

Adult Attachment, Affect Regulation, Negative Mood, and Interpersonal Problems: The Mediating Roles of Emotional Reactivity and Emotional Cutoff

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This study examined the mediating role of affect regulation among attachment, negative mood, and interpersonal problems. Participants were 229 college students at a large midwest university. Structural equation modeling indicated attachment anxiety and avoidance contributed to negative mood and interpersonal problems through *different* and *distinct* affect regulation strategies (i.e., emotional reactivity or emotional cutoff). The association between attachment anxiety, negative mood, and interpersonal problems was mediated only by emotional reactivity (not emotional cutoff). Conversely, the association between attachment avoidance, negative mood, and interpersonal problems was mediated only by emotional cutoff (not emotional reactivity). Furthermore, emotional reactivity and emotional cutoff explained 36% of the variance in negative mood; attachment, emotional reactivity, and emotional cutoff explained 75% of the variance in interpersonal problems.

Attachment theory (Bowlby, 1969, 1973, 1980, 1988) represents an important theoretical perspective for understanding an individual's experience of negative mood and interpersonal problems. The basic premise of attachment theory is that individuals' emotional experiences with primary caregivers lead to the development of attachment security or insecurity. Attachment security or insecurity is then associated with the individuals' ability to connect with others and cope with affective or stressful problems (e.g., Kobak & Sceery, 1988). If individuals have caregivers who are consistent in their emotional availability, they are likely to develop attachment security and can effectively cope with negative events that arise in their life (e.g., seek support from a friend). If individuals do not have caregivers who are emotionally available, individuals are likely to develop attachment insecurity and subsequently be less able to cope with stressful events in their lives (e.g., withdraw from others).

Brennan, Clark, and Shaver (1998) recently indicated that adult attachments could be described in terms of two orthogonal dimensions: attachment anxiety and attachment avoidance. *Adult attachment anxiety* is defined as the fear of rejection and abandonment. *Adult attachment avoidance* is characterized as the fear of intimacy and discomfort with closeness and dependence. In the attachment literature, it is well documented that the presence of these attach-

ment dimensions are positively linked to indices of psychological distress such as depression and anxiety (e.g., Lopez, Mauricio, Gormley, Simko, & Berger, 2001; Wei, Heppner, & Mallinckrodt, 2003; Wei, Mallinckrodt, Russell, & Abraham, 2004), negative affect (e.g., Simpson, 1990), pathological narcissism (Wagner & Tangney, 1991), emotional distress and nervousness (Collins, 1996), and general distress symptoms (Lopez, Mitchell, & Gormley, 2002). In addition, these two dimensions of attachment have been positively linked to interpersonal difficulties (Bartholomew & Horowitz, 1991; Horowitz, Rosenberg, & Bartholomew, 1993), increased feelings of loneliness (Hecht & Baum, 1984; Kobak & Sceery, 1988; Shaver & Hazan, 1989), and greater hostility toward others (Mikulincer, Hirschberger, Nachmias, & Gillath, 2001; Mikulincer & Shaver, 2001).

In the past decade, researchers have become increasingly interested in understanding how these attachment dimensions are associated with distress beyond the direct links described above. These researchers have suggested that there is a need to expand the attachment literature by exploring the complex relations between attachment and distress. Studies have identified a small number of mediators between attachment and distress such as dysfunctional attitudes and low self-esteem (Roberts, Gotlib, & Kassel, 1996), problem-focused coping (Lopez et al., 2001; Wei et al., 2003), self-splitting and self-concealment (Lopez et al., 2002), maladaptive perfectionism (Wei et al., 2004), and social competencies and emotional awareness (Mallinckrodt & Wei, in press). Most of these studies have examined the same mediator for both attachment anxiety and avoidance. However, by definition, the two attachment dimensions (Anxiety and Avoidance) should be associated with different and distinct coping and affect regulation strategies (e.g., Kobak & Sceery, 1988; Lopez & Brennan, 2000; Mikulincer, Shaver, & Pereg, 2003; Shaver & Mikulincer, 2002). Theoretically, individuals experiencing attachment anxiety should use more overreactive or hyperactive strategies in order to try and elicit increased attention from others, whereas individuals experiencing attachment avoidance should use underreactive or deacti-

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vating strategies in order to distance themselves and their emotions from others (Kobak & Sceery, 1988). In other words, individuals with attachment anxiety should be more emotionally reactive or hypersensitive to problems they experience. In turn, individuals with attachment avoidance should be more likely to respond to problems by discounting the severity of their feelings and distancing themselves from others.

Not surprisingly, some researchers have begun to suggest that research is needed to better understand whether distinct mediators can be found that distinguish between specific attachment dimensions (Mallinckrodt & Wei, in press). By identifying the distinct mediators, clinicians could develop interventions that more directly meet the differential needs of individuals with specific attachment dimensions, and it would allow practitioners to decrease the negative emotions felt by individuals with insecure attachments. Therefore, it is important to examine the distinct mediators for persons with attachment anxiety and attachment avoidance in order to advance our understanding of attachment theory and to improve our clinical interventions.

Two types of maladaptive affect regulations have been implicated in the extant literature as possible mediators of the different attachment dimensions and negative mood and interpersonal problems. The first type of maladaptive affect regulation is a hyperactive strategy in which individuals overreact to their negative feelings in order to elicit support from others and to ensure their availability (e.g., Cassidy, 1994, 2000; Cassidy & Kobak, 1988; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Lopez & Brennan, 2000; Mikulincer et al., 2003; Pietromonaco & Feldman Barrett, 2000; Shaver & Mikulincer, 2002). The second type of maladaptive affect regulation is a deactivating strategy in which individuals suppress their negative feelings and maximize their distance from others in order to avoid frustration caused by others' unavailability (e.g., Cassidy, 1994, 2000; Cassidy & Kobak, 1988; Lopez & Brennan, 2000; Mikulincer et al., 2003; Pietromonaco & Feldman Barrett, 2000; Shaver & Mikulincer, 2002). These affect regulation strategies may have a short-term adaptive value by reducing uncomfortable feelings toward others who have been insensitive or rejecting (Cassidy, 2000; Cassidy & Kobak, 1988). However, the rigid use of these affect regulation strategies appears to contribute to negative mood (e.g., depression or anxiety) and interpersonal problems (e.g., needy, cold, hostility, or loneliness) in adulthood. Both emotional reactivity and emotional cutoff (indices of affect regulation), for example, have been linked to decreased relationship satisfaction (Skowron, 2000; Skowron & Friedlander, 1998) and increased symptoms of negative mood (Skowron & Friedlander, 1998) in adult populations. In addition, other indices of affect regulation, such as reactive and suppressive styles of coping, were significantly associated with depression and anxiety (Lopez et al., 2001); psychological distress and personal problems (Lopez et al., 2002); and depression, anxiety, hopelessness, anger, and interpersonal problems (Wei et al., 2003) in college student samples.

