
Adult Attachment Dimensions and Specificity of Emotional Distress Symptoms: Prospective Investigations of Cognitive Risk and Interpersonal Stress Generation as Mediating Mechanisms

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Three prospective studies examined the relation between adult attachment dimensions and symptoms of emotional distress (anxiety and depression). Across all three studies, avoidant and anxious attachment prospectively predicted depressive symptoms, and anxious attachment was associated concurrently with anxiety symptoms. Study 2 tested a cognitive risk factors mediational model, and Study 3 tested an interpersonal stress generation mediational model. Both cognitive and interpersonal mediating processes were supported. The cognitive risk factors pathway, including elevated dysfunctional attitudes and low self-esteem, specifically mediated the relation between insecure attachment and prospective elevations in depression but not anxiety. For the interpersonal stress generation model, experiencing additional interpersonal, but not achievement, stressors over time mediated the association between insecure attachment and prospective elevations in depressive and anxious symptoms. Results advance theory and empirical knowledge about why these interpersonal and cognitive mechanisms explain how insecurely attached people become depressed and anxious.

Keywords: *attachment; depression; anxiety; mediating mechanisms*

A variety of theoretical models have been proposed to explain the etiology of depression (e.g., Abramson, Metalsky, & Alloy, 1989; Beck, 1987; Joiner & Coyne, 1999). Two of the central etiological theories are cognitive and interpersonal models. Research has provided support for both cognitive factors (Abramson et al.,

2002) and interpersonal processes (Joiner, 2002) contributing to the development of depressive symptoms. Although independent bodies of research have provided evidence supporting both the cognitive and interpersonal theories, relatively little research has examined models that integrate the cognitive and interpersonal factors into a more comprehensive model of depression.

The few theorists that have attempted to examine the etiology of depression from an integrative cognitive-interpersonal perspective have emphasized the role of early attachment relationships in the development of cognitive and interpersonal vulnerability to depression (e.g., Gotlib & Hammen, 1992; Haines, Metalsky, Cardamone, & Joiner, 1999). According to these models, individuals who exhibit insecure attachment to primary caregivers are hypothesized to be more likely than securely attached individuals to exhibit vulnerability factors (e.g., negative representations of the self and others) that increase their risk for developing depression in the future. In the current article, we will examine (a) whether insecure-attachment dimensions prospectively predict the development of depressive symptoms

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over time and (b) whether they do so through the mediating role of cognitive (e.g., dysfunctional attitudes and low self-esteem) and/or interpersonal (e.g., the occurrence of additional interpersonal stressors) processes. In addition, we will examine whether insecure-attachment orientations and each of the proposed cognitive and interpersonal mediating processes specifically predict depressive symptoms or whether they contribute to other forms of emotional distress (i.e., anxiety) as well.

Attachment Theory During the Life Span

Bowlby (1969, 1973, 1980) proposed an ethological theory of attachment and loss that has been used to explain both normal and abnormal behavior, social relationships, cognition, emotions, and personality across the life span. Bowlby posited that infants exhibit attachment behaviors, such as seeking contact and proximity with caregivers, that serve to keep infants in close proximity to a primary caregiver. The caregiver's level of support, responsiveness, and accessibility influences how the child forms representations of the self and others. If the caregivers are consistently responsive, available, helpful, and warm, then the child likely develops a sense of security and learns that others can be trusted and supportive when needed (Bretherton, 1985). Repeated interactions over time with caregivers contribute to the formation and consolidation of a set of expectations and beliefs of others' dependability and supportiveness; these expectations are called *internal working models* (Bowlby, 1969, 1973). Internal working models are hypothesized to influence the capacity for regulating emotions and behaviors during the life span.

There are individual differences in the working models that people develop in response to variability in the caregiver's behaviors. In their classic book, Ainsworth, Blehar, Waters, and Wall (1978) described three attachment prototypes, including secure, anxious-avoidant, and anxious-ambivalent. Most children are securely attached and are comfortable seeking contact and comfort with a caregiver after separations. In contrast, anxious-ambivalent individuals vary between expressions of anger and reassurance seeking after separations from caregivers, whereas anxious-avoidant individuals typically respond with withdrawal or indifference after separations.

Subsequent to Ainsworth's classic work on attachment, attachment dimensions have been refined and studied across the life span. Recently, theoretical and empirical research in the attachment literature (Brennan, Clark, & Shaver, 1998; Fraley & Shaver, 2000; Griffin & Bartholomew, 1994) has shown that individual differences in attachment can be represented by two relatively distinct dimensions: avoidance and anxiety. The dimension of attachment-related avoidance represents

individual differences in intimacy and emotional expression, and the dimension of attachment-related anxiety represents differences in sensitivity to abandonment, separation, and rejection. The traditional attachment dimension of security (low avoidance and anxiety) to insecurity (high avoidance and anxiety) is represented in this two-dimensional model.

Attachment theory and research has progressed from its origins in studying infants to more recent applications and study within adult attachment security. Research has shown that the attachment system is active in adult relationships (Hazan & Shaver, 1987; Hazan & Zeifman, 1999), and individual differences in attachment dimensions are relatively stable over time from childhood through adulthood, although there can be change in individuals' attachment orientation (Fraley, 2002; Waters, Hamilton, & Weinfield, 2000). This is consistent with the view that attachment is a process that extends from "the cradle to the grave" (Bowlby, 1969). In infancy, parents typically serve as attachment figures; in adulthood, peers and romantic partners typically serve as attachment figures (Fraley & Davis, 1997; Hazan & Zeifman, 1999). Thus, adults have a need for attachment bonds to others during the life span, and individual attachment dimensions are fairly stable over time.

Insecure Attachment and Emotional Distress

In his original writings, Bowlby (1969, 1980) sought to understand the intense emotional distress displayed when children were separated from primary caregivers. He observed that children often experienced intense anxiety when separated from their caregivers as manifested by crying, clinging, and searching for their lost caregiver. Bowlby suggested that this "protest-despair-detachment" sequence may be used to understand different depressive experiences ranging from temporary despair over separation to both grief and clinical depression. Thus, Bowlby's original ideas for understanding despair, depression, and loss in children may be applicable to understanding vulnerability to depression among adults.

Indeed, prior research has shown that insecure attachment is associated with depressive symptoms among adults (e.g., Carnelley, Pietromonaco, & Jaffe, 1994; Eng, Heimberg, Hart, Schneier, & Liebowitz, 2001; Roberts, Gotlib, & Kassel, 1996) and youths (Abela et al., 2003; Armsden & Greenberg, 1987; Hammen et al., 1995; Kobak, Sudler, & Gamble, 1991). Although research has established a correlation between insecure attachment and depression, little research has prospectively explored mechanisms that might mediate this association. The primary impetus for this investigation is to examine processes by which insecure attachment leads to future elevations in depression and to explore

whether these processes are specific to symptoms of depression versus anxiety.

Cognitive Mechanisms

To date, the few studies that have examined mechanisms have focused on cognitive risk factors as a potential mediator of the attachment-depression association. This work is based on Bowlby's (1980) suggestion that internal working models are composed of cognitive-affective representations of the self and others based on past experiences with caregivers. With inadequate, unsupportive, and inconsistent parenting, a child is likely to develop negative working models of the self as unworthy and unlovable and of others as unsupportive and unreliable. Such negative internal working models are very similar to those posited by modern theories of cognitive vulnerability to depression (Abramson et al., 2002). For example, Beck (1987) posited that dysfunctional attitudes, which are rigid and extreme beliefs about the self and the world (e.g., "It is awful to be disapproved of by people important to you," or "I am nothing if a person I love doesn't love me"), operate as a vulnerability factor for depression.

To date, both cross-sectional (Carnelley et al., 1994; Whisman & McGarvey, 1995) and short-term prospective research (Roberts et al., 1996) have found that cognitive vulnerability factors (i.e., dysfunctional attitudes) partially mediate the insecure attachment–depressive symptoms link. Furthermore, Roberts and colleagues (1996) showed that an insecure attachment style was associated with more depresso-typic dysfunctional attitudes, which in turn contributed to lower self-esteem levels, which in turn led directly to elevations in depression. Most recently, Simpson, Rholes, Campbell, Tran, and Wilson (2003) showed that cognitive perceptions of a lack of spousal support mediated the association between insecure attachment and depression after the birth of a child only among anxiously attached women.

