative social exchange received. The Test of Negative Social Exchange (Finch, Okun, Pool, & Ruehlman, 1999) assesses perceptions of the frequency with which one's partner has acted negatively toward one within the past month. This 24-item scale asks about a variety of negative behaviors, including "put me down," "lost his/her temper with me," "seemed bored with me," and "acted as if I was foolish." Items were answered on a 9-point scale, from 1 (*not at all*) to 9 (*frequently*). Cronbach alphas ranged from .96 to .98 for men and from .95 to .96 for women. Mean scores were computed such that higher scores indicated perceptions of having received a greater variety and frequency of negative behaviors from the partner.

Perceived closeness to the partner. The Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992) assessed feelings of subjective closeness to and interdependence with the romantic partner. The single-item IOS contains seven Venn diagrams, with one circle representing the self and the other representing the partner. In each diagram, the circles overlap to varying degrees. The diagrams ranged from 1 (circles touching but not overlapping) to 7 (circles almost completely overlapping). Participants were asked to choose the picture that best described their current relationship with their partner/spouse. Scores could range from 1 to 7, with higher scores indicating greater felt closeness.

Partner's caregiving style. The Caregiving Questionnaire (Kunce & Shaver, 1994) assessed different types of caregiving received from partners during the past month. It contains four subscales that describe different types of care people might provide to their partners. Each subscale had eight items, which were rated on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Mean scores for each scale could range from 1 to 7. Proximal Care assessed perceptions of the partner's caregiving through physical closeness (e.g., "When I cry or am distressed, my partner's first impulse is to hold or touch me"). Cronbach alphas ranged from .82 to .90 for men and from .88 to .90 for women. Higher scores indicated more proximal (and less distant) care. Cooperative Care assessed perceptions of the partner's caregiving through supporting the individual's efforts to solve his/her own problems (e.g., "My partner can help me work out my problems without taking control"). Alphas ranged from .89 to .92 for men and from .89 to .92 for women, with higher scores indicating more cooperative (and less controlling) care. Sensitive Care assessed perceptions of the partner's ability to recognize the individual's needs to receive care (e.g., "My partner can always tell when I need comforting, even when I do not ask for it"). Cronbach alphas ranged from .89 to .93 for men and from .92 to .94 for women. Higher scores indicated more sensitive care. Compulsive Care assessed perceptions of the partner's ability to provide care without becoming overly involved (e.g., "When necessary, my partner can say 'no' to my requests for help without feeling guilty"). Alphas ranged from .77 to .86 for men and from .72 to .81 for women, with higher scores indicating less compulsive care.

Baby's interference in the romantic relationship (BIRR). We developed a five-item scale to measure perceptions that the baby was interfering with the couple's romantic relationship. In particular, it assessed perceived competition with the baby for the romantic partner's time, attention, and affection. At Time 1, the scale assessed prenatal expectations of interference, whereas the postnatal scale assessed perceptions of actual interference. Sample items included, "It is unfair when my baby often receives more attention from my partner than I do," "I resent it when my partner is more affectionate with our baby than s/he is with me," "My partner thinks I am just as important, if not more important, than our baby" (reverse-scored), and "Because of our baby, I get less of my partner's time and attention than I deserve." Participants answered each item on a 7-point scale, from 1 (*not at all like me*) to 7 (*very much like me*). Cronbach alphas ranged from .81 to .88 for men and from .66 to .82 for women. Mean scores were computed such that higher scores denoted more interference by the baby in the romantic relationship.

Baby's interference in outside activities (BIOA). We also developed a 10-item scale for this study to assess the degree to which partners felt bothered or upset that their baby was interfering with their participation in different activities. Activities included hobbies, social life, leisure and/or recreational activities, free time, and going out. Interference with each activity was rated on a 7-point scale, from 1 (*not at all*) to 7 (*a great deal*). At Time 1, the scale assessed prenatal expectations of interference in outside activities. Cronbach alphas ranged from .93 to .95 for men and from .91 to .94 for women. Mean scores were computed such that higher scores indicated feeling more upset at the baby's interference with various activities.

Data Structure

Dyadic growth curve models were tested using multilevel modeling (MLM; Kashy & Donnellan, 2008). In these analyses, we

modeled dyadic interdependence in two ways: as similarity on the average outcome (i.e., by including a correlation between the spouses' intercepts) and as unique similarity at the specific time-points (i.e., by including a correlation between the spouses' time-specific residuals).

Data were also structured for analysis using the actor–partner interdependence model (APIM; Kashy & Kenny, 2000; Kenny, 1996). The APIM specifies that a person's outcome may be a function of the person's own predictor scores (actor effect) and of his or her partner's predictor scores (partner effect). For example, one can test whether depression is higher not only for more anxious people (actor effect) but also for people who have more anxious partners (partner effect). In addition, by including both actor and partner effects in a model, one can examine the predictive value of actor predictors when controlling for variance explained by the partner.

In this data set, we defined Time 0 as the date of birth, and our time variable was scored in months since the child's birth. Although the study had five assessment waves, the exact timing of each assessment varied across couples. Standard deviations for time within each assessment wave ranged from .36 months to 1.23 months. Because Time 0 was set at the child's birth, the intercept indicates depression at birth, and the slope for time represents the degree to which depressive symptoms change each month. Gender was coded as −1 for women and 1 for men. All other predictor variables were centered on their grand means.

Data Analytic Models

Growth curve models estimated initial levels and change trajectories of depressive symptoms over the first 2 years of the transition to parenthood. Moderated growth models of depressive symptoms were examined in two steps—first with, then without, the nonlinear (quadratic) fixed effects of time. These models included fixed effects for attachment (anxiety or avoidance), gender, and the hypothesized moderator (e.g., perceived social support or baby's interference). All interactions were included, resulting in a possible four-way interaction between time, gender, attachment, and the moderator. Initial analyses tested for both linear and nonlinear effects of time, including interactions for each of these two measures of time with other predictor variables. If there were no significant quadratic time effects, quadratic terms were removed from the model. We then conducted further analyses, which included only linear effects of time and their corresponding interaction terms. Only models with significant (and attachment-relevant) interactions are presented. Significant interactions are graphed and interpreted, using 1 SD above and below the grand mean as high and low values for continuous predictors (Aiken & West, 1991).

Although initial analyses contained only the actor effects, APIM analyses were also conducted to test whether significant interactions remained significant when controlling for partner effects. Although this data structure allows partner effects to be tested, we had no specific hypotheses regarding these effects. Further, with so many terms in the model, significant partner effects may be artifacts of the model or be uninterpretable. As such, partner effects were not examined or interpreted. When significant interactions emerged, we added partner predictors and interaction terms to the model to control for partner effects. In the interest of parsimony, we present only the actor-only models in their entirety. However,

we discuss whether the inclusion of partner effects influenced the significance of actor-only interactions.

Results

Preliminary Analyses

Table 1 presents means and standard deviations for the study variables at each assessment wave, separately for men and women. Table 2 presents correlations between the variables assessed at Time 1.

We first examined whether participants who completed the study were different from those who dropped out. Participants were considered dropouts if they did not complete the final assessment wave (Time 5), regardless of when they actually dropped out. Independent-samples t tests were conducted using Time 1 variables (see Table 3). Dropouts reported significantly more negative social exchange and perceived their partners to be less compulsive in their caregiving, compared with nondropouts. Prior to childbirth, dropouts had also been married for a shorter time. Additionally, they were younger, less educated, and lower in household income.

Base Model

The base model examined linear changes in depressive symptoms over time, as moderated by gender (see Table 4). The main effect for gender was significant, as was the interaction between gender and time. As shown in Figure 1, at the time of the child's birth, women were more depressed than were men. However, women significantly decreased over time ($b = -0.07$), $t(392) = -2.31$, $p = .02$, whereas men did not significantly change ($b = 0.04$), $t(337) = 1.44$, $p = .14$.

The base model also contained significant random effects. First, the intercepts for husbands and wives were correlated ($r = .25$, Wald $Z = 5.55$, $p < .001$). Thus, at the time of the baby's birth, partners' depression scores were positively related. Second, there was a significant time-specific correlation of the residuals ($r = -.21$, Wald $Z = 5.08$, $p < .001$). After controlling for the predictors in the model, the two partners' residuals were negatively correlated across the five assessment waves. This negative correlation suggests that after controlling for the effects of gender and time, if one partner was more depressed at a particular time point, the other tended to be less depressed at that time. Third, the slopes for time varied significantly (variance = 0.017, Wald $Z = 2.09$, $p = .04$). This indicates that the effects of time differed across couples.

Anxious Attachment

Perceived social support available from partner (Hypothesis 1). This model predicted depressive symptoms using gender, time, attachment anxiety, and perceived social support, including all interaction terms. As presented in Table 5, the main effects for gender, anxiety, and perceived social support were significant. There was a significant two-way interaction between time and perceived support. There also were two significant three-way interactions with anxiety and social support: one involving gender and another involving time.