The specific affect regulation strategy used has also been linked to the specific dimension of insecure attachment experienced. Fuendeling (1998), for example, after reviewing the empirical research on the link of attachment and affect regulation, concluded that individuals with anxious attachment are the most attentive toward and expressive of their distress, whereas individuals with avoidant attachment are the most inattentive toward or repressive

of their distress. In addition, Lopez (2001) found that attachment anxiety was positively associated with emotional reactivity ($r = .24$) in a college population. Thus, the constructs of attachment anxiety and emotional reactivity shared 6% common variance in this college sample. Similarly, in studies by Lopez et al. (2001, 2002) and Wei et al. (2003), the constructs of attachment (anxiety and avoidance) and another index of affect regulation (reactive and suppressive style of coping) were found to be related and shared between 6% and 27% common variance in three college student samples. These findings suggest that the constructs of attachment (anxiety and avoidance) and affect regulation are related but distinct constructs. However, it is important to note that the small amount of shared variances between these two constructs may also be due to a poor operationalization of these variables (use of cognitive and not affective coping styles) as well as possible measurement errors in these previous studies. Further research is needed for clarification.

From the above review, it appears that attachment insecurity may contribute to the development of maladaptive affect regulation strategies. The rigid use of maladaptive affect regulation strategies, in turn, may contribute to negative mood and interpersonal problems. In other words, this implies that insecure attachment may contribute to negative mood and interpersonal problems through maladaptive affect regulation strategies. However, it is important to highlight several issues related to the associations of attachment, affect regulation, negative mood, and interpersonal problems that make the above suggestions uncertain. First, most of the extant research has only focused on the direct link between attachment anxiety and hyperactive affect regulation strategies and the direct link between attachment avoidance and deactivating affect regulation strategies. Few studies have empirically examined whether affect regulation serves as a mediator between the attachment dimensions and negative mood or interpersonal problems. In addition, although attachment dimensions are related to cognitive, affective, and behavioral components (e.g., Lopez & Brennan, 2000), the few studies that have examined affect regulation as a mediator have only examined the cognitive component (e.g., perceived coping). Furthermore, most studies that have examined affect regulation as a potential mediator tended to look for a single mediator for both attachment dimensions (e.g., Wei et al., 2003). Not surprisingly, from the literature review, we could not locate a single study that has provided clear-cut empirical evidence to support the notion that the different attachment dimensions contribute to negative mood and interpersonal problems indirectly through *distinct* affect regulation strategies. Thus, theoretically, empirically, and clinically, there is a need to continue this line of research by examining the possible distinct affective mediator of each attachment dimension.

The purpose of the present study was to examine whether individuals with attachment anxiety and attachment avoidance use different and distinct affect regulation strategies (i.e., the emotional reactivity strategy for attachment anxiety and the emotional cutoff strategy for attachment avoidance), which then contribute to negative mood and interpersonal problems. Specifically, we hypothesized that the association between attachment anxiety and negative mood or interpersonal problems would be mediated by emotional reactivity instead of emotional cutoff. In turn, we hypothesized that the association between attachment avoidance and

negative mood or interpersonal problems would be mediated by emotional cutoff instead of emotional reactivity (see Figure 1).

Method

Participants

Participants were 229 undergraduate students enrolled in psychology classes at a large midwestern university. There were 148 (65%) women, 70 (31%) men, and 11 (5%) who did not indicate their gender. Most participants were freshmen (42%), followed by sophomores (27%), juniors (17%), and seniors (8%). Their ages ranged from 18 to 43 years old ($M = 19.88, SD = 2.26$). Moreover, participants were predominantly Caucasian (84.7%), followed by African American (4.4%), international students (2.2%), Asian American (1.7%), Hispanic American (1.3%), and biracial or multiracial American (0.4%). The range of the ethnicities or racial identities and ages are reflective of the ratio from the university that the present data were collected from. In terms of current relationship status, almost half the participants (46%) were in a committed relationship, with most of the remaining half (44%) being single, and a small minority of participants being married (3%).

Measures

Attachment. Attachment orientation was measured with the Experiences in Close Relationships Scale (ECRS; Brennan et al., 1998). The ECRS is a 36-item self-report measure of adult attachment. Each item is responded to on a 7-point Likert-type scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). Participants rate how well the statement describes their typical feelings in romantic relationships. The ECRS was developed from the 14 attachment measures (60 subscales and 323 items) available at the time and from collected data from over 1,000 participants. Because the ECRS was developed from all the extant attachment measures, we only selected this one measure for the present study. The results of a factor analysis identified two relatively orthogonal continuous attachment dimensions, Anxiety and Avoidance. The Anxiety subscale (18 items) taps fears of rejection and preoccupation with abandonment. A sample item is "I worry about being abandoned." The Avoidance subscale (18 items) assesses fear of intimacy and discomfort with getting close to others or dependence. A sample item is "I am nervous when partners get too close to me." Higher scores on the Anxiety and Avoidant subscales indicate

higher attachment anxiety and attachment avoidance. Brennan et al. reported coefficient alphas of .91 and .94 for the Anxiety and Avoidance subscales, respectively. In the present study, coefficient alpha was .92 for the Anxiety subscale and .93 for the Avoidance subscale. Brennan et al. also reported that the ECRS was positively correlated with self-reported measures of touch and postcoital emotions. In order to create three observed indicators for each of the two latent variables of attachment anxiety and attachment avoidance, we followed the recommendation of Russell, Kahn, Spoth, and Altmaier (1998) to create three parcels for each subscale. First, exploratory factor analyses using the maximum likelihood method were conducted for the two factors (Anxiety and Avoidance), separately. We then rank ordered the items on the basis of the magnitude of the factor loadings and successively assigned pairs of the highest and lowest items to each parcel to equalize the average loadings of each parcel on its respective factor.