Interpersonal Mechanisms

Although research has recently begun to examine cognitive factors as mediators, relatively little research has examined *interpersonal processes* that might explain why insecurely attached individuals experience more emotional distress. This is surprising because attachment theory is primarily a theory of interpersonal relationships and social interactions. The few studies to explore interpersonal risk factors have all conceptualized insecure attachment within a *moderational* framework. For example, Hammen and colleagues (1995) found that insecure attachment (the vulnerability) interacted with interpersonal stressors to predict depressive symptoms. Also, Abela and colleagues (2003) found that the interaction between insecure attachment and exces-

sive reassurance seeking was associated with elevations in current depressive symptoms and a history of past depressive episodes in children. Last, interpersonal factors, including perceptions of spousal anger and low social support, predicted elevated depressive symptoms among anxiously attached women after the stressful transition of childbirth (Simpson et al., 2003). To date, however, no study has examined whether insecurely attached individuals experience additional stressors over time and whether the generation of these stressors operates as a *mediator* of the association between insecure attachment and future depression.

We hypothesize that insecurely attached individuals are particularly likely to generate additional interpersonal stressors over time, and this interpersonal stress generation mechanism is an important interpersonal process that will explain, at least in part, why insecurely attached adults are at elevated risk to become depressed. The stress generation mechanism (see Hammen, 1991; Hankin & Abramson, 2001) posits that these additional stressors are created or generated over time by something about the individual's personality or behavior. In our theoretical integration of attachment theory and stress generation, we posit that insecure attachment is such a personality structure that can contribute to the increased likelihood that individuals will create additional stressors for themselves as they seek reassurance or comfort from close peers, partners, or family members. According to attachment theory, insecurely attached individuals with negative internal working models of their self and others may act in ways that weaken important interpersonal relations and may alienate peers and partners who can provide social support. However, no study has examined whether insecurely attached individuals will create more interpersonal stressors for themselves over time. To date, the stress generation mechanism has been tested exclusively with depressed individuals to investigate the hypothesis that characteristics of depressed people (e.g., excessive reassurance, clinginess, dependency, etc.) would generate more stressors (see Hammen, 1999). Indeed, interpersonal depression researchers (e.g., Joiner, 2002; Joiner & Coyne, 1999) have shown that mildly depressed individuals often seek reassurance excessively to assuage their insecurities, pessimistic beliefs, and depressed mood. Furthermore, depressed people typically expect that others will reject them (rejection sensitivity; Ayduk, Downey, & Kim, 2001) and may inadvertently elicit behaviors from others that confirm their negative self-views (Giesler & Swann, 1999). Taken together, these lines of theory and evidence suggest that insecurely attached adults may create additional interpersonal negative events in their lives (e.g., breakup of romantic partner, arguments with close friends) while they seek verifi-

cation of their negative internal working models and as they seek excessive reassurance from their close friends, romantic partners, and family. Last, we hypothesize that insecurely attached individuals will generate additional *interpersonal* stressors specifically, but not *achievement*-related stressors (e.g., failing an exam, losing a job). Insecurely attached individuals should experience more interpersonal stressors, but not any more achievement stressors, compared with securely attached people because the working models of individuals with insecure attachment are hypothesized to influence the perception of, and behaviors in, one's *social* environment, whereas the self-views and behaviors in the achievement domain should not be as affected by an insecure attachment.

The Current Research

The goal of the current study is to examine whether the relationship between insecure attachment and depressive symptoms is mediated by (a) cognitive vulnerability factors (i.e., dysfunctional attitudes and low self-esteem) and (b) interpersonal processes (i.e., the generation of interpersonal stressors). In addition to investigating mediating processes, we seek to advance the theoretical and empirical knowledge base and expand on past research examining the association between insecure attachment and depression in at least three important ways.

First, the majority of past studies have been cross-sectional. As such, they cannot sufficiently distinguish between insecure attachment as a cause, correlate, or consequence of depression (Barnett & Gotlib, 1988; Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). Consequently, we used longitudinal designs in all three studies to establish temporal precedence and disentangle these possibilities. In addition, in Studies 1 and 2, we assessed attachment dimensions and symptoms of emotional distress (both anxiety and depression) at two time points, whereas past studies have only measured attachment orientations at an initial baseline time point and not at a prospective follow-up. Prospectively assessing both attachment dimensions and symptoms is important because individual differences in attachment dimensions are not entirely stable, so it is virtually unknown whether different forms of emotional distress (i.e., anxiety and depression) will be prospectively predicted by or only concurrently associated with insecure attachment after accounting for the stability of the attachment dimensions at both time points.

Second, as introduced earlier, we are examining both cognitive and interpersonal mediational models, whereas most prior studies have explicitly or implicitly tested moderational models (e.g., insecure attachment vulnerability interacting with stress; Hammen et al.,

1995; Simpson et al., 2003). Furthermore, whereas some past research has investigated a cognitive mediational model (e.g., Roberts et al., 1996), none has examined an interpersonal stress generation mediational model. Within this stress generation model, we also are investigating different domains of stressors (i.e., interpersonal versus achievement). Attachment theory suggests that insecure attachment will predict greater interpersonal stressors, but not achievement stressors, but no research has explicitly examined this issue directly. Also, there is little extant research in general that has separated domains of stressors (e.g., interpersonal and achievement) to explore the discriminant predictive validity of a particular domain of stressors with emotional distress symptoms (see Kendler, Hettema, Butera, Gardner, & Prescott, 2003, for a recent exception). Little is known about how different domains of stressors influence the development of different forms of emotional distress symptoms, and no research has explicitly examined achievement versus interpersonal stressors as a mediator of the insecure-attachment association with emotional distress symptoms. Thus, the present research can advance theory and knowledge on cognitive and interpersonal mediating mechanisms as well as further understanding on what types of stressors are most associated with insecure attachment and emotional distress.

Third, surprisingly few prior studies have examined whether insecure attachment is associated specifically with depressive symptoms or whether it is also associated with other types of emotional distress. Such research is needed because (a) insecure attachment is theoretically linked to both depression and anxiety (e.g., Cassidy, 1995), and (b) depressive and anxious symptoms frequently co-occur at very high levels (e.g., concurrent correlations often range $r = .6$ to $.7$; Mineka, Watson, & Clark, 1998). Given the strong overlap between anxiety and depression, numerous authors (e.g., Hammen & Rudolph, 2003; Mineka et al., 1998) have argued persuasively that research investigating risk factors and processes for emotional distress needs to assess and examine both anxiety and depressive symptoms; otherwise, it is impossible to discern whether the risk processes (cognitive or interpersonal) actually predict specific affective symptoms as hypothesized in a causal theory or emotional distress in general.

The few studies that have examined emotional symptom specificity have been mostly cross-sectional and explored only social anxiety, even though there are different facets of anxiety, including symptoms of general anxiety and physiological/anxious arousal (Clark & Watson, 1991). The cross-sectional studies suggest that insecure attachment is a nonspecific risk factor for both depression and social anxiety (Eng et al., 2001; Mickelson, Kessler, & Shaver, 1997; see also Hammen

et al., 1995 for a longitudinal study). Consequently, to examine more rigorously the symptom specificity of insecure attachment as a risk factor for emotional distress, we included prospective assessments of both depressive and anxious symptoms (both general and anxious arousal). In addition, the studies that tested a cognitive factors mechanism (Carnelley et al., 1994; Roberts et al., 1996; Simpson et al., 2003; Whisman & McGarvey, 1995) only examined symptoms of depression, not anxiety, so the emotional specificity of the cognitive factors mechanism is unclear. Cognitive vulnerability models of depression (e.g., Hankin & Abramson, 2001) posit that cognitive risk factors and processes should specifically predict elevations of depression, not anxiety, and the few studies to test this prediction are largely supportive (e.g., Hankin, Abramson, Miller, & Haefffel, 2004). As no research has investigated an interpersonal stress mechanism, the affective symptom specificity of this process to anxiety and depression is unknown. Thus, our prospective studies are poised to advance theory and evidence on the specificity of insecure attachment as a predictor of anxiety versus depression and on the affective specificity of cognitive and interpersonal mediators.