Table 1

Means and Standard Deviations of Study Variables Across Time for Men and Women

| | Assessment wave | | | | | | | | | |
| | Prenatal | | 6 months | | 12 months | | 18 months | | 24 months | |
Variable	M	SD	M	SD	M	SD	M	SD	M	SD
Men										
Depressive symptoms	7.78	7.54	7.94	7.32	8.72	8.26	8.34	8.21	8.33	8.83
Attachment anxiety	2.74	0.91	2.59	0.95	2.50	0.86	2.54	0.91	2.50	0.91
Attachment avoidance	2.50	0.92	2.31	0.81	2.34	0.89	2.29	0.86	2.37	0.94
Perceived social support	6.00	0.87	5.91	0.95	5.82	0.99	5.85	0.98	5.75	1.01
Negative social exchange	2.59	1.40	2.67	1.47	2.79	1.65	2.67	1.54	2.66	1.52
Perceived closeness	5.89	1.23	5.58	0.99	5.49	1.29	5.46	1.26	5.38	1.37
Proximal care	6.23	0.78	5.91	1.01	5.88	1.01	5.89	1.06	5.78	1.05
Cooperative care	5.45	1.02	5.24	1.11	5.25	1.14	5.29	1.06	5.19	1.14
Sensitive care	5.38	1.02	5.11	1.21	5.04	1.22	5.24	1.13	5.08	1.19
Compulsive care	4.95	0.93	4.98	0.98	4.96	0.98	4.99	1.13	5.02	1.13
BIRR	2.26	1.04	1.99	1.09	1.97	1.04	1.97	1.09	2.01	1.03
BIOA	3.60	1.44	3.07	1.41	2.90	1.30	2.90	1.35	2.85	1.40
Women										
Depressive symptoms	13.36	8.35	9.63	8.86	9.84	8.68	11.11	10.20	10.44	9.07
Attachment anxiety	3.34	1.06	3.22	1.17	3.03	1.04	3.06	1.13	3.03	1.19
Attachment avoidance	2.35	0.93	2.23	0.96	2.23	0.99	2.34	1.06	2.36	1.14
Perceived social support	6.18	0.79	6.10	0.87	5.96	0.96	5.93	1.00	5.96	0.98
Negative social exchange	2.00	1.08	2.22	1.16	2.28	1.26	2.36	1.33	2.32	1.21
Perceived closeness	5.98	1.08	5.49	1.24	5.33	1.39	5.18	1.38	5.08	1.46
Proximal care	6.17	1.05	6.08	1.08	5.98	1.07	5.97	1.10	5.92	1.11
Cooperative care	5.59	1.06	5.50	1.19	5.35	1.13	5.31	1.26	5.37	1.14
Sensitive care	5.23	1.23	4.90	1.36	4.89	1.37	4.87	1.39	4.81	1.23
Compulsive care	5.40	0.79	5.47	0.94	5.43	0.94	5.38	0.99	5.34	0.99
BIRR	2.41	1.18	1.55	0.81	1.57	0.70	1.54	0.81	1.47	0.70
BIOA	3.35	1.35	2.91	1.46	2.75	1.39	2.77	1.36	2.88	1.41

Note. BIRR = perceptions of the baby's interference in the romantic relationship; BIOA = perceptions of the baby's interference in outside activities.

However, these effects occurred within the context of a significant four-way interaction. Figure 2 illustrates this interaction (see Table 6 for the simple slopes). When highly anxious people perceived less support, women remained at higher levels of depressive symptoms, whereas men became more depressed over time. However, when highly anxious people perceived more support, depressive symptoms decreased over time for both women and men (although the slope was not significant for men). For low anxiety and high support, women were moderately depressed at childbirth but became less depressed over time, whereas men stayed at lower levels of depressive symptoms. The same pattern did not hold for less anxious people who perceived less support.

Table 2

Correlations for Study Variables at Time 1 for Men and Women

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Depression	(.21)	.20	.15	−.20	.39	−.15	−.20	−.25	−.22	−.17	.22	.19
2. Anxiety	.26	(.24)	.18	−.33	.40	−.18	−.40	−.26	−.33	−.28	.28	.16
3. Avoidance	.28	.26	(.18)	−.27	.29	−.29	−.23	−.25	−.23	−.15	.00	.10
4. Perceived support	−.22	−.27	−.53	(.23)	−.65	.37	.66	.49	.60	.13	−.08	−.01
5. Negative exchange	.38	.25	.33	−.45	(.47)	−.28	−.59	−.55	−.55	−.27	.19	.18
6. Closeness (IOS)	−.17	−.09	−.26	.27	−.19	(.44)	.32	.27	.27	−.01	.03	−.03
7. Proximal care	−.27	−.18	−.28	.38	−.33	.28	(.34)	.48	.65	.17	−.20	−.16
8. Cooperative care	−.34	−.35	−.41	.50	−.61	.29	.52	(.29)	.50	.41	−.25	−.17
9. Sensitive care	−.32	−.12	−.41	.56	−.42	.35	.59	.64	(.33)	.20	−.28	−.11
10. Compulsive care	−.14	−.27	−.33	.25	−.32	−.02	.24	.43	.25	(.10)	−.17	−.16
11. BIRR	.22	.31	.05	−.14	.25	−.08	−.35	−.26	−.21	−.08	(.22)	.34
12. BIOA	.04	.14	.23	−.14	.15	−.16	−.16	−.26	−.22	−.17	.29	(.19)

Note. Correlations among variables collected from men (husbands) appear below the diagonal; correlations among variables collected from women (wives) appear above the diagonal. The values on the diagonal (in parentheses) are the correlations between measures collected from each partner (e.g., the correlation between husbands' and wives' perceived social support). Significant correlations are larger than .14 ($p < .05$), .18 ($p < .01$), and .24 ($p < .001$). BIRR = perceptions of the baby's interference in the romantic relationship; BIOA = perceptions of the baby's interference in outside activities; IOS = Inclusion of Other in the Self Scale.

Table 3

Differences Between Completers and Dropouts on Phase 1 Study Variables

| | Completers | | Dropouts | | |
Variable	M	SD	M	SD	t
Depressive symptoms	10.17	8.19	11.77	8.95	1.65
Attachment anxiety	3.02	1.02	3.11	1.08	0.80
Attachment avoidance	2.39	0.93	2.50	0.91	1.03
Perceived social support	6.12	0.78	6.01	0.97	1.11
Negative social exchange	2.20	1.12	2.57	1.60	2.54*
Perceived closeness	5.93	1.12	5.95	1.24	0.15
Proximal care	6.23	0.85	6.12	1.08	1.00
Cooperative care	5.54	1.02	5.46	1.11	0.71
Sensitive care	5.30	1.09	5.31	1.24	0.12
Compulsive care	5.23	0.86	5.03	0.97	1.99*
BIRR	2.40	1.08	2.16	1.19	1.92
BIOA	3.52	1.38	3.36	1.46	0.99
Marriage length (years)	3.45	2.55	2.73	2.73	2.32*
Age (years)	28.09	4.21	26.11	4.27	4.09***
Level of education	4.96	1.16	4.10	1.53	5.92***
Household income	3.41	1.67	2.82	1.46	3.18**

Note. Level of education was rated on the following 7-point scale: 1 (*no high school diploma or GED*), 2 (*high school diploma or GED*), 3 (*some college or technical school, but no degree*), 4 (*2-year degree*), 5 (*4-year degree*), 6 (*master's degree*), or 7 (*doctoral degree*). Household income was rated on the following 7-point scale: 1 (*under $25,000*), 2 (*$25,000 to $39,999*), 3 (*$40,000 to $54,999*), 4 (*$55,000 to $69,999*), 5 (*$70,000 to $84,999*), 6 (*$85,000 to $99,999*), or 7 (*over $100,000*). BIRR = perceptions of the baby's interference in the romantic relationship; BIOA = perceptions of the baby's interference in outside activities.
* $p < .05$. ** $p < .01$. *** $p < .001$.

When anxiety and perceived support were both low, depressive symptoms decreased over time for men, but remained somewhat higher for women.

A parallel analysis was conducted, substituting avoidance for anxiety. There were no significant interactions involving avoidance and perceived support.

Negative social exchange received (Hypothesis 2). This model predicted depressive symptoms with gender, time, attachment anxiety, and negative social exchange received, including all interaction terms. As shown in Table 5, the main effects for gender, anxiety, and negative social exchange were significant. There was also a significant two-way interaction between gender and time.