Emotional reactivity and emotional cutoff. Emotional reactivity and emotional cutoff were assessed with the Differentiation of Self Inventory (DSI; Skowron & Friedlander, 1998). The DSI is a 43-item self-report measure of differentiation of self. *Differentiation of self* is defined as the degree to which one is able to balance (a) emotional and intellectual functioning and (b) intimacy and autonomy in relationships (Bowen, 1978). Each item uses a 6-point response scale ranging from 1 (*not at all true of me*) to 6 (*very true of me*). Participants rate how true the statement describes their typical feelings in their relationships. The DSI contains four subscales: Emotional Reactivity, I Position, Emotional Cutoff, and Fusion With Others. In the present study, only Emotional Reactivity and Emotional Cutoff were used because they can be viewed as the index of the two maladaptive affect regulation strategies (i.e., hyperactivation and deactivation). The Emotion Reactivity subscale (11 items) reflects the degree to which a person responds to environmental stimuli with emotion flooding, emotion lability, or hypersensitivity to the point of being consumed by them. A sample item is "At times I feel as if I'm riding an emotional roller-coaster." The Emotional Cutoff subscale (12 items) reflects feeling threatened by intimacy and isolating themselves from others and their emotions when internal emotional experiences or interpersonal interactions are too intense. A sample item is "I would never consider turning to any of my family members for emotional support." Scores on the Emotional Reactivity subscale range from 6 (lowest degree of emotional reactivity) to 66. Scores on the Emotional Cutoff subscale range from 6 (lowest degree of emotional cutoff) to 72. Skowron and Friedlander reported that coeffi-

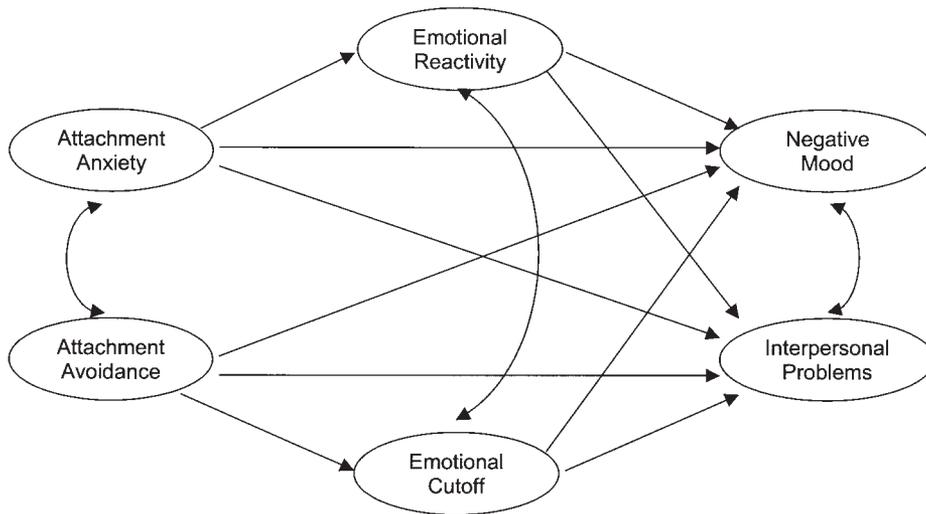


Figure 1. The hypothesized model.

cient alphas were .88 and .79 for scores on emotional reactivity and emotional cutoff, respectively. In this study, the coefficient alphas were .83 and .84 on emotional reactivity and emotional cutoff, respectively. Skowron and Friedlander also provided validity by showing that greater emotional reactivity and cutoff both uniquely predict greater symptomatic distress, and less emotional cutoff uniquely predicts greater marital satisfaction. In order to create two latent variables of emotional reactivity and emotional cutoff for the present study, we followed the recommendation of Russell et al. (1998) to create three parcels for Emotional Reactivity and Emotional Cutoff, separately. Similar to the above procedure, exploratory factor analyses, using the maximum likelihood method, were conducted for Emotional Reactivity and Emotional Cutoff, separately. Then, we rank ordered the items on the basis of the magnitude of the factor loadings and successively assigned pairs of the highest and lowest items to each parcel to equalize the average loadings of each parcel on its respective factor.

Negative mood. Negative mood was measured with the Depression and Anxiety subscales from the Depression Anxiety and Stress Scales (DASS; Lovibond & Lovibond, 1995). The DASS is a 21-item instrument measuring three negative mood states often found in clinical practice: depression, anxiety, and stress. Only the Depression and Anxiety subscales were used as observed indicators for the negative mood latent variable in the present study because they are most commonly correlated with insecure attachment (e.g., Lopez et al., 2001; Wei et al., 2003). Each scale is composed of seven primary symptoms. Participants rate how much the statement applied to them over the past week. Each item uses a 4-point response scale ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). A sample item from the Depression subscale is "I could not seem to experience any positive feeling at all." A sample item from the Anxiety subscale is "I felt I was close to panic." Scores range from 0 to 21 for each subscale. Higher scores indicate higher depression and anxiety. The DASS asserts that depression and anxiety are relatively mutable states and not necessarily enduring traits. Lovibond and Lovibond reported that coefficient alphas were .96 and .89 for depression and anxiety, respectively. The coefficient alphas of this study were .87 and .76 for depression and anxiety, respectively.