To examine these issues, we report data from 3 separate prospective studies. In these studies, we examined the concurrent and prospective relation of the two attachment dimensions (avoidant and anxiety) as predictors of anxiety and depressive symptoms. In Study 1, we assessed whether the attachment dimensions were associated either concurrently or prospectively with anxiety and depressive symptoms over an 8-week follow-up. In Study 2, we measured attachment dimensions, dysfunctional attitudes, self-esteem, anxiety, and depressive symptoms over an 8-week interval to examine cognitive mediating processes. Study 3 used a 2-year follow-up in which the attachment dimensions, interpersonal and achievement negative life events, as well as anxiety and depressive symptoms were assessed to examine an interpersonal stress generation mechanism.

STUDY 1

Method

PARTICIPANTS AND PROCEDURES

Participants were undergraduate students who volunteered for extra credit for their Introduction to Psychology at a large southeastern university. Only those students who completed questionnaires at both time points were included, resulting in a final sample size of 187. Ages of participants ranged from 17 to 24 years with the mean age (\pm *SD*) being 18.4 ± 0.87 . The majority (81.4%) were female and Caucasian (89%). Participants were

administered a battery of questionnaires in groups of 15 to 20 individuals on two occasions (Times 1 and 2) separated by an 8-week interval.

MEASURES

Adult attachment dimensions. Collins and Read's (1990) 18-item inventory was used to measure adult attachment and was administered at Time 1 (T1) and Time 2 (T2). Three scales are assessed with this measure: the extent to which an individual is comfortable with closeness (Close), feels that others are dependable (Depend), and is fearful about being unloved or abandoned (Anxiety). Participants rated items on a 5-point scale. A principal factor analysis with varimax rotation of these 18 items extracting two factors resulted in a solution with good factor interpretability, and both factors had eigenvalues greater than 1. The first factor (eigenvalue = 4.79) explained 26.6% of the variance, and the second factor (eigenvalue = 2.25) explained 12.5% of the variance; the two factors combined accounted for 39% of the variance. The first factor consisted of a combination of items from the Close and Depend Scales, and the second factor was composed of items from the Anxiety Scale. Based on this factor analysis and the theoretical views of attachment as two dimensions (Fraley & Shaver, 2000), the Close and Depend Scales were collapsed and reverse scored to create an overall Avoidant Attachment Scale, and Anxiety represented the Anxiety attachment dimension. Coefficient alphas were .77 for Avoidance and .79 for Anxiety.

Depressive symptomatology. The Inventory to Diagnose Depression (IDD; Zimmerman, Coryell, Corenthal, & Wilson, 1986), administered at T1 and T2, was used to measure depressive symptomatology during the previous week. The IDD has good validity (Zimmerman et al., 1986). Alpha coefficients at Times 1 and 2 were .92 and .94.

Anxiety. The State Anxiety subscale of the State-Trait Anxiety Inventory Form Y (STAI-S; Spielberger, Gorsuch, & Lushene, 1983), administered at T1 and T2, was used to assess general anxiety during the past week. The STAI-S is a 20-item scale including feelings of nervousness, tension, and worry. Participants respond to statements on a 4-point scale. The psychometric properties of the STAI are excellent and well established (Spielberger et al., 1983). Coefficients alphas at T1 and T2 were .94 and .95.

Results

Descriptive statistics. Table 1 provides the means, standard deviations, and correlations among all variables. Table 1 reveals moderate associations between both Anxious and Avoidant attachment dimensions and symp-

TABLE 1: Descriptive Statistics and Correlations Among Main Measures in Study 1 (N = 187)

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--------------|--------|--------|--------|--------|--------|--------|--------|-------|
| 1. ANXIOUS1 | | | | | | | | |
| 2. AVOIDANT1 | .15* | | | | | | | |
| 3. STAI1 | .42*** | .34*** | | | | | | |
| 4. DEPRESS1 | .35*** | .22** | .51*** | | | | | |
| 5. ANXIOUS2 | .51*** | .13 | .34*** | .38*** | | | | |
| 6. AVOIDANT2 | .15* | .66*** | .32*** | .27*** | .17* | | | |
| 7. STAI2 | .19** | .18* | .43*** | .62*** | .26*** | .19** | | |
| 8. DEPRESS2 | .38*** | .37*** | .68*** | .62*** | .35*** | .30*** | .35*** | |
| M | 16.07 | 40.61 | 45.50 | 12.80 | 16.20 | 40.89 | 45.80 | 10.47 |
| SD | 4.53 | 7.75 | 13.89 | 9.49 | 4.45 | 7.50 | 14.05 | 8.93 |
| Skew | 0.37 | -0.26 | 0.35 | 1.44 | 0.24 | -0.05 | 0.29 | 1.57 |

NOTE: ANXIOUS = anxious attachment style; AVOIDANT = avoidant attachment style; DEPRESS = Inventory to Diagnose Depression Questionnaire; STAI = Spielberger State Anxiety Inventory.

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

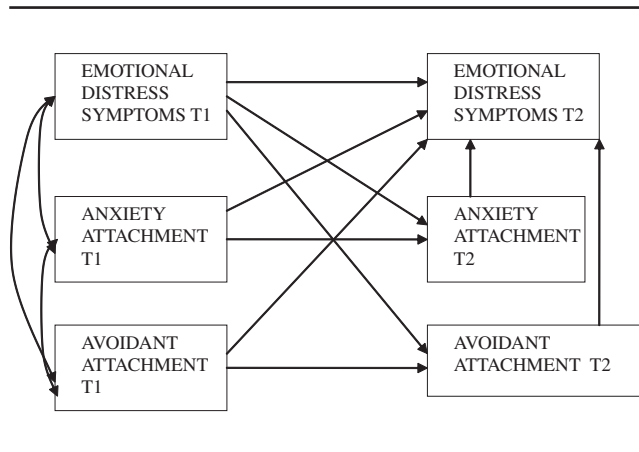


Figure 1 Structural equation model depiction of concurrent and prospective associations between insecure attachment dimensions (attachment-related avoidance and attachment-related anxiety) and symptoms of emotional distress assessed (anxiety and depression) at Times 1 and 2 (Study 1).

NOTE: T = time interval.

toms of anxiety and depression. Anxiety and depression correlated strongly at both time points. Individuals who were highly avoidant or anxious in attachment reported heightened levels of anxiety and depression symptoms at both T1 and T2.

Structural equation modeling (SEM) of insecure attachment and emotional distress. We fit structural equation models (Arbuckle, 1999) that included paths from anxious attachment and avoidant attachment to symptoms of emotional distress at T1 and T2 (see Figure 1). Table 2 reports the results of these SEMs fitted for depressive and anxiety symptoms separately. The models for depressive and general anxiety symptoms both fit well.

TABLE 2: Structural Equation Modeling Results for Associations Between Attachment Dimensions and Emotional Distress Symptoms in Study 1 (N = 187)

| Parameter | β Coefficient Estimate | χ^2 | df | CFI | RMSEA |
|-------------------------|------------------------------------|----------|----|-----|-------|
| Depression model | | .67 | 3 | 1.0 | 0.0 |
| T1 ANXIOUS → T2 DEPRES | .15** | | | | |
| T1 AVOID → T2 DEPRES | .26*** | | | | |
| T2 ANXIOUS → T2 DEPRES | .05 | | | | |
| T2 AVOID → T2 DEPRES | .04 | | | | |
| T1 DEPRES → T2 ANXIOUS | .23*** | | | | |
| T1 DEPRES → T2 AVOID | .13** | | | | |
| T1 DEPRES → T2 DEPRES | .50*** | | | | |
| T1 ANXIOUS → T2 ANXIOUS | .42*** | | | | |
| T1 AVOID → T2 AVOID | .63*** | | | | |
| Anxiety model | | 1.12 | 3 | 1.0 | .02 |
| T1 ANXIOUS → T2 STAI | .06 | | | | |
| T1 AVOID → T2 STAI | .02 | | | | |
| T2 ANXIOUS → T2 STAI | .16** | | | | |
| T2 AVOID → T2 STAI | .05 | | | | |
| T1 STAI → T2 ANXIOUS | .16** | | | | |
| T1 STAI → T2 AVOID | .10* | | | | |
| T1 STAI → T2 ANXIOUS | .39*** | | | | |
| T1 ANXIOUS → T2 ANXIOUS | .44*** | | | | |
| T1 AVOID → T2 AVOID | .63*** | | | | |

NOTE: ANXIOUS = anxious attachment style; AVOIDANT = avoidant attachment style; DEPRES = Inventory to Diagnose Depression Questionnaire; STAI = Spielberger State Anxiety Inventory; T1 = Time 1; T2 = Time 2; CFI = Comparative Fit Index; RMSEA = root mean square error of approximation.