Table 4

Gender Differences in Changes in Depression for the Base Model

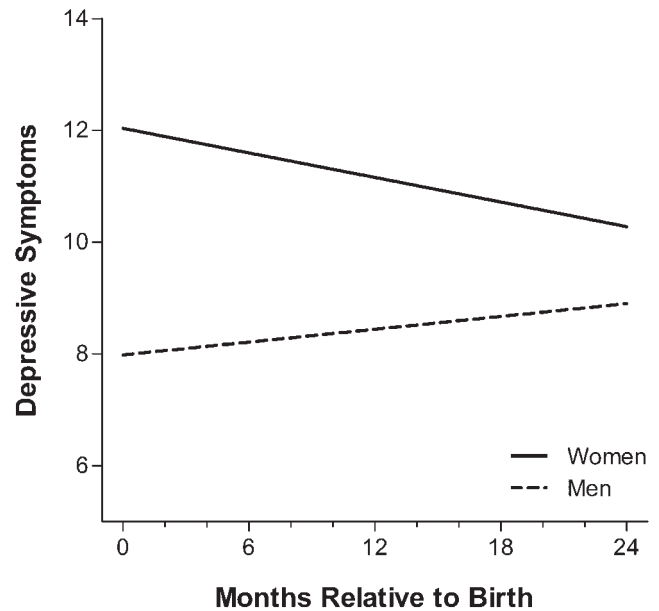| Fixed effects	b	t
Intercept	10.008	24.51***
Gender	−2.028	−6.62***
Time	−0.018	−0.85
Gender × Time	0.056	2.67**
Growth equations		
Men		$\hat{Y} = 7.98 + .04 \times \text{Time}$
Women		$\hat{Y} = 12.04 - .07 \times \text{Time}$

** $p < .01$. *** $p < .001$.

Figure 1. Linear changes in depression over time for men and women.

A significant four-way interaction indicated that gender, anxiety, and negative exchange moderated changes in depressive symptoms across time (see Figure 3 and Table 6 for simple slopes). When anxiety and negative exchange were both high, women began the transition at higher depressive symptom levels and remained higher. Men became more depressed over time, reaching women's symptom levels after 2 years. However, when highly anxious people received less negativity from their partners, they remained stable at lower depressive symptom levels, with women slightly more depressed than men. For low anxiety and low negative exchange, depressive symptoms decreased over time for women, whereas men were low throughout the transition. When receiving more negative exchange, less anxious individuals remained stable at their pre-birth depressive symptom levels, with women reporting more symptoms than men did.

A parallel analysis was conducted, with avoidance in place of anxiety. No significant interactions emerged between avoidance and negative exchange received.

Exploratory analyses of social support and negative social exchange. As shown in Figures 2 and 3, men who were anxious and perceived lower levels of social support or higher levels of negative social exchange from their partners became more depressed over time, ultimately reaching the depression levels of their female partners. One possibility for this upward trend for men is that their interactions with their wives gradually became depressogenic. To explore this possibility, analyses were conducted to determine whether support or negative exchanges directed at anxious men changed over time. In an analysis of negative social exchange directed toward partners, results revealed a significant three-way interaction between gender, anxiety, and the quadratic effect of time ($b = -.0007$), $t(1044) = -2.30$, $p = .02$. This interaction showed that women reported that they directed increasing levels of negative social

Table 5

Depression as a Function of Attachment Anxiety Moderated by Either Perceived Social Support or Negative Social Exchange

	Moderator			
	Perceived support		Negative exchange	
Fixed effects	b	t	b	t
Intercept	10.108	25.89***	10.069	25.01***
Gender	−1.394	−4.24***	−2.091	−5.99***
Time	−0.032	−1.53	−0.028	−1.33
Anxiety	1.482	4.84***	1.071	3.46**
Moderator	−1.249	−3.17**	1.619	5.35***
Gender × Time	0.036	1.61	0.055	2.42*
Gender × Anxiety	0.166	0.54	0.238	0.77
Gender × Moderator	−0.295	−0.75	−0.048	−0.16
Time × Anxiety	0.016	0.77	0.026	1.34
Time × Moderator	−0.058	−2.46*	0.034	1.90
Anxiety × Moderator	0.355	1.26	0.213	1.02
Gender × Time × Anxiety	0.019	0.96	0.015	0.73
Gender × Time × Moderator	0.027	1.14	−0.008	−0.45
Gender × Anxiety × Moderator	1.358	4.81***	−0.355	−1.73
Time × Anxiety × Moderator	−0.047	−2.67**	0.008	0.66
Gender × Time × Anxiety × Moderator	−0.071	−3.95***	0.033	2.61**

Note. For gender, 1 = men, and −1 = women.
* $p < .05.$ ** $p < .01.$ *** $p < .001.$

exchange toward their anxious male partners over the course of the transition, particularly during the second year. The same was not true for women with less anxious partners or for men with more anxious partners.

Perceived closeness to the partner (Hypothesis 3). This model used gender, anxiety, and perceived closeness to predict nonlinear changes in depressive symptoms over time (see Table 7). Significant main effects emerged for gender, anxiety, and perceived closeness. There were two significant two-way interactions with gender: one with the linear effect of time and another with the quadratic effect of time.

There also were two significant three-way interactions involving anxiety, perceived closeness, and time (linear and nonlinear terms; see Table 8 for tests of simple slopes). These interactions were driven by individuals low in anxiety and high in closeness. These individuals were relatively low in depression at birth. Their depression levels dropped quickly across their first year as parents, then stabilized (or perhaps increased slightly) as time passed.

A parallel analysis was conducted, substituting avoidance for anxiety. There were no significant interactions involving avoidance and perceived closeness.

Partner's caregiving style (Hypothesis 4). In these four models, we predicted temporal changes in depressive symptoms from gender, anxiety, and each of the four caregiving styles (proximal, sensitive, cooperative, and compulsive). The proximal care model was the only one that revealed significant attachment-related interactions with anxiety. As shown in Table 7, there were significant main effects for gender, anxiety, and proximal care. The model also revealed four two-way interactions. Gender significantly interacted with time (linear and quadratic) and with proximal care, and there was an interaction between anxiety and proximal care.

There were two significant three-way interactions with anxiety and proximal care, one with the linear and one with the quadratic effect of time. Tests of simple slopes are displayed in Table 8. The pattern of results for this model was consistent with those described for closeness with the partner. When anxiety was low and proximal care was high, depression levels dropped quickly in the first year but increased somewhat during the second year.

When we conducted parallel analyses with avoidance and the four caregiving styles, several significant effects were found, including proximal care (see below).

Avoidant Attachment

Baby's interference in the romantic relationship (Hypothesis 5). This model predicted depressive symptoms with gender, avoidance, BIRR, and the nonlinear time effect. As shown in Table 9, the main effects for gender, avoidance, and BIRR were significant. Additionally, both two-way interactions between gender and time (linear and nonlinear) were significant.

There were two significant three-way interactions with avoidance and BIRR: one with the linear and one with the quadratic effect of time. Figure 4 shows the nonlinear interaction, with tests of simple slopes displayed in Table 10. Higher avoidance and greater BIRR predicted the most depressive symptoms at the child's birth, along with a rapid increase in symptoms from 12 months to 24 months. Lower avoidance and greater BIRR were associated with overall lower symptom levels, including a significant decline in symptom levels across time. When perceptions of BIRR were low, highly avoidant persons reported somewhat higher depressive symptoms than less avoidant persons did, particularly during the middle of the transition.
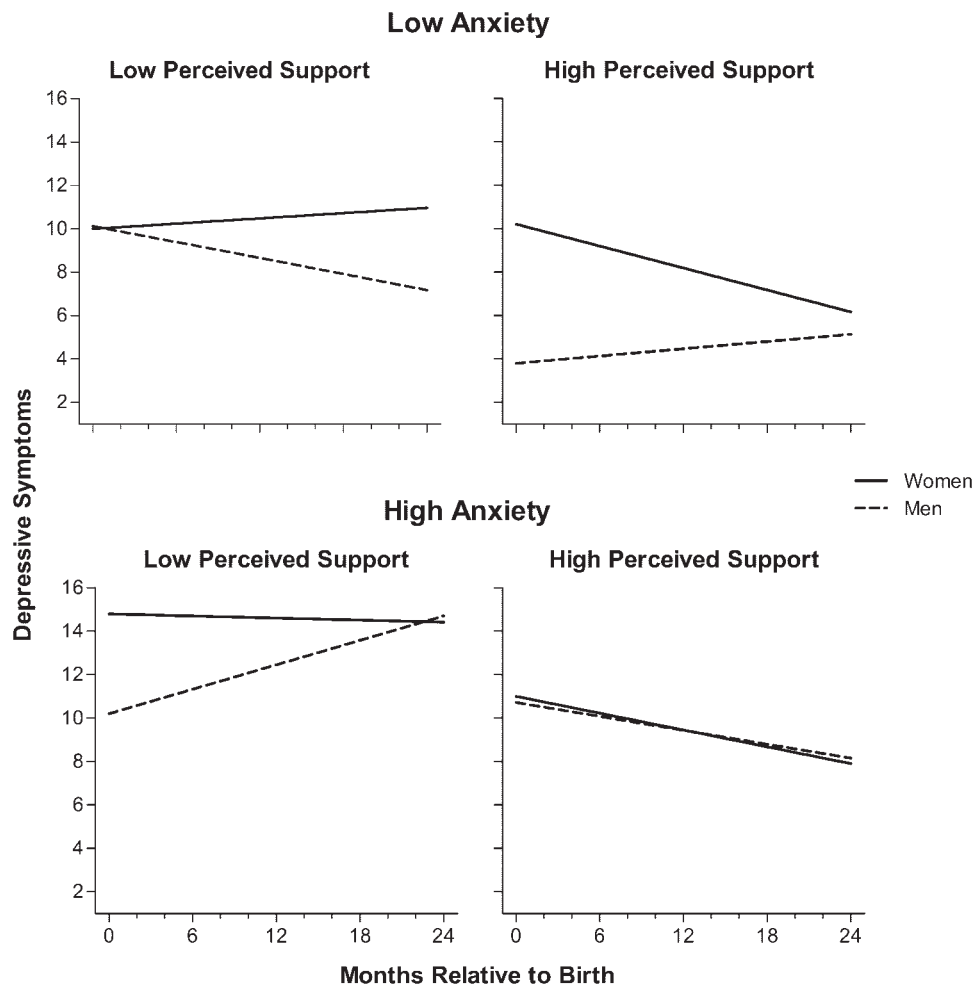
Figure 2. Linear changes in depression over time by gender, anxiety, and perceived social support.