Interpersonal problems. Interpersonal problems were measured with the Inventory of Interpersonal Problems-Short Circumplex Form (IIP-SC; Soldz, Budman, Demby, & Merry, 1995) and the UCLA Loneliness Scale-Version 3 (Russell, 1996). The IIP-SC is a 32-item measure designed to assess the individuals' interpersonal distress. It is a short form of the 64-item IIP-C Circumplex Form (IIP-C; Alden, Wiggins, & Pincus, 1990). The IIP-C was extracted from the original 127-item Inventory of Interpersonal Problems (IIP; Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988). Each item is designed as a 5-point Likert-type scale: 0 (*not at all*), 1 (*a little bit*), 2 (*moderately*), 3 (*quite a bit*), and 4 (*extremely*). A sample item is "I try to please other people too much." The IIP-SC total score ranges from 0 to 128. A higher score reflects greater distress related to interpersonal problems. Soldz et al. reported that the coefficient alpha for the IIP-SC total score ranged from .88 to .89. In the present study, the coefficient alpha for the IIP-SC total score was .91. In addition, Soldz et al. indicated that the IIP-SC could be used as a substitute for the IIP on the basis of a high correlation between the IIP-SC and the IIP. The validity evidence of IIP-SC was provided by the positive association of the IIP-SC with the indices of negative mood such as depression and anxiety (Wei et al., 2003).

The UCLA Loneliness Scale-Version 3 (Russell, 1996) was designed to detect variations in loneliness in everyday life. Version 3 of the UCLA Loneliness Scale contains 20 items, 9 positive (nonlonely) and 11 negative (lonely), that are randomly distributed in the instrument. Participants are asked to respond on a scale ranging from 1 (*never*) to 4 (*always*). A sample item is "How often do you feel alone?" Scores on the scale range from 20 (lowest degree of loneliness) to 80. Russell reported that Version 3 of this scale appears to be reliable, with coefficient alphas ranging from .89 to .94 across samples. The coefficient alpha for the UCLA Loneliness Scale was

.92 in the present study. In terms of validity, convergent validity for the scale was indicated by significant and positive correlations with other measures of loneliness such as the NYU Loneliness Scale (Rubenstein & Shaver, 1982) and the Differential Loneliness Scale (Schmidt & Sermat, 1983). Construct validity was supported with significant and positive associations with depression and neuroticism as well as with significant and negative associations with several social support measures and self-esteem (Russell, 1996). The IIP-SC and the UCLA Loneliness Scale served as the two observed indicators for the latent variable of interpersonal problems in the present study.

Procedure

The questionnaires were administered to small groups of 5–30 students who signed up for one of several data collection times. The participants were told that "the present study is related to close relationships and emotions." It took about 30–45 min to complete the entire packet of instruments. No personal identifying information was included on the questionnaires. Participants were guaranteed anonymity of their responses and confidentiality of the data. Participants received credit toward their course grade for agreeing to participate in this study.

Results

Descriptive Statistics

Means, standard deviations, and zero-order correlations for the 16 observed variables are shown in Table 1.¹ The multivariate normality test was used to examine whether the data met the normality assumptions underlying the maximum likelihood procedure used to test the models in the present study. The result of the multivariate normality test indicated that the data were not normal, $\chi^2(2, N = 229) = 97.73, p < .001$. Therefore, the scaled chi-square statistics for adjusting the impact of nonnormality, developed by Satorra and Bentler (1988), would be used in subsequent analyses.

Measurement Model for Testing Mediated Effects

According to Anderson and Gerbing's (1988) recommendation, the measurement model was first tested for an acceptable fit to the data through a confirmatory factor analysis. Then, the structural model was tested after an acceptable measurement model was developed. The measurement model was estimated using the maximum likelihood method in LISREL (Version 8.54). As suggested by Hu and Bentler (1999) and Quintana and Maxwell (1999), we used three indices to assess goodness of fit for the models: the comparative fit index (CFI; values of .95 or greater indicate that the model adequately fits the data), the root-mean-square error approximation (RMSEA; values of .06 or less indicate that the model adequately fits the data), and the standardized root-mean-square residual (SRMR; values of .08 or less indicate that the model adequately fits the data). Finally, we used the corrected scaled chi-square difference test (Satorra & Bentler, 2001) to compare the nested model.

¹ The Emotional Reactivity and Emotional Cutoff subscales in the Differentiation of Self Inventory use a 6-point response scale ranging from 1 (*not at all true of me*) to 6 (*very true of me*). In the present study, we made an error of using a 5-point response scale ranging from 1 (*not at all true of me*) to 5 (*very true of me*).

Table 1
Means, Standard Deviations, and Correlations Among 16 Observed Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Anxiety 1	20.93	6.96	—	.80	.82	.17	.22	.23	.27	.37	.20	.07	.16	.08	.17	.18	.22	.39
2. Anxiety 2	22.02	7.54		—	.79	.16	.22	.22	.25	.36	.24	.11	.22	.13	.22	.22	.26	.34
3. Anxiety 3	20.54	6.91			—	.08	.17	.12	.23	.34	.19	.07	.20	.10	.16	.18	.27	.35
4. Avoid 1	16.76	6.20				—	.86	.85	-.05	.07	-.04	.26	.27	.23	.11	.11	.26	.43
5. Avoid 2	15.22	6.36					—	.84	-.04	.06	-.02	.24	.29	.25	.15	.17	.21	.42
6. Avoid 3	16.00	6.30						—	.02	.07	.04	.26	.27	.27	.17	.20	.24	.40
7. React 1	12.93	3.22							—	.68	.63	.10	.08	.05	.26	.33	.32	.06
8. React 2	12.62	3.11								—	.71	.12	.13	.05	.29	.35	.31	.22
9. React 3	8.07	2.55									—	.08	.09	.00	.26	.30	.31	.08
10. Cutoff 1	8.29	3.02										—	.70	.76	.24	.35	.34	.20
11. Cutoff 2	8.18	3.00											—	.66	.29	.38	.33	.22
12. Cutoff 3	8.63	2.95												—	.23	.31	.27	.22
13. Dassa	10.21	3.33													—	.62	.31	.16
14. Dassa	10.79	3.87														—	.39	.22
15. IIP	69.19	17.58															—	.34
16. LS	38.21	9.32																—

Note. *N* = 229. Absolute values of correlation greater than .17 were significant at *p* < .01. Anxiety 1, 2, 3 = item parcels from the Anxiety subscale of the Experiences in Close Relationships Scale; Avoid 1, 2, 3 = item parcels from the Avoidance subscale of the Experiences in Close Relationships Scale; React 1, 2, 3 = item parcels from the Emotional Reactivity subscale of the Differentiation of Self Inventory; Cutoff 1, 2, 3 = item parcels from the Emotional Cutoff subscale of the Differentiation of Self Inventory; Dassa and Dassa = the Anxiety and Depression subscales of the Depression Anxiety and Stress Scales; IIP = Inventory of Interpersonal Problems-Short Circumplex Form; LS = UCLA Loneliness Scale-Version 3.