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

T1 anxious attachment and T1 avoidant attachment predicted T2 depressive symptoms even after controlling for T1 depression, although neither anxiety nor avoidant attachment at T2 remained as predictors of T2 depressive symptoms. Also, general anxiety symptoms

were associated concurrently with T2 anxious attachment but not avoidant attachment after controlling for T1 general anxiety. Neither T1 anxiety nor avoidant attachment predicted T2 general anxiety symptoms after partialing T1 general anxiety symptoms.

Discussion Study 1

Findings from Study 1 implicate the potential role of adult attachment dimensions in contributing to emotional distress symptoms, including general depressive and anxious symptoms. Anxiety and Avoidance attachment dimensions, assessed at T1, independently predicted prospective elevations of symptoms of depression at T2 even after controlling for T1 symptoms. These results are consistent with previous studies reporting prospective associations between adult attachment and depression (e.g., Carnelley et al., 1994). Regarding affective symptom specificity, anxious attachment, but not avoidant attachment, assessed at T2, was associated concurrently with anxiety symptoms at T2 after controlling for T1 anxiety symptoms and T1 attachment dimensions. This finding appears consistent with the past cross-sectional studies that found insecure attachment correlated concurrently with both anxiety and depression (Eng et al., 2001; Mickelson et al., 1997). Our findings replicate and extend this pattern because we assessed attachment dimensions and emotional distress symptoms at both time points, so we could more rigorously examine the predictive ability of insecure attachment after modeling the moderate stability in individual differences in attachment over time. In sum, Study 1 and past research show that anxious and avoidant attachment dimensions are prospective predictors of changes in depressive symptoms but may only concurrently correlate with anxiety symptoms.

In Study 2, we examined potential cognitive mediators of these relationships. We examined whether dysfunctional attitudes and depleted levels of self-esteem would mediate the association between insecure attachment and depressive symptoms (see also Roberts et al., 1996). In addition to replicating this cognitive risk pathway with depression, we advance knowledge in this area by examining whether this mediating cognitive pathway is affectively specific to depression or predictive of anxiety as well.

STUDY 2

Method

PARTICIPANTS AND PROCEDURES

Participants were undergraduate students from an Introduction to Psychology class at a large, ethnically diverse midwestern university who volunteered for

course credit. Only those students who completed questionnaires at both time points were included, resulting in a final sample size of 202. Ages of participants ranged from 17 to 26 years with the mean age (\pm *SD*) being 19.5 ± 2.08 . The majority (75%) were female, with 43% Caucasian, 31% Asian, 9% African American, and 17% Hispanic. Participants were administered a battery of questionnaires in groups of 5 to 15 individuals on two occasions (T1 and T2) separated by an 8-week interval.

MEASURES

Adult attachment dimensions. As with Study 1, Collins and Read's (1990) measure was used at both T1 and T2. Coefficient alphas were .74 for Avoidance and .84 for Anxiety at T1.

Depressive symptomatology. The IDD was used at T1 and T2 to assess depressive symptoms experienced in the past week. Alpha coefficients at T1 and T2 were .89 and .90, respectively.

Anxiety. The STAI-S was given at T1 and T2 to measure anxiety during the past week. Coefficient alphas at T1 and T2 were .92 and .93.

Dysfunctional attitudes. The Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) is a 40-item questionnaire assessing beliefs that reflect maladaptive contingencies of self-worth. Items such as "If I fail at my work, then I am a failure as a person" and "I do not need the approval of other people in order to be happy" (reverse scored) are rated on a 7-point scale. Higher scores reflect more dysfunctional attitudes. The DAS has established validity (Abramson et al., 2002). Coefficient alpha was .93. The DAS was given at T1.

Self-esteem. The Rosenberg Self-Esteem Scale (RSE) is a measure of global self-regard consisting of 10 items (Rosenberg, 1979). The questionnaire was scored on a 5-point Likert-type scale. Higher scores reflect more positive self-esteem. The RSE has established validity (e.g., Roberts et al., 1996). Coefficient alpha was .86. The RSE was given at T2.

Results

Descriptive statistics. Table 3 shows the means, standard deviations, and correlations among all variables. Avoidant and Anxiety attachment were negatively associated with self-esteem and positively related to affective distress and dysfunctional attitudes.

SEM of a cognitive factors mediational pathway accounting for the association between attachment and emotional distress. We fit a series of structural equation models that included the paths from anxious attachment and avoidant attachment to emotional distress symptoms at T1 and T2 (see Figure 2 for an illustration). On the basis of criteria

TABLE 3: Descriptive Statistics and Correlations Among Main Measures in Study 2 (N = 202)

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 1. ANXIOUS1 | | | | | | | | | | |
| 2. AVOIDANT1 | .17* | | | | | | | | | |
| 3. STAI 1 | .45*** | .40*** | | | | | | | | |
| 4. DEPRESS1 | .39*** | .42*** | .71*** | | | | | | | |
| 5. ANXIOUS2 | .55*** | .18* | .37*** | .37*** | | | | | | |
| 6. AVOIDANT2 | .22** | .68*** | .33*** | .34*** | .21** | | | | | |
| 7. STAI 2 | .37*** | .33*** | .67*** | .56*** | .31*** | .30*** | | | | |
| 8. DEPRESS2 | .33*** | .33*** | .48*** | .66*** | .33*** | .31*** | .70*** | | | |
| 9. SELF-ESTEEM | -.43*** | -.32*** | -.53*** | -.54*** | -.33*** | -.33*** | -.48*** | -.59*** | | |
| 10. DAS | .44*** | .30*** | .37*** | .35*** | .35*** | .24** | .39*** | .32*** | -.47*** | |
| M | 14.41 | 40.17 | 43.04 | 13.66 | 16.06 | 40.60 | 43.71 | 11.26 | 38.12 | 120.30 |
| SD | 4.37 | 8.24 | 13.28 | 9.49 | 4.42 | 7.46 | 13.34 | 10.85 | 8.75 | 29.80 |
| Skew | 0.36 | -0.28 | 0.32 | 1.35 | 0.28 | -0.08 | 0.26 | 1.32 | -0.75 | 0.48 |

NOTE: ANXIOUS = anxious attachment style; AVOIDANT = avoidant attachment style; DEPRESS = Inventory to Diagnose Depression Questionnaire; STAI = Spielberger State Anxiety Inventory; DAS = Dysfunctional Attitude Questionnaire.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