We also conducted a parallel analysis, replacing avoidance with anxiety. It revealed no significant interactions involving anxiety and BIRR.

Baby's interference in outside activities (Hypothesis 6). This model predicted nonlinear changes in depressive symptoms over time, moderated by gender, avoidance, and BIOA (see Table 9). There were significant main effects for gender, avoidance, and BIOA. In addition, there were five significant two-way interactions: gender with time (linear and quadratic), gender with BIOA, and BIOA with time (linear and quadratic). There were also two significant three-way interactions, one of which involved gender, BIOA, and the nonlinear time effect.

The other three-way interaction involved avoidance, BIOA, and the nonlinear time effect. Because this interaction included avoidance, we explored it further (see Figure 5 and Table 10 for simple slopes). When BIOA was high, more avoidant persons reported more depressive symptoms than less avoidant persons reported. Over time, however, more avoidant persons moved nonsignificantly toward higher levels of symptoms, whereas less avoidant individuals moved nonsignificantly toward lower levels. When baby interference was low, more avoidant persons reported slightly more symptoms than did low avoidant persons, with low avoidant

persons also reporting a significant decline in symptom levels across the transition.

When we substituted anxiety for avoidance, no significant interactions involving anxiety and BIOA were found.

Partner's caregiving styles (Hypothesis 7). These four models examined temporal changes in depressive symptoms, moderated by gender, avoidance, and each of the four caregiving styles. Only two caregiving styles revealed significant attachment effects: cooperative care and proximal care.

In the cooperative care model, there were significant main effects for gender, avoidance, and cooperative care (see Table 9). There were also four significant two-way interactions: two between gender and time (linear and quadratic) and two between cooperative care and time (linear and quadratic). However, the model also revealed a significant three-way interaction involving avoidance, cooperative care, and the quadratic effect of time. This interaction is illustrated in Figure 6, and simple slopes are reported in Table 10. Among highly avoidant people who received less cooperative (more controlling) care, depressive symptoms started higher and increased slightly after 12 months. Among less avoidant individuals who received less cooperative care, depressive symptoms were somewhat lower at

Table 6
Simple Slopes for Four-Way Interactions With Anxiety and Perceived Social Support and With Anxiety and Negative Social Exchange

| | Low anxiety | | | | | | | | High anxiety | | | | | | | |
| | Low perceived support | | High perceived support | | Low negative exchange | | High negative exchange | | Low perceived support | | High perceived support | | Low negative exchange | | High negative exchange | |
Measure	b	t	b	t	b	t	b	t	b	t	b	t	b	t	b	t
Men																
Intercept	10.129	11.96***	3.804	5.36***	4.185	5.84***	8.996	11.70***	10.204	13.40***	10.717	11.37***	7.383	7.15***	11.348	15.60***
Slope for time	−0.123	−2.30*	0.056	1.28	0.009	0.21	−0.043	−0.92	0.188	4.07***	−0.107	−1.49	−0.028	−0.40	0.167	3.76***
Women																
Intercept	10.003	6.53***	10.210	10.61***	9.789	9.98***	12.765	7.07***	14.796	18.39***	11.000	14.09***	9.873	12.53***	16.215	18.51***
Slope for time	0.040	0.47	−0.168	−2.80*	−0.191	−3.13**	0.000	0.00	−0.016	−0.32	−0.129	−2.50*	−0.092	−1.71	−0.049	−0.88

$* p < .05.$ $** p < .01.$ $*** p < .001.$

the child's birth and remained constant across the transition. When cooperative care was high, individuals reported fewer depressive symptoms, both at birth and at 24 months, regardless of their avoidance level. However, more avoidant individuals became slightly more depressed during the first 8 months. After 12 months, their depressive symptoms began to decline. For less anxious people, symptom levels did not significantly change across the transition.

There were also significant effects involving avoidance and proximal care. As displayed in Table 11, the proximal care model had three significant main effects: gender, avoidance, and proximal care. There were also three significant two-way interactions. Similar to the base model, gender and time yielded a significant interaction. Additionally, the interaction between avoidance and time was significant. However, our primary interest was the interaction between avoidance and proximal care (illustrated in Figure 7). Highly avoidant individuals reported fewer depressive symptoms when they received more proximal care from their partners ($b = -2.09$), $t(955) = -5.30$, $p < .001$. Less avoidant individuals, in contrast, reported fewer depressive symptoms, regardless of how much proximal care they received ($b = -0.66$), $t(1123) = -1.37$, $p = .17$. As discussed previously, parallel analyses for anxiety revealed a significant effect for proximal care.

Actor–Partner Models

All of the above models were reanalyzed to control for possible partner effects. All of the interaction effects remained significant at the .05 level, with the exception of one. The interaction between avoidance, BIOA, and the nonlinear time effect approached significance ($p = .07$) when controlling for partner effects.

Discussion

This study produced four principal findings. First, the association between anxious attachment and depressive symptoms was moderated by factors related to the romantic relationship. Second, the association between avoidant attachment and depressive symptoms was moderated by factors relevant to childcare. Third, perceived styles of caregiving received from romantic partners affected depressive symptoms differently in anxious and avoidant persons. Fourth, in certain predictable circumstances, depressive symptoms either persisted at higher levels or increased to higher levels across the 2 years of the transition to parenthood. Thus, the unique difficulties associated with the transition to parenthood for anxious and avoidant individuals outlast the immediate stresses encountered during the first few months of this major life transition.