An initial test of the measurement model resulted in good fit to the data, $\chi^2(89, N = 229) = 140.51, p < .001$; scaled $\chi^2(89, N = 229) = 134.94, p < .001$, CFI = .98; RMSEA = .05 (90% confidence interval [CI]: .03, .06); SRMR = .05. All of the loadings of the 16 measured variables on the latent variables were statistically significant (*p* < .001; see Table 2). Therefore, all of the latent variables appear to have been adequately measured by their respective indicators. Moreover, in Table 3, attachment anx-

ity was significantly and positively associated with emotional reactivity (*r* = .39, *p* < .001). Even though attachment anxiety was also significantly associated with emotional cutoff (*r* = .14, *p* < .05), the magnitude of the association with emotional reactivity was much stronger than it was for emotional cutoff. In contrast, attachment avoidance was significantly and positively associated with emotional cutoff (*r* = .33, *p* < .001), whereas attachment avoidance was not significantly associated with emotional reactivity (*r* = .03, *p* > .05). In addition, as seen in Table 3, the mediator latent variables (i.e., emotional reactivity and emotional cutoff) were significantly and positively associated with the dependent latent variables (i.e., negative mood and interpersonal problems).

It is important to note that we also explored an alternative measurement model that examined whether attachment anxiety and emotional reactivity (or attachment avoidance and emotional cutoff) were overlapping constructs. We assessed this possibility by combining attachment anxiety and emotional reactivity as indicators for one independent latent variable, as well as combining attachment avoidance and emotional cutoff as indicators for another independent latent variable. Both independent latent vari-

Table 2
Factor Loadings for the Measurement Model

Measure and variable	<i>b</i>	<i>SE</i>	<i>Z</i>	β
Attachment Anxiety				
Anxiety Parcel 1	6.35	0.33	19.40	.91***
Anxiety Parcel 2	6.65	0.35	18.91	.88***
Anxiety Parcel 3	6.21	0.34	18.04	.90***
Attachment Avoidance				
Avoidance Parcel 1	5.77	0.27	21.05	.93***
Avoidance Parcel 2	5.86	0.30	19.30	.92***
Avoidance Parcel 3	5.77	0.28	20.66	.92***
Emotional Reactivity				
Reactivity Parcel 1	2.49	0.20	12.60	.77***
Reactivity Parcel 2	2.76	0.15	19.03	.89***
Reactivity Parcel 3	2.04	0.13	15.17	.80***
Emotional Cutoff				
Cutoff Parcel 1	2.68	0.14	18.49	.89***
Cutoff Parcel 2	2.38	0.17	14.04	.79***
Cutoff Parcel 3	2.50	0.16	15.23	.85***
Negative mood				
Depression	3.48	0.34	10.27	.90***
Anxiety	2.31	0.27	8.43	.69***
Interpersonal problems				
Interpersonal distress	9.98	1.50	6.66	.57***
Loneliness	5.63	0.76	7.36	.60***

Note. *N* = 229.
*** *p* < .001.

Table 3
Correlations Among Latent Variables for the Measurement Model

Latent variable	1	2	3	4	5	6
1. Attachment anxiety	—	.21**	.39***	.14*	.25***	.59***
2. Attachment avoidance		—	.03	.33***	.19**	.62***
3. Emotional reactivity			—	.12	.45***	.46***
4. Emotional cutoff				—	.44***	.51***
5. Negative mood					—	.57***
6. Interpersonal problems						—

Note. *N* = 229.
* *p* < .05. ** *p* < .01. *** *p* < .001.

ables were used as predictors of the two dependent latent variables (negative mood and interpersonal problems). However, this resulted in a poor fit of the data, $\chi^2(98, N = 229) = 1057.44, p < .001, CFI = .67; RMSEA = .21$ (CI: .20, .22); SRMR = .15, and did not support this possibility.

Structural Model for Testing Mediated Effects

We hypothesized that emotional reactivity (but not emotional cutoff) would be a distinct mediator between attachment anxiety and negative mood and interpersonal problems, whereas emotional cutoff (but not emotional reactivity) would be a distinct mediator between attachment avoidance and negative mood and interpersonal problems. To empirically test this hypothesis, we tested four alternative models (Models A-D). First, we examined the hypothesized model (see Model A in Table 4) depicted in Figure 1. Next, we examined whether emotional reactivity and emotional cutoff were, in fact, distinct mediators of attachment anxiety and attachment avoidance by adding paths from attachment anxiety to emotional cutoff and from attachment avoidance to emotional reactivity (see Model B in Table 4) in order to determine whether they contributed significantly to the model. Finally, to examine whether attachment anxiety contributed to negative mood and interpersonal problems and whether attachment avoidance contributed to nega-

tive mood and interpersonal problems only indirectly through emotional reactivity or emotional cutoff, we compared Model A with two alternative models (Models C and D). Model C constrained the direct paths from attachment anxiety and avoidance to interpersonal problems to zero (see Model C in Table 4). Model D constrained the direct paths from attachment anxiety and avoidance to negative mood to zero (see Model D in Table 4). Constraining these direct paths to zero allowed us to examine whether these paths contributed significantly or not to the model.