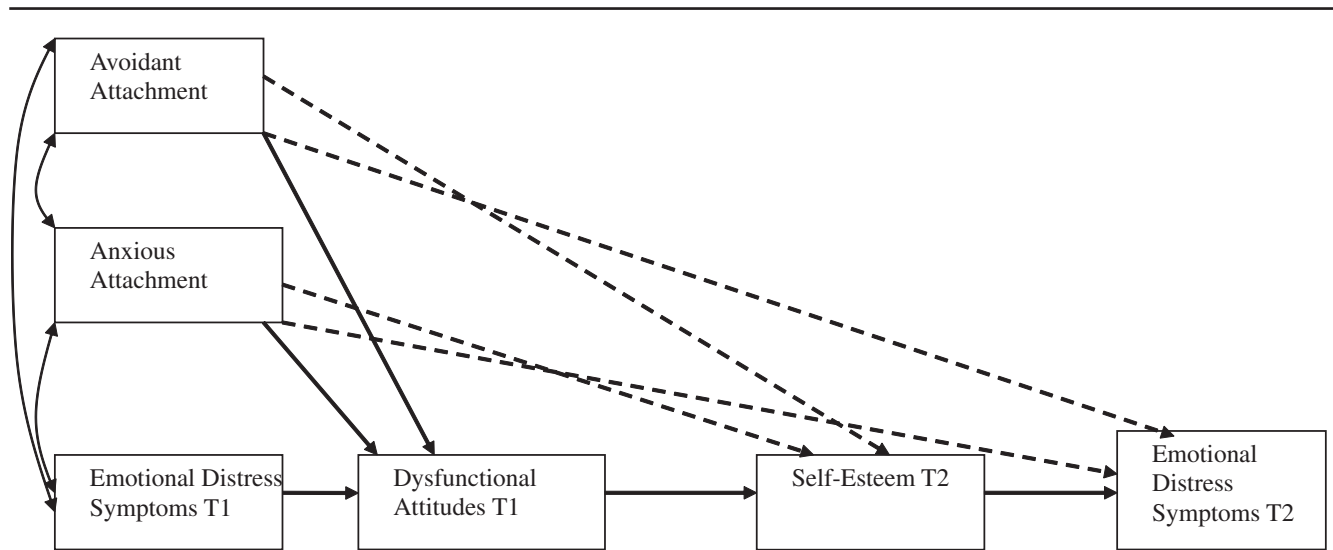


Figure 2 Depiction of a cognitive risk factors pathway involving dysfunctional attitudes and self-esteem as mediators of the association between adult attachment dimensions and emotional distress symptoms (Study 2).

NOTE: Solid lines indicate direct paths, and dotted lines indicate indirect paths in the model. T = time interval.

for testing and establishing mediation (e.g., Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998), we first fit a model to examine the effect from insecure attachment to emotional distress symptoms (as done in Study 1, so this step provides a replication of Study 1). The second model included the mediating effect of dysfunctional attitudes as well as attachment dimensions predicting emotional distress outcomes. Here, it is important to verify whether (a) attachment dimensions predict DAS and (b) DAS predicts symptoms of emotional distress. The third model included the mediating effect of self-esteem

as well as dysfunctional attitudes and attachment dimensions as predictors of emotional distress symptoms. Mediation is supported in this model if (a) self-esteem is associated with emotional distress symptoms, (b) the effect of DAS on emotional distress is reduced, and (c) the effect of insecure attachment dimensions on emotional distress is reduced.

Table 4 shows that the initial models for depressive and general anxiety symptoms both fit well and replicated the results from Study 1. T1 anxious and avoidant attachment predicted T2 depressive symptoms even

TABLE 4: Structural Equation Modeling Results Examining Cognitive Factors as Mediators Between Attachment Dimensions and Emotional Distress Symptoms in Study 2 (N = 202)

| Parameter | β | | χ^2 | df | CFI | RMSEA |
|-------------------------|----------------------|--|----------|----|-----|-------|
| | Coefficient Estimate | | | | | |
| Depression model—Step 1 | | | 1.03 | 3 | 1.0 | 0.0 |
| T1 ANXIOUS → T2 DEPRES | .15** | | | | | |
| T1 AVOIDANT → T2 DEPRES | .27** | | | | | |
| T2 ANXIOUS → T2 DEPRES | .06 | | | | | |
| T2 AVOIDANT → T2 DEPRES | .05 | | | | | |
| Depression model—Step 2 | | | 3.49 | 3 | 1.0 | 0.0 |
| T1 DAS → T2 DEPRES | .23*** | | | | | |
| T1 ANXIOUS → T1 DAS | .39*** | | | | | |
| T1 AVOIDANT → T1 DAS | .31** | | | | | |
| T1 ANXIOUS → T2 DEPRES | .10 | | | | | |
| T1 AVOIDANT → T2 DEPRES | .21** | | | | | |
| Depression model—Step 3 | | | 6.45 | 3 | 1.0 | .00 |
| T2 RSE → T2 DEPRES | -.31*** | | | | | |
| T1 DAS → T2 RSE | -.39*** | | | | | |
| T1 DAS → T2 DEPRES | .11 | | | | | |
| T1 ANXIOUS → T2 DEPRES | .08 | | | | | |
| T1 AVOIDANT → T2 DEPRES | .08 | | | | | |
| Anxiety model—Step 1 | | | 1.63 | 3 | 1.0 | .00 |
| T1 ANXIOUS → T2 STAI | .06 | | | | | |
| T1 AVOIDANT → T2 STAI | .03 | | | | | |
| T2 ANXIOUS → T2 STAI | .17** | | | | | |
| T2 AVOIDANT → T2 STAI | .05 | | | | | |
| Anxiety model—Step 2 | | | 1.97 | 3 | 1.0 | .00 |
| T1 DAS → T2 STAI | .03 | | | | | |
| T2 ANXIOUS → T1 DAS | .12* | | | | | |
| T2 AVOIDANT → T1 DAS | .03 | | | | | |
| T2 ANXIOUS → T2 STAI | .16** | | | | | |
| T2 AVOIDANT → T2 STAI | .04 | | | | | |

NOTE: Only the paths required for demonstrating mediation are shown. ANXIOUS = anxious attachment style; AVOIDANT = avoidant attachment style; DEPRES = Inventory to Diagnose Depression Questionnaire; STAI = Spielberger State Anxiety Inventory; RSE = Rosenberg Self-Esteem; DAS = Dysfunctional Attitudes Scale; T1 = Time 1; T2 = Time 2; CFI = Comparative Fit Index; RMSEA = root mean square error of approximation.

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

after controlling for T1 depression. General anxiety symptoms were associated concurrently with T2 anxious attachment but not avoidant attachment after controlling for T1 anxiety. For the second condition of mediation for depressive symptoms, T1 insecure attachment dimensions were associated with dysfunctional attitudes, and dysfunctional attitudes predicted T2 depressive symptoms. In contrast, for anxiety symptoms, dysfunctional attitudes did not predict T2 anxiety symptoms, although insecure attachment styles were associated with dysfunctional attitudes. Thus, the cognitive factors mediational pathway is not supported for anxiety symptoms. Finally, the third condition of mediation for depressive symptoms was also supported. Self-esteem

was negatively associated with T2 depressive symptoms, and neither dysfunctional attitudes nor insecure attachment dimensions predicted T2 depressive symptoms with self-esteem in the model. More important, the inclusion of self-esteem and dysfunctional attitudes in the model reduced the avoidant attachment and depression association (70%) and the anxious attachment and depression association (46%).

Discussion Study 2

Results from Study 2 replicate and extend the findings from Study 1. Insecure attachment dimensions, assessed at T1, predicted prospective changes in depressive symptoms during the follow-up, whereas only anxious insecure attachment was associated concurrently with T2 anxiety symptoms. Furthermore, in seeking to explain how insecure attachment is associated with emotional distress symptoms, Study 2's results replicate past research (e.g., Roberts et al., 1996) in showing that cognitive factors represent one mediational pathway capable of explaining the association between insecure attachment and later depressive symptoms. Insecure attachment was associated with dysfunctional attitudes, which predicted lowered self-esteem, and in turn, poor self-esteem was associated with elevated depressive symptoms. In a novel extension, we investigated affective symptom specificity of this cognitive risk factors pathway and found that it accounted for the insecure attachment association with depression, but not anxiety symptoms. Thus, these cognitive vulnerabilities were specific predictors of depression only.

STUDY 3

Method

PARTICIPANTS AND PROCEDURES

Participants were undergraduate students from an Introduction to Psychology class at a different large mid-western university who volunteered for extra credit. Participants' ages ranged from 18 to 23 ($M = 18.6$, $SD = .84$); more than 90% of the sample was Caucasian. Participants completed a packet of questionnaires for the initial assessment (T1). They were then invited to complete a follow-up assessment (T2) that occurred 2 years after the initial assessment. The participants who completed the follow-up packet of questionnaires were paid for their time. A total of 233 (70 male) participants completed the follow-up assessment. Twenty-five participants declined participation in the follow-up; this resulted in an overall 90.3% retention rate during the 2-year follow-up. There were no significant differences on any measures between the group who completed the follow-up assessment and those who did not.