Findings Associated With Anxious Attachment

The chronic fears of abandonment that characterize anxious individuals suggest that depressive symptoms should be moderated by variables tied to relationship functioning across the transition to parenthood. For this study, we identified three relationship variables as central moderators of this association: perceived partner support, perceptions of negative social exchange with the partner, and perceptions of closeness to the
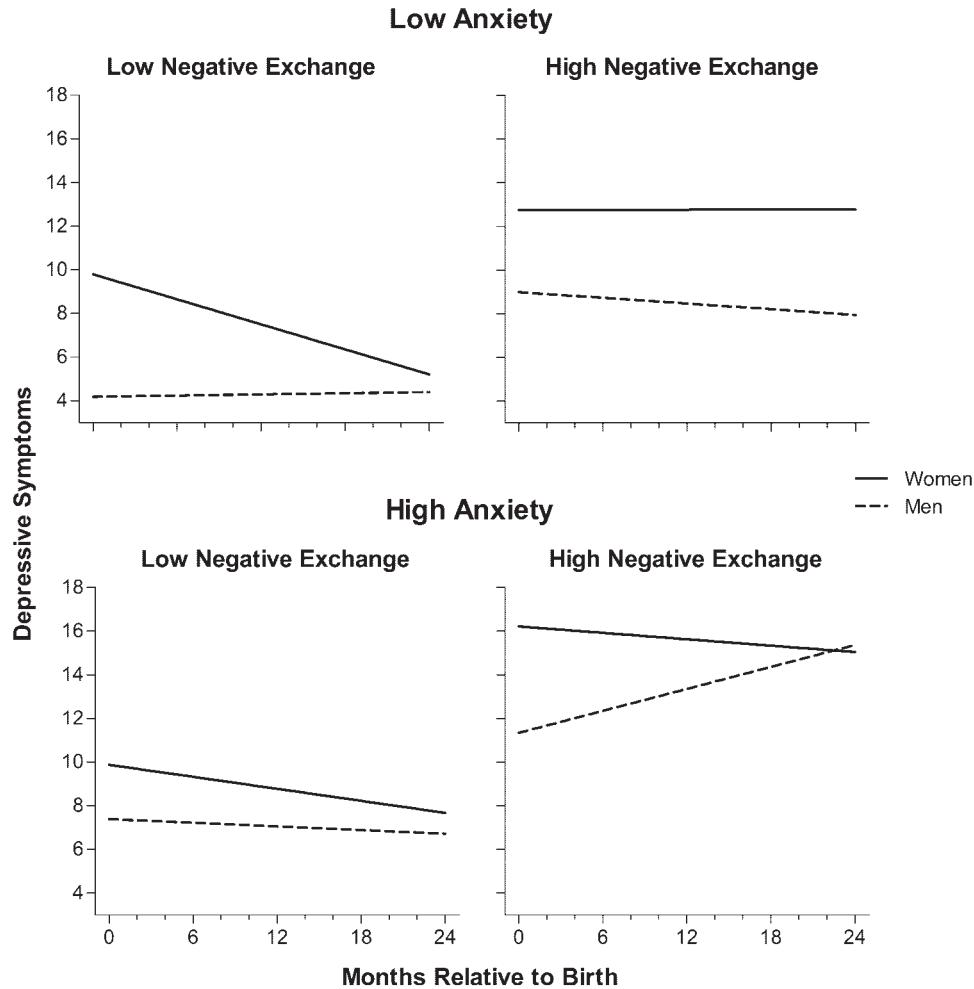
Low Anxiety

Figure 3. Linear changes in depression over time by gender, anxiety, and negative social exchange received.

partner. The perceived likelihood of physical or emotional abandonment should be greater among anxious people when they believe that their partner is unwilling to provide support, when they perceive they are the targets of anger or other negative reactions from their partner, or when they believe their relationship is less close. Although these three moderators appear different on the surface, each of them should make fears of abandonment more salient, especially among persons who harbor chronic concerns about abandonment.

As hypothesized, the analysis testing perceptions of partner support as a moderator indicated that anxious women started the transition to parenthood with higher levels of depressive symptoms, and they remained more symptomatic throughout the study if they perceived less partner support. Anxious men who perceived less partner support reported greater symptom levels as the transition progressed, reaching levels comparable with anxious women at approximately 2 years postpartum. Anxious women and men who perceived greater partner support began the transition at somewhat lower symptom levels and declined to even lower levels across the study. This difference suggests that perceptions of inadequate partner support may be depres-

sogenic for anxious individuals. The symptom levels of more and less anxious individuals who perceived greater partner support were lower overall than those of people who perceived less partner support and tended to remain so or decline even more over time.

The upward trend for depressive symptoms among anxious men who perceived less partner support could result from several factors. At the beginning of the transition, most women are quite stressed due to the strains of giving birth and providing early childcare. As such, men may not expect partner support or may "discount" the lack of it, attenuating or forestalling their depressive symptoms. Alternatively, stress levels among men may be lower than those for women because the biological and childcare stresses fall more on their partners. However, men and women should experience more similar stress levels as they move further into the transition and more is expected of men. As stress grows for men, the impact of perceiving lower levels of partner support may generate higher levels of depressive symptoms. Finally, increases in symptom levels may stem from a decline in the amount of support that women provide to their partners. Consistent with this explana-

Table 7

Depression as a Function of Attachment Anxiety Moderated by Perceived Closeness With Partner and Proximal Care

	Moderator			
	Perceived closeness		Proximal care	
Fixed effects	b	t	b	t
Intercept	10.348	23.74***	10.072	23.08***
Gender	−1.912	−5.12***	−1.801	−4.63***
Time	−0.108	−1.82	−0.078	−1.24
Time^2	0.003	1.44	0.002	0.94
Anxiety	1.432	4.14***	1.202	3.48**
Moderator	−0.730	−2.37*	−0.945	−2.15*
Gender × Time	0.250	3.66***	0.195	2.70**
Gender × Time^2	−0.008	−2.88**	−0.007	−2.41*
Gender × Anxiety	0.081	0.24	0.214	0.62
Gender × Moderator	−0.342	−1.11	−0.887	−2.03*
Time × Anxiety	0.042	0.70	0.044	0.71
Time × Moderator	−0.078	−1.59	−0.090	−1.26
Time^2 × Anxiety	−0.001	−0.35	−0.001	−0.54
Time^2 × Moderator	0.002	0.90	0.002	0.88
Anxiety × Moderator	−0.421	−1.54	−0.951	−3.10**
Gender × Time × Anxiety	0.062	1.01	0.039	0.60
Gender × Time × Moderator	0.056	1.08	0.127	1.70
Gender × Time^2 × Anxiety	−0.001	−0.48	−0.001	−0.42
Gender × Time^2 × Moderator	−0.002	−1.17	−0.004	−1.37
Gender × Anxiety × Moderator	0.448	1.63	0.090	0.29
Time × Anxiety × Moderator	0.111	2.35*	0.172	3.13**
Time^2 × Anxiety × Moderator	−0.005	−2.71**	−0.007	−3.23**
Gender × Time × Anxiety × Moderator	0.018	0.39	−0.028	−0.50
Gender × Time^2 × Anxiety × Moderator	−0.001	−0.74	0.0003	0.14

Note. For gender, 1 = men, and −1 = women.
* $p < .05$. ** $p < .01$. *** $p < .001$.

tion, Simpson et al. (2003) found that partners of more anxious individuals reported providing less support to them 6 months into the transition than at the beginning. Declines in actual support could result from several factors, including accumulating stress, declining marital satisfaction, or excessive dependency (Shaver, Schachner, & Mikulincer, 2005).

The findings for negative social exchange were similar to those for perceived partner support. When anxious people perceived more negative social exchanges with their partners, they reported elevated depressive symptoms at the beginning of the transition,

and they remained high in symptom levels across the entire study. Men began the transition at lower symptom levels than did women but increased significantly over time, reaching women's symptom levels near the end of the study. Anxious individuals who perceived less negativity started the transition at lower levels of depressive symptoms and remained comparatively low throughout the transition.

The significant increase in depressive symptoms among more anxious men who perceived greater partner negativity could be the result of factors similar to those discussed above in connection

Table 8

Simple Slopes for Three-Way Interaction With Anxiety and Perceived Closeness With Partner

	Low closeness		High closeness		Low proximal care		High proximal care	
Anxiety	b	t	b	t	b	t	b	t
Low anxiety								
Intercept	9.196	9.24***	8.461	12.90***	8.732	7.91***	8.863	12.87***
Slope for time	0.100	0.68	−0.407	−3.66***	0.157	0.91	−0.407	−3.63***
Slope for time^2	−0.005	−0.88	0.013	2.89**	−0.006	−1.00	0.014	3.11**
High anxiety								
Intercept	13.388	16.61***	10.346	15.95***	13.370	20.16***	9.325	13.97***
Slope for time	−0.114	−0.93	−0.013	−0.11	−0.129	−1.22	0.064	0.50
Slope for time^2	0.007	1.52	−0.002	−0.42	0.006	1.50	−0.004	−0.76

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 9

Depression as a Function of Avoidance, Moderated by Baby's Interference With Romantic Relationship, Interference in Outside Activities, and Cooperative Care

	Moderator					
	BIRR		BIOA		Cooperative care	
Fixed effects	b	t	b	t	b	t
Intercept	9.705	23.45***	9.972	24.39***	10.406	25.38***
Gender	−2.511	−7.45***	−2.443	−7.35***	−2.615	−7.72***
Time	−0.001	−0.01	−0.048	−0.84	−0.113	−1.94
Time^2	0.0004	0.15	0.002	0.77	0.003	1.22
Avoidance	1.244	3.43**	1.357	3.62***	1.150	3.13**
Moderator	1.214	4.20***	0.520	2.26*	−1.753	−5.45***
Gender × Time	0.215	3.29**	0.204	3.20**	0.246	3.76***
Gender × Time^2	−0.008	−2.82**	−0.007	−2.63**	−0.008	−3.09**
Gender × Avoidance	0.448	1.25	0.526	1.42	0.365	1.00
Gender × Moderator	−0.154	−0.54	−0.506	−2.20*	0.138	0.43
Time × Avoidance	0.056	0.83	0.049	0.75	0.123	1.84
Time × Moderator	−0.008	−0.13	0.106	2.48*	0.133	2.34*
Time^2 × Avoidance	0.001	0.48	0.001	0.40	−0.003	−1.20
Time^2 × Moderator	0.001	0.44	−0.003	−1.98*	−0.006	−2.62**
Avoidance × Moderator	0.536	1.78	0.259	1.08	−0.223	−0.70
Gender × Time × Avoidance	−0.001	−0.01	−0.097	−1.49	−0.033	−0.49
Gender × Time × Moderator	0.037	0.57	0.080	1.84	−0.037	−0.63
Gender × Time^2 × Avoidance	−0.001	−0.31	0.005	1.77	0.001	0.46
Gender × Time^2 × Moderator	−0.001	−0.32	−0.004	−2.11*	0.001	0.43
Gender × Avoidance × Moderator	0.246	0.82	−0.033	−0.14	0.401	1.25
Time × Avoidance × Moderator	−0.268	−3.98***	−0.079	−1.75	0.102	1.81
Time^2 × Avoidance × Moderator	0.013	4.26***	0.004	2.23*	−0.005	−2.27*
Gender × Time × Avoidance × Moderator	0.040	0.60	0.028	0.62	−0.054	−0.97
Gender × Time^2 × Avoidance × Moderator	−0.004	−1.26	−0.001	−0.65	0.002	0.85