According to all our criteria, Model A fit the data well (see Model A in Table 4). This model showed that emotional reactivity was a specific mediator between attachment anxiety and negative mood and interpersonal problems, whereas emotional cutoff was a specific mediator between attachment avoidance and negative mood and interpersonal problems. The results also indicated that Model B fit the data well according to all our criteria (see Model B in Table 4). However, when Model A and Model B were compared, the nonsignificant corrected scaled chi-square difference, $\Delta\chi^2(2, N = 229) = 1.78, p = .41$, indicated that adding these two paths did not contribute significantly to the model. Therefore, Model B was not better than Model A. Also, the paths from attachment anxiety to emotional cutoff and attachment avoidance to emotional reactivity were close to zero ($\beta = .08$ and $-.05, ps >$

Table 4
Structural Paths, Chi-Square, and Fit Indices Among Different Models

Path coefficients and fit indices	Model A	Model B	Model C	Model D
Attachment anxiety → emotional reactivity	.38***	.40***	.39***	.39***
Attachment avoidance → emotional reactivity	—	-.05	—	—
Attachment anxiety → emotional cutoff	—	.08	—	—
Attachment avoidance → emotional cutoff	.33***	.31***	.34***	.33***
Emotional reactivity → negative mood	.39***	.39***	.41***	.40***
Emotional cutoff → negative mood	.37***	.37***	.40***	.39***
Emotional reactivity → interpersonal problems	.27***	.27***	.44***	.28***
Emotional cutoff → interpersonal problems	.29***	.29***	.45***	.30***
Attachment anxiety → interpersonal problems	.35***	.35***	—	.35***
Attachment avoidance → interpersonal problems	.44***	.44***	—	.43***
Attachment anxiety → negative mood	.03	.03	.00	—
Attachment avoidance → negative mood	.05	.05	.00	—
Standard χ^2	142.21	140.51	179.18	143.09
Scaled χ^2	136.82	134.94	164.88	138.19
df	91	89	93	93
CFI	.98	.98	.97	.98
RMSEA	.05	.05	.06	.05
CI for RMSEA	.03, .06	.03, .06	.04, .07	.03, .06
SRMR	.05	.05	.08	.06
Δ corrected scaled $\chi^2(df)$		A vs. B 1.78(2)	A vs. C 11.41(2)	A vs. D 1.03(2)

Note. $N = 229$. Boldface type represents the best model; dashes indicate that the paths were constrained to zero. Model A = the hypothesized structural model (see Figure 1) in which the paths from attachment anxiety to emotional cutoff and from attachment avoidance to emotional reactivity were constrained to zero; Model B = the fully recursive model in which every structural path was estimated; Model C = the direct paths from attachment anxiety or avoidance to interpersonal problems were constrained to zero, and the paths from attachment anxiety to emotional cutoff and from attachment avoidance to emotional reactivity were constrained to zero; Model D (the best fit model, see Figure 2) = direct paths from attachment anxiety or avoidance to negative mood were constrained to zero, and the paths from attachment anxiety to emotional cutoff and from attachment avoidance to emotional reactivity were also constrained to zero. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval; SRMR = standardized root-mean-square residual.

*** $p < .001$.

.05, respectively; see Model B in Table 4). These results implied that there was almost no relationship between attachment anxiety and emotional cutoff and between attachment avoidance and emotional reactivity after controlling for the other attachment dimension.

The results of Model C still indicated a good fit to the data according to all our criteria (see Model C in Table 4). A significant corrected scaled chi-square difference, $\Delta\chi^2(2, N = 229) = 11.41$, $p < .01$, however, suggested that Model A and Model C were significantly different. The significant chi-square difference implied that these two direct paths from attachment anxiety and avoidance to interpersonal problems did make a significant contribution to the model. Therefore, Model A was a better model than Model C. The results of Model D also indicated a good fit to the data according to all our criteria (see Model D in Table 4), but the corrected scaled chi-square difference, $\Delta\chi^2(2, N = 229) = 1.03$, $p = .60$, between Model A and Model D was not significant. This result indicated that these two direct paths from attachment anxiety and avoidance to negative mood did not make a significant contribution to the model. Therefore, Model D (see Figure 2) was chosen as the best model.

In summary, the results from Model D (see Figure 2) supported our hypothesis that attachment anxiety would contribute to negative mood and interpersonal problems indirectly through emotional reactivity (and not through emotional cutoff). Conversely, attachment avoidance would contribute to negative mood and interpersonal problems indirectly through emotional cutoff (and not through emotional reactivity). Interestingly, Model D did show that there were also significant direct effects from attachment anxiety and avoidance to interpersonal problems but not between attachment anxiety and avoidance and negative mood. However, before we made these conclusions for the results of the indirect effects, Model D would be used in the bootstrap procedure to test the significant levels of indirect effects.

Testing the Significant Levels of Indirect Effects

A number of methods have been suggested in the literature for testing mediation effects. Recently, MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) evaluated 14 methods in terms of Type I error and statistical power. They found that the commonly used method recommended by Baron and Kenny (1986) for testing mediation had the lowest statistical power among the 14 methods examined. Thus, MacKinnon et al. (2002) recommended using a test of the indirect effect of the causal variable through the hypothesized mediator reported by the LISREL program in testing for mediation. However, MacKinnon et al. (2002) indicated that the method used by LISREL to calculate the standard error of the indirect effect tends to yield incorrect estimates. In order to develop more accurate estimates of standard errors of the indirect effects, Shrout and Bolger (2002) suggested a bootstrap procedure. In general, bootstrap methods offer an empirical method of determining statistical estimates (Efron & Tibshirani, 1993). A standard error is the expected variability of an estimate if the estimation were repeated a large number of times. Therefore, in the present study, Model D (see Figure 2) was used in a bootstrap procedure to test the significant levels of indirect effects.