MEASURES

Adult Attachment Questionnaire (AAQ). The AAQ was used to assess participants' adult attachment dimensions. The AAQ was based on Hazan and Shaver's (1987) three attachment prototype descriptions. Instead of their forced-choice assessment, a 10-item questionnaire was created based on Hazan and Shaver's (1987) attachment descriptions. Respondents rated these 10 items for the degree to which secure, avoidant, and anxious adult attachment statements described them using a 7-point scale. An Anxious Attachment Scale and an Avoidant Attachment Scale were created from the 10 AAQ items based on recent theoretical and empirical research in the adult attachment literature (Fraley & Shaver, 2000). A principal factor analysis with varimax rotation of these 10 items resulted in a two-factor solution based on the scree criterion, factor interpretability, and eigenvalues greater than 1 as estimation criteria. The first factor (eigenvalue = 3.15) explained 31.5% of the variance, and the second factor (eigenvalue = 1.65) explained 16.5% of the variance; the two factors combined accounted for 48% of the variance. Based on this factor analysis and consistent with the more recent theoretical views of attachment as two dimensions, 6 items were summed to create the Avoidant Attachment Scale (coefficient alpha = .67), and 4 items comprised the Anxious Attachment Scale (alpha = .71). The AAQ was given at T1.

Negative Life Events Questionnaire (NLEQ; Metalsky & Joiner, 1992). The NLEQ assesses negative life events typically occurring among young adults. It assesses a broad range of life events from school/achievement to interpersonal/romantic difficulties. Scores on the NLEQ are counts of stressors and range from 0 to 67. Higher scores reflect the occurrence of more negative events. Participants were instructed to indicate which of these 67 events had occurred to them during the 2-year follow-up. Prior to conducting analyses, we created a priori variables for negative life events in the interpersonal and achievement domains. Events in the achievement domain (14 events) included items involving poor academics (e.g., "did poorly on, or failed, an exam or major project in an important course" or work (e.g., "got laid off or fired from work"). Events in the interpersonal domain (35 events) included items covering family problems (e.g., "significant fight or argument with close family member that led to serious consequences"), peer problems (e.g., "close friend has been withdrawing affection from you"), and romantic problems (e.g., "discovered boyfriend/girlfriend/spouse has been cheating on you"). The remaining 18 events were neither clearly interpersonal nor achievement related and so were not included in the current analyses. The

NLEQ's validity has been demonstrated in previous research (e.g., Metalsky & Joiner, 1992). The NLEQ was given at T1 and T2.

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI assesses levels of depressive symptoms with 21 items rated on a scale from 0 to 3. Scores range from 0 to 63, and higher scores reflect more depressive symptoms. The BDI is a reliable and well-validated measure of depressive symptomatology (Beck, Steer, & Garbin, 1988), although it does not enable diagnoses of depression. Participants were instructed to respond to the items thinking about the 1 week in the past 2 years when they had been feeling the most depressed. This methodology of thinking about a 1-week period when most depressed has been used successfully and been shown to be valid in previous research (e.g., Hankin et al., 2004; Zimmerman et al., 1986). Coefficient alpha for the BDI was .88. The BDI was given at T1 and T2. The mean at T1 was 12.94 ($SD = 9.05$), and T2 was 15.96 ($SD = 10.3$).

Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995). This questionnaire contains 90 items to assess the general distress and specific anxiety and depression symptoms based on the tripartite theory of anxiety and depression (Clark & Watson, 1991). The MASQ subscales, General Distress: Depression (GDDEP), General Distress: Anxiety (GDANX), Anhedonic Depression (DEP), and Anxious Arousal (ANXAR) were used in this study. Examples of GDDEP include "felt sad," DEP include "felt cheerful" (reverse scored), GDANX include "felt afraid," and ANXAR include "felt faint." According to the tripartite model, anhedonic depression is a relatively more specific measure of depression, and anxious arousal is a relatively more specific measure of anxiety, compared with other commonly used affective symptom scales that are saturated with high levels of nonspecific negative affect. The MASQ scales were used to provide multiple, theoretically based, measures of emotional distress symptoms in order to cover the general and specific affective aspects of anxiety and depression. Higher scores on each of the subscales reflect greater levels of depressive or anxious symptomatology. Reliability and validity of the MASQ has been demonstrated in previous studies (e.g., Watson et al., 1995). Participants were asked to respond to the items thinking about the 1 week in the past 2 years when they had been feeling most upset. Coefficient alpha for GDDEP was .92, for GDANX was .81, for ANXAR was .86, and for DEP was .92. The MASQ was given at T1 and T2.

Results

Preliminary analyses. For the purpose of analyses, two composite symptom variables were created: a composite

TABLE 5: Descriptive Statistics and Correlations Among Main Measures in Study 3 (N = 233)

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------|--------|--------|--------|--------|--------|--------|--------|-------|
| 1. ANXIOUS | | | | | | | | |
| 2. AVOIDANT | .33*** | | | | | | | |
| 3. ANX1 | .27*** | .21*** | | | | | | |
| 4. DEPRESS1 | .38*** | .33*** | .59*** | | | | | |
| 5. ANX2 | .37*** | .27*** | .49*** | .46*** | | | | |
| 6. DEPRESS2 | .47*** | .37*** | .42*** | .65*** | .66*** | | | |
| 7. INTNLEQ2 | .40*** | .34*** | .19** | .23*** | .35*** | .41*** | | |
| 8. ACHNLEQ2 | .16* | .17** | .15* | .24*** | .13* | .20** | .36*** | |
| M | 5.37 | 2.63 | 0.00 | 0.00 | 0.00 | 0.00 | 15.17 | 4.55 |
| SD | 5.19 | 6.93 | 1.86 | 1.92 | 1.88 | 1.69 | 6.5 | 1.41 |
| Skew | 0.47 | 0.17 | 1.24 | 1.14 | 1.21 | 0.80 | -0.09 | -1.25 |

NOTE: ANXIOUS = anxious attachment style; AVOIDANT = avoidant attachment style; DEPRESS = composite depressive symptoms variables; ANX = composite anxiety symptoms variable; INTNLEQ = interpersonal negative life events; ACHNLEQ = achievement negative life events.

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

depressive symptoms variable (DEPRES) and a composite anxiety symptoms variable (ANX). To form these variables, each of the depressive symptom measures (BDI, GDDEP, and DEP) and the anxiety symptom measures (GDANX and ANXAR), respectively, were standardized. We then summed the standardized depression measures to create the composite depression variable, and we summed the standardized anxiety measures to create the composite anxiety variable. This procedure creates highly reliable depression and anxiety variables.

Descriptive statistics and the correlation matrix for the main variables are presented in Table 5. Both anxious and avoidant attachment dimensions moderately correlated with depressive and anxious symptoms assessed at T1 and T2. Both insecure attachment dimensions correlated with more negative events (especially interpersonal stressors).

SEM testing an interpersonal stress generation mechanism accounting for the association between attachment and emotional distress. According to the interpersonal stress generation hypothesis, insecure attachment will contribute prospectively to a greater occurrence of negative events during the 2 years (especially interpersonal stressors), and these extra stressors, in turn, will lead to elevations in emotional distress symptoms. As in Study 2 and consistent with the steps for mediation according to Kenny and colleagues (1998), we fit a series of SEMs that included the paths from anxious attachment and avoidant attachment to emotional distress symptoms at T1 and T2 (see Figure 3 for an illustration). We first fit a model to examine the effects from T1 insecure attachment dimensions to both depressive and anxious symptoms at T2 while controlling for the effect of T1 symptoms. The next model included the mediating effect of stressors (interpersonal in one model, achievement in a second model)

as well as the attachment dimensions predicting emotional distress outcomes while controlling for T1 symptoms and stressors. By controlling for initial stressors in this model, we are examining prospective changes in negative life events beyond the effect of individuals' usual stressor levels; this analytic strategy enables us to investigate the stress generation hypothesis as opposed to merely the presence of typical levels of stressors. In this model, it is important to see that (a) attachment dimensions predict additional stressors, and (b) these stressors predict symptoms of emotional distress. In these models, mediation is supported if (a) T1 insecure attachment predicts emotional distress symptoms at T2 controlling for T1 symptoms; (b) additional stressors (particularly interpersonal, as hypothesized in the interpersonal stress generation mechanism) are associated with emotional distress symptoms; and (c) the effect of insecure attachment on emotional distress symptoms is reduced. In these models, we fit a more conservative model in which both initial depressive and anxiety symptoms were included together (see Hankin, Roberts, & Gotlib, 1997). The pattern of results was the same when models were fit for one set of symptoms alone (e.g., anxiety without controlling also for initial depression) as for both symptoms together, so we present findings for the more parsimonious model controlling for both anxiety and depression symptoms.