Note. For gender, 1 = men, and −1 = women. BIRR = perceptions of the baby's interference in the romantic relationship; BIOA = perceptions of the baby's interference in outside activities.
* $p < .05$.   ** $p < .01$.   *** $p < .001$.

with the growth of symptoms among men who perceived less partner support. At the beginning of the transition, men may have been less affected by their partners' negativity because they attributed their partners' behavior to the stress of childbirth and early childcare. Over time, men may have responded more strongly to negative social exchanges with their partners. Increased stress, resulting from growing expectations for childcare, may have rendered them more vulnerable to their partners' negative behavior. In addition, given the accumulative effects of stress, some of which may have resulted from some men not fully participating in childcare responsibilities, women's actual negative behavior toward their partners may have increased over the course of the transition. Consistent with this, our exploratory analysis of negative social exchange showed that women reported that they behaved more negatively toward their anxious male partners as the transition progressed.

The findings for anxious attachment and both perceived partner support and negative social exchange partially replicate previous research. Simpson et al. (2003) found that between birth and 6 months postpartum, highly anxious women who perceived less support or more negativity from their partners experienced more intense depressive symptoms. The results reported here provide greater confidence in the importance of these two moderators. It is important that Simpson et al. (2003) did not address men's depressive symptoms or effects of the moderator variables beyond

the first 6 months of the transition. As discussed earlier, for men, connections between attachment insecurity and depressive symptoms should be stronger at later stages of the transition, once the permanent demands and responsibilities of parenthood really begin to sink in for them. The Simpson et al. (2003) study was short-term, ending at 6 months postpartum—well before effects for men should have emerged.

The analysis of perceived closeness revealed that more anxiously attached individuals who perceived less closeness reported more depressive symptoms at both the beginning and end of the study, compared with more anxious individuals who perceived more closeness. These findings are consistent with the results for perceptions of partner support and negativity. They show that, among anxious people, feeling less close to one's partner predicts more depressive symptoms. In contrast to more anxious individuals, less anxious people reported fewer depressive symptoms, with those perceiving more closeness also reporting a significant decline in depressive symptoms from the beginning to the middle of the study (i.e., 1 year postpartum).

Although perceptions of partner closeness, support, and negative social exchange are different constructs, according to Bowlby (1980) they should have similar effects on anxious individuals. Each construct should activate underlying fears of abandonment in anxious individuals. The activation of this fear
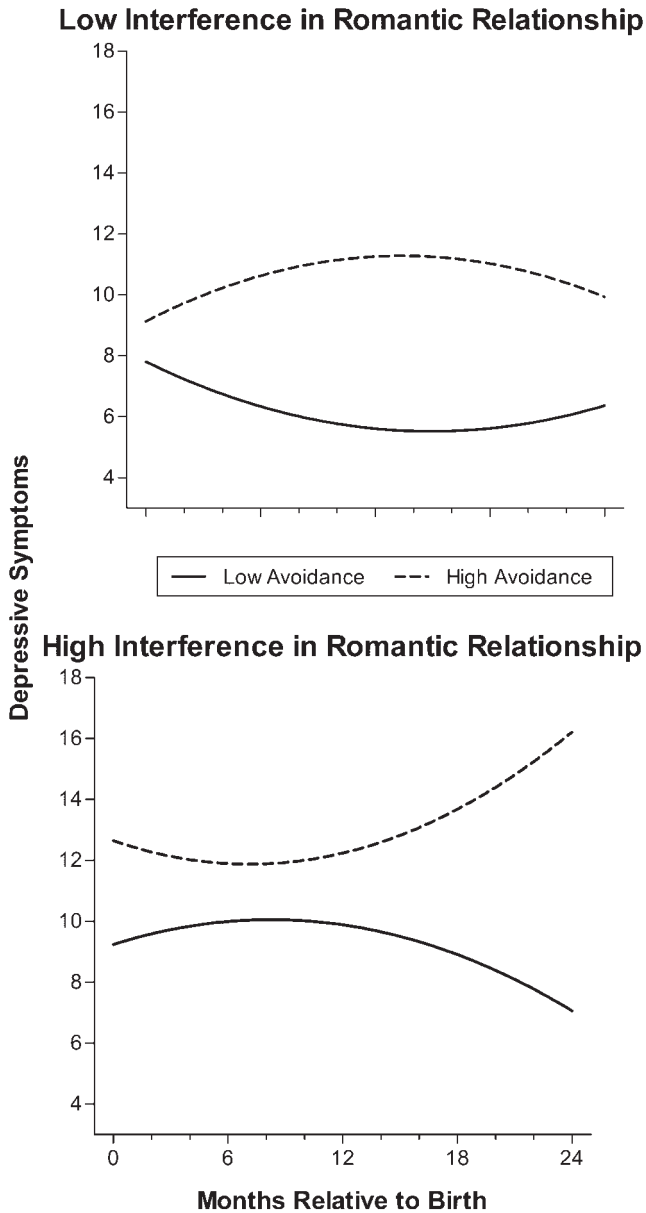
Figure 4. Nonlinear changes in depression over time by avoidance and baby's interference in the romantic relationship.

could increase depressive symptoms through two pathways. First, chronically activated fears and worries about abandonment should generate stress with which anxious people cope more poorly. Anxious people tend to engage in more mental rumination, which could play a key role in the development of depressive symptoms (Burnette, Davis, Green, Worthington, & Bradfield, 2009; Saffrey & Ehrenberg, 2007). The well-established association between rumination and depression (Nolen-Hoeksema, 1991; Rood, Roelofs, Bogels, Nolen-Hoeksema, & Schouten, 2009) suggests that anxious persons are likely to develop depressive symptoms because they ruminate about the lack of closeness or support or about negative interactions with their partners. These perceptions may trigger increased fears of abandonment.

In the second pathway, working models are divided into models of the self and models of others (Bowlby, 1973). Perceptions of attachment figures as untrustworthy and lacking commitment are critical to the model of others, and they should generate increased fears and concerns about possible abandonment. Perceptions of the self as unworthy of love and care are central to the anxious model of the self. Any perceived behavior by partners that elevates concerns about trustworthiness and abandonment is likely to increase the salience of both the self and the other working models (Simpson & Rholes, 1994). Increasing the salience of the model of the self among highly anxious persons means making salient negative views of the self, including lower self-esteem, and making lower self-esteem and other negative views of the self more salient may contribute to greater depressive symptoms (Roberts, Gotlib, & Kassel, 1996).

Findings Associated With Avoidant Attachment

The moderators of the relation between avoidance and depression should be very different from those that moderate the anxiety–depression link. Given that avoidant people are most concerned about avoiding dependence on relationship partners, it is not surprising that none of the variables that predicted depressive symptoms for participants scoring high on anxiety were significant for avoidance. In this study, avoidant persons were not more depressed when they perceived less partner support, less closeness, or more partner negativity. These findings suggest that the variables that trigger depressive symptoms in highly avoidant persons during the transition to parenthood are not associated with stress resulting from their romantic relationship. Instead, aspects of the parental role moderate the avoidance–depression link. This is not surprising, given that highly avoidant people fear being subjected to the pressures of becoming long-term caretakers (Bowlby, 1979).

In this study, we focused on two moderators of this effect. One moderator involved perceptions that the child was interfering with one's freedom to pursue outside activities, such as hobbies, social life, going out, and having sufficient free-time. Avoidant people who perceived greater interference of this type started the transition with more depressive symptoms than did those who perceived less interference, and this difference was maintained across the 2-year transition period. In contrast, less avoidant individuals began the transition with fewer depressive symptoms and either maintained lower levels or reported significant declines to even lower levels. These findings confirm that perceptions of baby interference are likely to play a pivotal role in generating depressive symptoms in avoidant persons. They are also consistent with previous studies showing that more avoidant people are less certain they want to become parents, are more distressed when parenting young children, and find childcare less satisfying (Rholes et al., 1995; Rholes et al., 2006).