First, 1,000 bootstrap samples were created from the original data set ($n = 229$) by random sampling with replacement. Second, Model D was conducted 1,000 times with these bootstrap samples in the LISREL program to yield 1,000 estimations of each path coefficient. Third, LISREL's saved output of the 1,000 estimations of each path coefficient calculated the estimations of two indirect effects for attachment anxiety on negative mood and on interpersonal problems by multiplying 1,000 pairs of path coefficients from (a) attachment anxiety to emotional reactivity and from (b) emotional reactivity to negative mood and to interpersonal problems. Similarly, two indirect effects for attachment avoidance on negative mood and on interpersonal problems were calculated by multiplying 1,000 pairings of path coefficients from (a) attachment

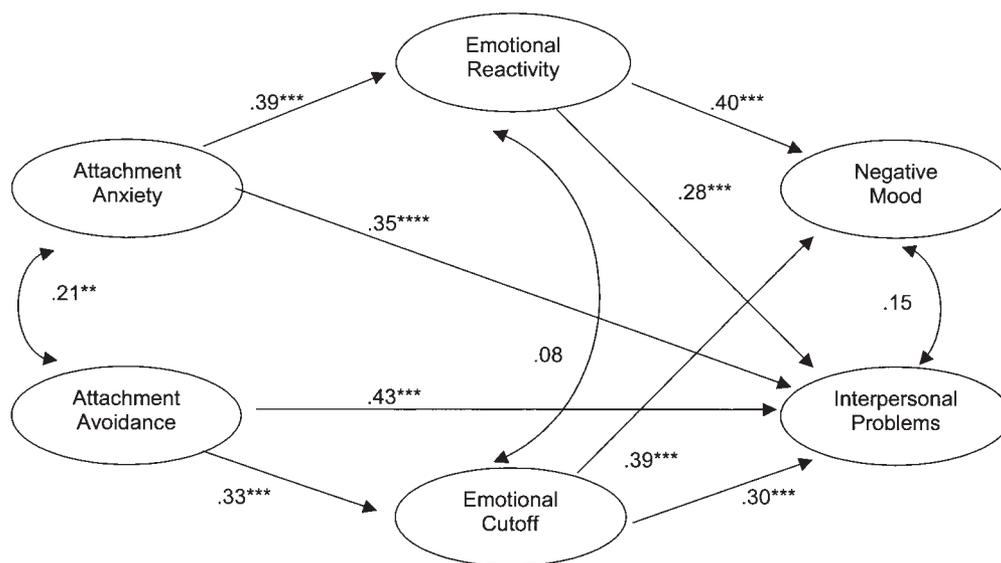


Figure 2. The mediation model. ** $p < .01$. *** $p < .001$.

avoidance to emotional cutoff and from (b) emotional cutoff to negative mood and to interpersonal problems. Finally, if the 95% CI for the estimate of indirect effect does not include zero, it can be concluded that the indirect effect is statistically significant at the .05 level (Shrout & Bolger, 2002).

The results from 1,000 bootstrap samples indicated that the mean indirect effects from attachment anxiety through emotional reactivity to negative mood ($b = .086$ [CI: .043, .138], $\beta = .39 \times .40 = .16$, $p < .001$) and interpersonal problems ($b = .167$ [CI: .017, .341], $\beta = .39 \times .28 = .11$, $p < .001$) were significant.² Also, the mean indirect effects from attachment avoidance through emotional cutoff to negative mood ($b = .081$ [CI: .036, .139], $\beta = .33 \times .39 = .13$, $p < .001$) and interpersonal problems ($b = .171$ [CI: .029, .361], $\beta = .33 \times .30 = .10$, $p < .001$) were significant (see Footnote 2). The 95% CI for all the indirect effects did not include zero. This indicates that all the indirect effects were statistically significant (see Footnote 2). In addition, the direct effects from attachment anxiety and avoidance to interpersonal problems were also significant ($\beta = .35$ or $.43$, $Z = 3.56$ or 4.72 , $p < .001$). In conclusion, the results in the present study suggest that attachment anxiety contributed to negative mood totally through emotional reactivity (instead of emotional cutoff), whereas attachment avoidance contributed to negative mood totally through emotional cutoff (instead of emotional reactivity). However, attachment anxiety contributed to interpersonal problems only partially through emotional reactivity (instead of emotional cutoff), whereas attachment avoidance contributed to interpersonal problems only partially through emotional cutoff (instead of emotional reactivity). It is also important to note that 36% of the variance in negative mood was explained by emotional reactivity and emotional cutoff; 75% of the variance in interpersonal problems was explained by attachment anxiety, attachment avoidance, emotional reactivity, and emotional cutoff.

Discussion

The findings of this study support the literature (e.g., Lopez et al., 2001, 2002; Wei et al., 2003), suggesting that the link between attachment and distress is not simply a direct relationship but that both attachment anxiety and avoidance contribute to distress through certain mediating psychological processes. The present results also extend our understanding of these processes by providing empirical evidence that emotional reactivity and emotional cutoff (indices of affect regulation), specifically, play important mediating roles between attachment and distress. Perhaps most importantly, the results of this study provide empirical support for the assertion within the attachment literature that different attachment dimensions are associated with different and distinct affect regulation strategies (e.g., Kobak & Sceery, 1988; Lopez & Brennan, 2000; Mikulincer et al., 2003; Shaver & Mikulincer, 2002). Specifically, attachment anxiety's contribution to negative mood and interpersonal problems was mainly through one distinct mediator, emotional reactivity (and not emotional cutoff). Conversely, attachment avoidance's contribution to negative mood and interpersonal problems was mainly through another distinct mediator, emotional cutoff (and not emotional reactivity). Thus, unlike previous studies, which have found the same mediators for both attachment dimensions and distress, the present results add to attachment research by providing empirical evidence that individuals with different attachment dimensions not only prefer to use

different and distinct affect regulation strategies but also experience negative mood and interpersonal problems through these distinct strategies.

An important interpretation of these results is that, whereas using either emotional reactivity or emotional cutoff as an affect regulation strategy may have short-term benefits for an individual, the rigid use of these strategies may later contribute to negative mood (e.g., depression and anxiety) and interpersonal problems (e.g., interpersonal distress and loneliness). Individuals with attachment anxiety, for example, may prefer an emotionally reactive affect regulation strategy because this strategy might initially draw others' attention to their negative mood or interpersonal problems. However, if they constantly or rigidly use this strategy in order to receive others' attention, others may eventually become tired of their overreactions and start to act negatively toward the individual, or even start to avoid or reject them. These reactions from others may lead individuals with attachment anxiety to ultimately experience increased negative mood, interpersonal distress, or loneliness. Individuals with attachment avoidance, in turn, may prefer to emotionally cutoff as an affect regulation strategy because this strategy could put distance between themselves and others, thereby avoiding potential conflicts, rejections, or disappointments. This strategy initially could be a protective strategy to deal with others' unavailability or unresponsiveness. However, if they frequently and rigidly use this strategy, they may wind up actually pushing others so far away that they experience more negative mood (e.g., depression or anxiety) and interpersonal problems (e.g., interpersonal distress or loneliness).