Table 6 shows that the initial models for depressive and anxiety composite symptoms both fit well. T1 anxious attachment and T1 avoidant attachment predicted T2 depressive symptoms even after controlling T1 depression and anxiety symptoms. T2 anxiety symptoms were predicted by T1 anxious attachment, but not avoidant attachment, after controlling for T1 anxiety and depression. For the second condition of mediation, T1 insecure attachment dimensions predicted interper-

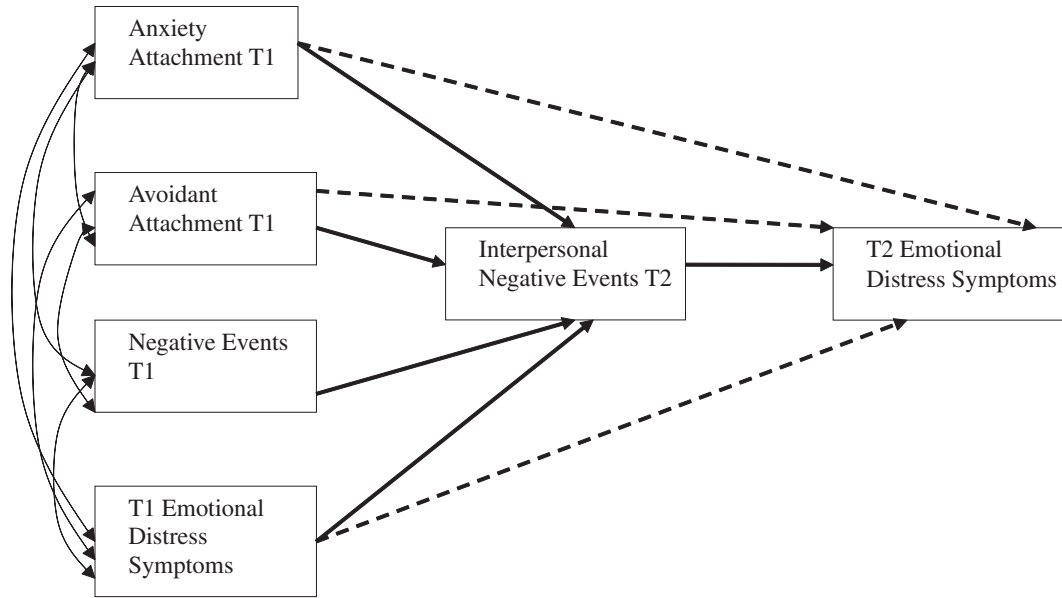


Figure 3 Depiction of an interpersonal stress generation mechanism involving interpersonal stressors as mediators of the association between adult attachment dimensions and emotional distress symptoms (Study 3).
 NOTE: Solid lines indicate direct paths, and dotted lines indicate indirect paths in the model. T = time interval.

TABLE 6: Structural Equation Modeling Results Examining an Interpersonal Stress Generation Mechanism as Mediator Between Attachment Dimensions and Emotional Distress Symptoms in Study 3 (N = 233)

| Parameter | β Coefficient Estimate | χ^2 | df | CFI | RMSEA |
|-----------------------------|------------------------------------|----------|----|-----|-------|
| Model—Step 1 | | .11 | 2 | 1.0 | 0.0 |
| T1 ANXIOUS → T2 DEPRES | .24*** | | | | |
| T1 AVOIDANT → T2 DEPRES | .13** | | | | |
| T1 ANXIOUS → T2 ANX | .20*** | | | | |
| T1 AVOIDANT → T2 ANX | .09 | | | | |
| Model—Step 2 | | .79 | 3 | 1.0 | 0.0 |
| T1 ANXIOUS → T2 INT STRESS | .30*** | | | | |
| T1 AVOIDANT → T2 INT STRESS | .22*** | | | | |
| T1 ANXIOUS → T2 ACH STRESS | .05 | | | | |
| T1 AVOIDANT → T2 ACH STRESS | .09 | | | | |
| Step 3 | | | | | |
| T1 ANXIOUS → T2 DEPRES | .18*** | | | | |
| T1 AVOIDANT → T2 DEPRES | .08 | | | | |
| T1 ANXIOUS → T2 ANX | .15** | | | | |
| T1 AVOIDANT → T2 ANX | .06 | | | | |

NOTE: Only paths necessary for testing mediation are shown. ANXIOUS = anxious attachment style; AVOIDANT = avoidant attachment style; DEPRES = composite depressive symptoms; ANX = composite anxiety symptoms; INT STRESS = interpersonal stressors from T1 to T2; ACH STRESS = achievement stressors from T1 to T2; T1 = Time 1; T2 = Time 2; CFI = Comparative Fit Index; RMSEA = root mean square error of approximation.

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

sonal stressors, but not achievement stressors. Thus, an achievement stressors mediational pathway is not supported. Finally, the third condition of mediation was also supported for both depressive and anxious symptoms. Interpersonal stressors predicted both T2 depressive and anxious symptoms with the insecure attachment dimensions included in the model. Consistent with partial mediation, T1 anxious attachment’s effect on T2 depression (25%) and T2 anxiety (25%) was reduced, but it remained as a significant predictor of both T2 depressive and anxious symptoms with the inclusion of interpersonal stressors in the model. Consistent with complete mediation, T1 avoidant attachment no longer significantly predicted T2 depression (54% reduction) with interpersonal stressors in the model.

Discussion Study 3

Results from Study 3 replicated the basic findings from Studies 1 and 2 in that insecure attachment dimensions, assessed at T1, predicted prospective changes in depressive symptoms during the 2-year follow-up. Furthermore, anxious attachment, but not avoidant attachment, predicted prospective changes in anxiety symptoms. Advancing theory and evidence for attachment theory in a novel direction, Study 3 showed that an interpersonal stress generation mediational pathway explained the association between insecure attachment and later depressive and anxiety symptoms. Insecure attachment predicted prospective changes in interpersonal stressors, but not achievement stressors, experi-

enced during the 2-year follow-up, and interpersonal stressors in turn were associated with elevated levels of both depressive and anxious symptoms. This is consistent with attachment theory as a social, relational model and provides important discriminant predictive validity for interpersonal versus achievement stressors being generated by insecurely attached people.

GENERAL DISCUSSION

Several broad findings emerged from the current investigation. First, insecure attachment dimensions consistently predicted prospective increases in depressive symptoms across all three studies, and anxious attachment was associated only concurrently with anxious symptoms. Second, the relationship between insecure attachment dimensions and increases in depressive symptoms was mediated by both dysfunctional attitudes and low self-esteem. At the same time, the relationship between insecure attachment orientations and increases in anxious symptoms over time was not mediated by either of these cognitive variables. Last, the relationship between insecure attachment and increases in both depressive and anxious symptoms was mediated by interpersonal, but not achievement, stressors.

Insecure Attachment and Emotional Distress Symptoms

Insecure attachment dimensions predicted increases in depressive symptoms, even after controlling for initial depression. Both avoidant and anxious attachment dimensions predicted prospective rises in depressive symptoms during the 8-week interval (Studies 1 and 2) and during the 2-year period (Study 3). Only the anxious attachment dimension, but not avoidant attachment, was associated concurrently with elevations in anxious symptoms in Studies 1 and 2, and only anxious attachment predicted anxiety symptoms in Study 3 after controlling for initial anxiety. These findings add to a burgeoning literature suggesting that insecure attachment, particularly the anxiety attachment dimension, may be a nonspecific risk factor for emotional distress, including anxiety and depression (Eng et al., 2001; Hammen et al., 1995; Mickelson et al., 1997). Moreover, our findings extend this growing body of literature by demonstrating that insecure attachment dimensions are not simply correlates or consequences of depressive symptoms but may be causal risk factors that contribute prospectively to elevations in depressive symptoms. Insecure attachment prospectively predicted depression even after modeling the stability of individual differences in attachment and depression. Furthermore, this is the first study to show that anxious attachment was only concurrently associated with anxiety symptoms after controlling for ini-

tial anxiety symptoms and attachment stability. Thus, anxious attachment may only be a correlate of, rather than a causal risk factor for, anxiety symptoms.