The second hypothesized moderator was the perceptions of the baby's interference with the romantic relationship. This measure assessed the degree to which participants believed that they (a) were deprived of time with their partner because of their child and (b) were less important to their partner than their child. The findings for baby's interference with the romantic relationship revealed strong effects on depressive symptoms. Avoidant people who perceived greater romantic interference began the transition

Table 10

Simple Slopes for Three-Way Interaction With Avoidance and Baby's Interference in the Romantic Relationship, Interference in Outside Activities, and With Cooperative Care

	Low BIRR		High BIRR		Low BIOA		High BIOA		Low cooperative care		High cooperative care	
Avoidance	b	t	b	t	b	t	b	t	b	t	b	t
Low avoidance												
Intercept	7.804	10.19***	9.240	15.10***	8.296	11.06***	9.067	13.95***	11.048	12.34***	7.576	12.28***
Slope for time	−0.306	−2.55*	0.199	1.48	−0.350	−3.05**	0.162	1.35	−0.272	−1.88	−0.189	−1.92
Slope for time^2	0.010	2.23*	−0.012	−2.01*	0.011	2.51*	−0.009	−1.87	0.007	1.32	0.005	1.19
High avoidance												
Intercept	9.130	12.08***	12.647	22.38***	10.182	12.12***	12.344	21.71***	13.713	21.19***	9.287	12.49***
Slope for time	0.321	2.54*	−0.217	−1.75	−0.045	−0.33	0.042	0.40	−0.255	−2.53*	0.263	1.85
Slope for time^2	−0.012	−2.37*	0.015	2.68**	0.002	0.42	0.003	0.74	0.012	3.00**	−0.012	−2.05*

Note. BIRR = perceptions of the baby's interference in the romantic relationship; BIOA = perceptions of the baby's interference in outside activities.
* $p < .05$. ** $p < .01$. *** $p < .001$.

with more depressive symptoms than did those who perceived less interference. Over time, these two groups showed disparate patterns of development. Individuals who perceived more romantic interference experienced significantly more depressive symptoms over time, whereas those who perceived less interference experienced decreased symptoms. Regardless of their perceptions of interference, less avoidant people began the transition with fewer depressive symptoms than did more avoidant people, and they reported significant decreases in depressive symptoms at the end of the study.

Given the wealth of studies showing that avoidant persons seek psychological independence from their partners (see Mikulincer & Shaver, 2007), this effect may seem paradoxical. However, one must view these results within the complexity of close relationships. Close relationships serve many purposes, attachment security being only one. Weiss (1998) claimed that most relationships have two primary bases: attachment and affiliation. The affiliative component, which may be the only constituent of some close relationships, is further divided into friendships, work relationships, and kin relationships. The friendship component of affiliative relationships is most relevant to the present study. According to Weiss (1998), friendships provide reassurance of worth, the opportunity to share one's thoughts, play, companionship, and alliance against outsiders. Our baby interference measure did not assess the attachment and security components of relationships. Instead, it focused on affiliative aspects (e.g., the amount of attention from the partner, reassurance of worth by the partner). Because avoidant people minimize the importance of the attachment aspects of their relationships, the affiliative aspects may be particularly important to them. Accordingly, it may be especially troubling to avoidant persons to perceive that their child is interfering with this important facet of their romantic relationship. As a result, perceived interference with the affiliative aspects of the relationships of avoidant persons may explain why they develop depressive symptoms.

Findings Associated With Caregiving Style

In the present study, we also examined moderation of depressive symptoms by caregiving factors that may mitigate the onset of symptoms. We hypothesized that people who have different attachment orientations would respond best to different forms of partner caregiving. The caregiving style measure used in this study (which was adapted from Kunce & Shaver, 1994) assessed four styles. One style emphasizes the physical closeness and psychological intimacy of the caregiver. The second style emphasizes the ability of the caregiver to read signals of the need for care sensitively. The third emphasizes respect for the careseeker's autonomy and the need to allow him and/or her to solve his or her own problems. The fourth style addresses excessive involvement and intrusiveness on the part of caregivers.

We predicted that anxious individuals would respond more favorably to greater proximal care, which emphasizes physical and psychological proximity. We anticipated this form of caregiving would be effective because it is consistent with a primary goal of anxious individuals—to be closely connected to their attachment figures. As expected, anxious individuals who perceived more proximal care began and ended the study with fewer depressive symptoms than did highly anxious individuals who perceived less proximal care, and there was no significant change in symptom levels across time. Less anxious individuals had fewer depressive symptoms than highly anxious individuals, regardless of whether they perceived higher or lower proximal care.

We also predicted that avoidant persons would respond more positively to cooperative care, which respects their autonomy and efforts to solve their problems themselves. We expected that this form of caregiving would be particularly effective because it minimizes the dependency of the help seeker on the help giver—something that should make avoidant people feel more comfortable. The results were consistent with these expectations. Avoidant people were somewhat "protected" from depressive symptoms when they perceived that their partners were providing more cooperative care. Avoidant people who perceived less cooperative care began the transition with more depressive symptoms and then reported a significant upward trend in symptom levels, particularly during the latter half of the transition period. Avoidant people who reported receiving
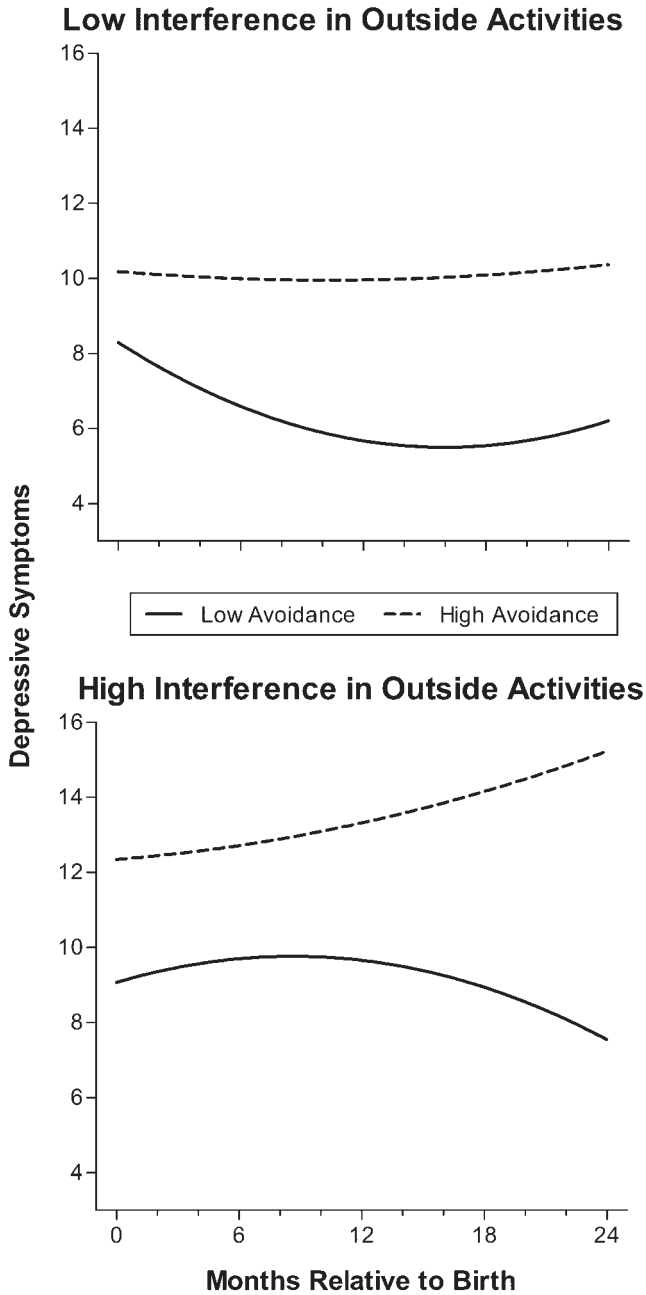
Low Interference in Outside Activities

High Interference in Outside Activities

Figure 5. Nonlinear changes in depression over time by avoidance and baby's interference with outside activities.

findings showing that highly avoidant women in dating relationships do not respond positively to physical touch as part of caregiving when they are upset (Simpson et al., 1992). It also seems inconsistent with the general goal of avoidant persons to maintain psychological distance and independence.