Finding that insecure attachment predicts prospective elevations in depression and concurrent symptoms of anxiety is particularly important because researchers have suggested that one reason for the strong overlap of depression and anxiety is that both forms of emotional distress share common vulnerability factors (Hankin & Abramson, 2001; Mineka et al., 1998). It is important to identify both (a) the risk factors that are specific to either depression or anxiety and (b) the risk factors that are shared by both forms of emotional distress. Our results suggest that anxious attachment is a nonspecific risk factor for emotional distress and may help to account for the high concurrent co-occurrence between depression and anxiety.

Cognitive Risk Factors Pathway

A cognitive risk factors pathway mediated the relationship between insecure attachment and increases in depressive symptoms consistent with past research (Roberts et al., 1996). Results from Study 2 showed that avoidant and anxious attachment dimensions were associated with higher levels of dysfunctional attitudes. Greater dysfunctional attitudes, in turn, were associated with lower self-esteem, which in turn predicted increases in depressive symptoms during the follow-up. Such findings are consistent with Bowlby's (1980) hypothesis that (a) insecurely attached individuals develop negative internal working models about the self and the world based on their interactions with important others and that (b) such negative internal working models subsequently confer vulnerability to depression.

Extending the theoretical and empirical research base on cognitive risk processes in a novel direction beyond past research, we found that this cognitive risk factors pathway mediated only the relationship between insecure attachment and increases in depressive symptoms but not anxious symptoms. These findings are consistent with other research that has found that cognitive vulnerabilities for depression may specifically predict prospective increases in depression but not anxiety (e.g., Alloy et al., 2000; Hankin et al., 2004; Metalsky & Joiner, 1992).

Taken together, these results suggest that cognitive vulnerability factors, such as dysfunctional attitudes and low self-esteem, may be relatively more specific for explaining depression than anxiety (see Hankin & Abramson, 2001, for a discussion of cognitive vulnerability and emotional symptom specificity). Whereas these cognitive theories of depression have posited that negative views of the self, the world, and the future may contribute relatively specifically to depression, other cogni-

tive models have sought to differentiate the etiology of anxiety and depressive symptoms through different cognitive processes and factors, such as helplessness expectancies (helplessness-hopelessness model; Swendsen, 1998) and thoughts of harm and threat (cognitive content specificity hypothesis; Beck, Brown, Steer, Eidelson, & Riskind, 1987). Future research should focus on the common and specific risk factors for anxiety and depression and how such anxiety-specific factors (e.g., helplessness expectancies) may account for the concurrent relationship between anxious attachment and anxiety symptoms.

Interpersonal Risk Factors Pathway

Interpersonal stressors mediated the relationship between insecure attachment dimensions and increases in emotional distress symptoms over time. In Study 3, insecure attachment predicted increases in negative *interpersonal*, but not *achievement*, events during 2 years. These additional interpersonal events during the 2-year follow-up predicted increases in depressive and anxious symptoms even after controlling for initial levels of stress and emotional distress.

It is novel and particularly interesting to find that insecurely attached individuals experienced additional negative stressors over time only in the interpersonal domain (e.g., peer problems, family fights, romantic partner problems), but not in the achievement domain (e.g., work difficulties, academic troubles). This finding points to the discriminant validity of an interpersonal pathway from insecure attachment to future emotional distress and is consistent with attachment theory as a comprehensive model of *social* interactions and emotion regulation. These results suggest that insecurely attached individuals are still seeking comfort and closeness in current interpersonal relationships, yet they may not be as successful as securely attached individuals in achieving this desired security. Indeed, our findings show that insecurely attached individuals may experience further interpersonal stressors for themselves as they seek to regulate their emotions (e.g., anxiety, depression) in their social world and continue to attempt to be close with important social others.

Furthermore, the present findings expand on the stress generation literature (Hammen 1991, 1999), studied exclusively to date with depressed individuals, by suggesting that individuals who are vulnerable to depression because of insecure attachments are likely to play a role in creating more stressful environments for themselves and consequently enhancing their risk for developing depressive symptoms through the generation of interpersonal stressors. It might be argued that insecurely attached individuals do not create interpersonal stressors but merely perceive or identify events as more

stressful. However, in contrast to this hypothesis, insecurely attached individuals did not experience additional achievement stressors, only interpersonal stressors. Furthermore, we statistically controlled for baseline levels of negative events and emotional distress, so this statistical strategy bolsters our theoretical interpretation for stress generation, as opposed to mere stress perception. Thus, these findings suggest that insecurely attached individuals not only possess cognitive vulnerability factors that place them at risk for interpreting negative events in a depressogenic manner (Study 2) but also generate more interpersonal negative events (Study 3). This is consistent with attachment theory as a coherent, integrative cognitive-interpersonal model of human relations and emotion regulation.

Further enhancing theory and empirical knowledge, we found that the occurrence of negative interpersonal events also mediated the relationship between anxious attachment and anxious symptoms over time. Such findings suggest that whereas some of the factors (e.g., cognitive) that mediate the relationship between insecure attachment and emotional distress symptoms exhibit symptom specificity, other mediating factors may be common to general emotional distress symptoms. The generation of interpersonal stressors appears to be a mediator contributing to general emotional distress and therefore may be another factor leading to the high covariation between anxiety and depression.

Future research may benefit from examining whether the interpersonal processes that lead to the generation of interpersonal stressors are similar in the development of depressive and anxious symptoms. For example, whereas individuals who ultimately develop depressive symptoms may generate interpersonal stressors through engaging in excessive reassurance-seeking behaviors that increase the likelihood of interpersonal rejection (e.g., Joiner, 2002), individuals who develop anxious symptoms may generate interpersonal stressors through engaging in avoidance strategies.

Strengths and Limitations

The current set of studies advances theory and research examining the relationship between insecure attachment dimensions and the development of emotional distress symptoms in several ways. First, the present investigation reports on three independent studies, all of which examined whether insecure attachment orientations predict elevations in emotional distress symptoms concurrently and prospectively over time (8 weeks in Studies 1 and 2; 2 years in Study 3). Second, all three studies used the more recent theoretical two attachment dimensions to predict anxiety and depression symptoms using different self-report attachment measures. The consistency in findings, while using these different

attachment measures, provides support for more recent perspectives on attachment measurement (e.g., Fraley & Shaver, 2000) and shows that these two dimensions of attachment are associated reliably with emotional distress. Third, the current investigation is the first to examine whether the generation of additional interpersonal stressors over time mediates the relationship between insecure attachment and prospective increases in emotional distress symptoms. Last, the current set of studies is the first to explore whether the cognitive and interpersonal mediating pathways are affectively specific mediators between insecure attachment and the development of depression or whether these mediators also predict the development of anxious symptoms.

At the same time, the sole use of self-report measures to assess key constructs is a potential limitation of these studies. Although all of the measures show good reliability and construct validity, the use of all self-report measures raises the concern of mono-method assessment. Future research is needed to replicate and extend these findings using different assessment methods, such as diagnostic interviewing to assess anxiety and depression, information processing methods (e.g., priming techniques) to assess cognitive vulnerability (Ingram, Miranda, & Segal, 1998), contextual threat interviews to assess stressors (Monroe & Simons, 1991), and interviews or observations to assess attachment (Crowell, Fraley, & Shaver, 1999). Also, the majority of participants across all three studies were female. The predominance of women may have influenced the results, especially given theory that the gender difference in depression may be explained, at least in part, by women exhibiting greater cognitive vulnerability levels and encountering more interpersonal stressors than men (Hankin & Abramson, 2001). Given that the majority of participants were women and that women are more likely to experience interpersonal stressors, caution is needed to interpret these findings and not prematurely rule out the hypothesis that achievement events are involved with the development of emotional distress symptoms.

Conclusion

In sum, these results show that insecure attachment dimensions prospectively predict depression and are associated concurrently with anxious symptoms. A cognitive risk factors pathway, including dysfunctional attitudes and low self-esteem, mediated specifically the relationship between insecure attachment and prospective elevations in depressive symptoms but not anxiety. Last, the occurrence of negative interpersonal, but not achievement, stressors mediated the relationship between insecure attachment and elevations in both depressive and anxious symptoms over time.

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