Attachment theory, however, states that the attachment goals and strategies most characteristic of avoidant persons—maintaining distance and independence—serve defensive functions designed to protect them from difficult or painful circum-
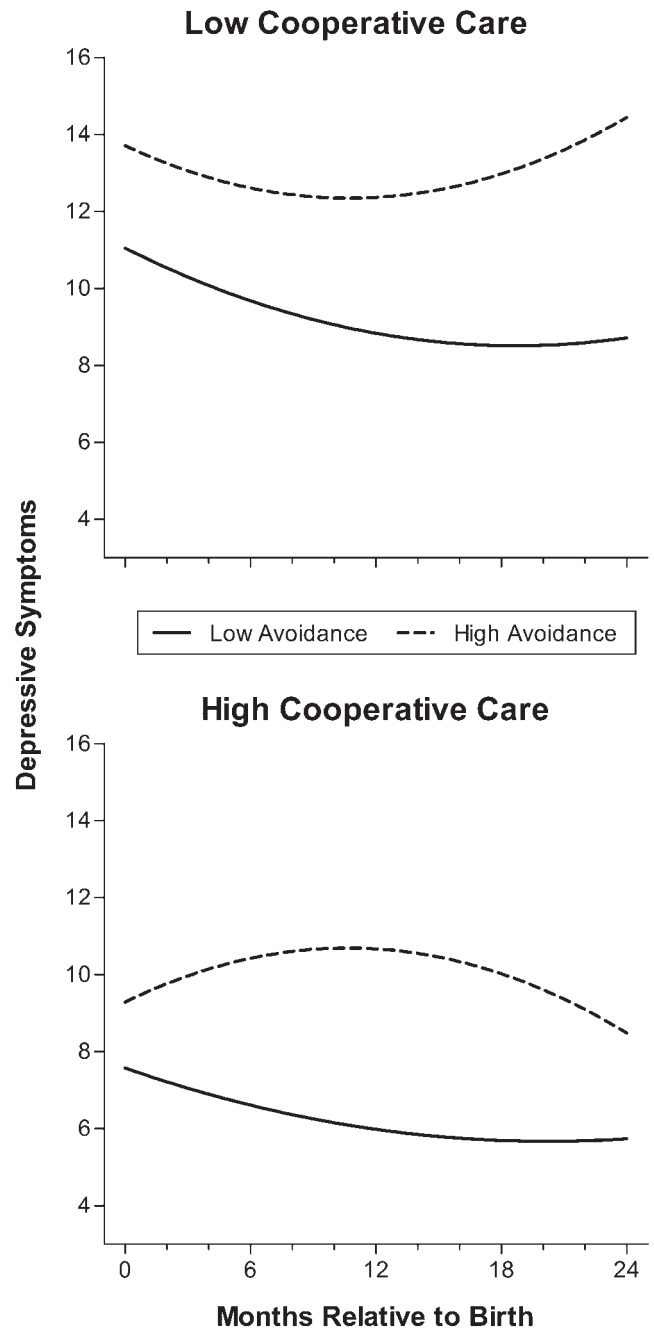
Low Cooperative Care

High Cooperative Care

Figure 6. Nonlinear changes in depression over time by avoidance and cooperative care.

more cooperative care began the transition with fewer symptoms and reported a significant declining pattern of symptoms, particularly during the latter half of the transition period. Less avoidant people began and ended the transition with fewer symptoms, regardless of their perceptions of cooperative care. Unexpectedly, proximal care also influenced depressive symptoms in avoidant individuals. Avoidant people reported fewer depressive symptoms when they perceived more proximal care than did avoidant people who perceived less proximal care. At first blush, this result appears to be inconsistent with past

stances (e.g., rejection by others). Their defenses, however, do not completely define avoidant people. According to attachment theory, avoidant people also have a deep-seated, usually dormant yearning for love and care (Bowlby, 1979). This yearning is normally dormant because it is presumably kept in check by their defenses. When avoidant people encounter strong and sustained levels of stress in long-term relationships (e.g., marriages), they might be more inclined to accept and benefit from proximal care in order to meet their deep-seated needs for love and care. Indeed, Simpson et al. (1992) also found that when avoidant female dating partners who were distressed received higher levels of care and comfort from their partners, they were rated as benefitting the most from it.

Caveats and Conclusions

The results of this study must be interpreted with several caveats in mind. First, the findings are correlational. Even though they include a time element, the results cannot be interpreted in terms of causality. Second, the results may apply only to the transition to parenthood. In circumstances when expectations for parenting and care for one's partner are different, the triggering and protective effects for depressive symptoms that we have documented may not be the same. Third, the findings may be culture-specific. For example, in cultures that have different expectations for the roles of fathers or where extended family is more versus less involved in routine childcare, our results may not replicate.

These caveats notwithstanding, this study confirms the unquestionable importance of interpersonal factors in generating depressive symptoms during the transition among anxious women and men. It also yields important and novel information about both the role of the child's interference in determining the emotional states of avoidant persons as well as the effects of various caregiving styles on people who have different attachment orientations. Finally, the study confirms that the impact of the birth of the first
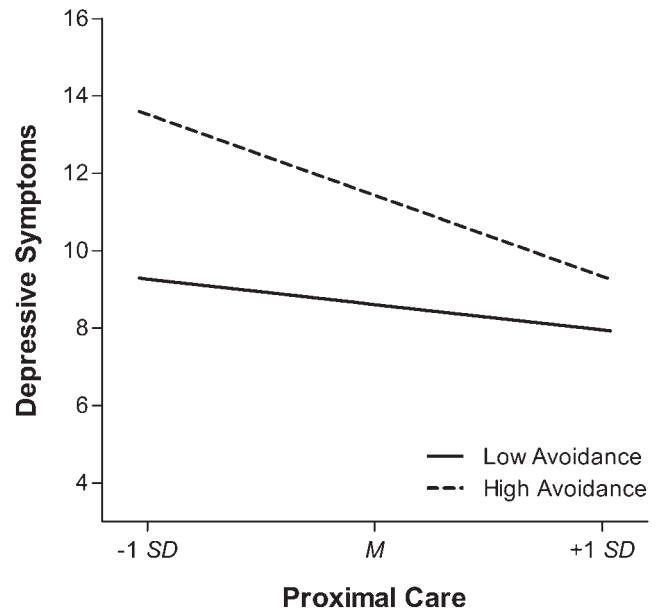

Figure 7. Depression as moderated by avoidance and proximal care.

child is not limited to the period immediately after the birth. In many cases, we found elevated levels of depressive symptoms that showed no signs of abatement even 2 years after childbirth. This suggests that the transition to parenthood plays a role in mental well-being long after early parts of the transition are long past. The transition to parenthood sets in motion certain perceptions and behaviors among new parents. These patterns of interaction pave the way for long-lasting negative effects, especially in highly anxious and avoidant people.

Table 11
Depression as Moderated by Avoidance and Proximal Care

Fixed effects	b	t
Intercept	10.022	25.76***
Gender	−2.218	−7.33***
Time	−0.038	−1.89
Avoidance	1.483	4.50***
Proximal care	−1.375	−4.29***
Gender × Time	0.055	2.66**
Gender × Avoidance	0.285	0.87
Gender × Proximal Care	−0.061	−0.20
Time × Avoidance	0.047	2.27*
Time × Proximal Care	−0.030	−1.51
Avoidance × Proximal Care	−0.756	−2.41*
Gender × Time × Avoidance	0.005	0.23
Gender × Time × Proximal Care	0.006	0.32
Gender × Avoidance × Proximal Care	−0.453	−1.44
Time × Avoidance × Proximal Care	0.032	1.67
Gender × Time × Avoidance × Proximal Care	0.017	0.87

Simple slopes	
Low avoidance	$\hat{Y} = 8.61 - 0.66 \times$ Proximal Care
High avoidance	$\hat{Y} = 11.43 - 2.09 \times$ Proximal Care

* $p < .05$.   ** $p < .01$.   *** $p < .001$.

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Correction to Rydell et al. (2010)

In the article "The effect of negative performance stereotypes on learning," by Robert J. Rydell, Michael T. Rydell, and Kathryn L. Boucher (*Journal of Personality and Social Psychology*, Vol. 99, No. 6, pp. 883-896. doi:10.1037/a0021139), there is an error in the first paragraph of the Results section on page 886.

The third sentence in this paragraph reads "As predicted, the stereotype threat manipulation did not affect women's learning of mathematical rules presented before the instructions, $F(1, 57) = 0.68$, $p = .41$, $\eta_p^2 = .01$; however, women in the stereotype threat condition learned fewer mathematical rules presented after the instructions than did women in the control condition, $F(1, 57) = 3.96$, $p = .05$, $\eta_p^2 = .07$." Given the data, the second part of the sentence should have read "however, women in the stereotype threat condition showed a non-significant trend towards learning fewer mathematical rules presented after the instructions than did women in the control condition, $F(1, 57) = 3.56$, $p = .064$, $\eta_p^2 = .06$."