It should be mentioned that we found that attachment anxiety's contribution to negative mood was fully mediated through emotional reactivity and that attachment avoidance's contribution to negative mood was fully mediated through emotional cutoff. However, attachment anxiety's contribution to interpersonal problems was only partially mediated through emotional reactivity, and attachment avoidance's contribution to interpersonal problems was only partially mediated through emotional cutoff. This implies that emotional reactivity for attachment anxiety and emotional cutoff for attachment avoidance are not acting alone as mediators of an individual's interpersonal distress and loneliness. Future researchers may examine other variables (e.g., self-awareness of relationship patterns) that may contribute to the relationship between attachment and interpersonal problems. In addition, future researchers may also want to build on the present findings by continuing to examine the role of different affect regulation strategies (e.g., self-defeating strategies, or strategies for social connectedness) as mediators for specific types of interpersonal distresses (e.g., interpersonal controlling, or interpersonal coldness) or loneliness issues (e.g., emotional loneliness, or social loneliness). Emotional reactivity and emotional cutoff are maladaptive affect regulation strategies. Future studies might examine whether the adaptive aspects of affect regulation (e.g., self-acceptance or satisfaction of basic psychological needs) mediate the relationship between attachment and interpersonal distress and loneliness. In

² The results for unstandardized path coefficients (*bs*) of the indirect effects were the results from the bootstrap procedure. However, the results of standardized path coefficients (β s) of the indirect effects were the results from the LISREL program.

addition, from the measurement model, the zero-order correlations among the latent variables in the present study (see Table 3) suggested that attachment anxiety and avoidance were actually associated more strongly with interpersonal problems ($r = .59$ and $.62$, respectively) than with negative mood ($r = .25$ and $.19$, respectively). This is an interesting finding, suggesting that an increased focus on the potential mediators of interpersonal distress and loneliness is warranted.

Lopez and Brennan (2000) also asserted that more work must be done to develop and evaluate attachment-theory-based interventions. In line with this, the present results suggest several possible clinical implications for individuals with attachment anxiety and avoidance. First, practitioners can recognize that individuals with different attachment dimensions prefer to use different and distinct affect regulation strategies to regulate their negative mood. Second, practitioners may assist individuals with attachment anxiety to make a connection regarding how they use an emotional reactivity strategy, which then contributes to their experience of negative mood and interpersonal problems. Conversely, clinicians may help individuals with attachment avoidance to make the connection regarding how they use an emotional cutoff strategy, which then contributes to their negative mood and interpersonal problems. Increasing awareness to what is going on regarding the link of affect regulation strategies and negative mood and interpersonal problems may be enough for some people to begin a process of change. Third, practitioners can help individuals with attachment anxiety and avoidance to recognize the temporary positive benefits (e.g., receiving attention or preventing rejection) and long-term negative consequences (e.g., chronic negative mood and interpersonal problems) of using their specific and distinct maladaptive affect regulation strategies. Recognition of the long-term costs of adhering to a certain specific affect regulation strategy may start to provide an increased desire to make a change. Finally, practitioners can help individuals with attachment anxiety and avoidance to identify the specific affect regulation strategies they use (e.g., emotional reactivity for anxiety and emotional cutoff for avoidant) and encourage them to develop an alternative affect regulation strategy to meet their psychological needs. For example, for individuals with attachment anxiety, they can directly let others know their needs for attention or comfort instead of rigidly using the emotional reactivity strategy to decrease their negative mood. Conversely, for individuals with attachment avoidance, they can selectively take risks to turn to trustworthy others first for emotional support instead of rigidly using the emotional cutoff strategy to decrease their negative mood. Allowing them to expand their flexibility in using the different and alternative affect regulation strategies instead of rigidly adhering to their habitual and specific affect regulation strategy should reduce their experiences of negative mood and interpersonal problems. In the future, researchers might conduct process and outcome research on the effectiveness of an affect regulation group by using preventive interventions, like these, on individuals with insecure attachment in order to try and reduce their negative mood and interpersonal problems.

Although the results of the present study provide important implications for those attempting to understand how different attachment dimensions contribute to negative mood and interper-

sonal distress through different and distinct affect regulation strategies, some limitations need to be noted. First, caution needs to be taken when generalizing the present study's results to diverse populations because few participants were from ethnically or racially diverse populations. Different cultures may have unique affect regulations. For example, the norm of adaptive affect regulation for Asian Americans may be quite different from the norm for White samples. Asian cultures value harmony in relationships; suppression of one's affect can sometimes be an important affect regulation strategy for maintaining harmonious interpersonal relationships. Future research should examine whether individuals with different attachment dimensions deal with their negative mood and interpersonal problems in the same way across different ethnic groups. Similarly, generalizing the results to populations other than college students should be cautioned until future research examines how noncollege students with different attachment dimensions deal with their negative mood and interpersonal distress. Second, although our results did not support the notion that attachment anxiety and emotional reactivity (or attachment avoidance and emotional cutoff) were overlapping constructs, future studies may want to examine this possibility by using different instruments. Third, although the present results were computed using structural equation modeling, they are still based on correlational data. A longitudinal study or a design featuring direct manipulation of variables could provide more conclusive evidence of causal relationships. Fourth, the present results are based entirely on self-report measures. Replication with other methods of data collection (e.g., observer ratings or other-report) would be beneficial in future research. Finally, most of the participants were women (65%). Future studies should include a more balanced sample of women and men. Beyond the above limitations, the present study adds an important piece of information to the attachment literature. Emotional reactivity (and not emotional cutoff) was a distinct mediator between attachment anxiety and negative mood and interpersonal problems, and emotional cutoff (and not emotional reactivity) was a distinct mediator between attachment avoidance and negative mood and interpersonal problems. As such, the present study provides direct empirical evidence that the different attachment dimensions contribute to psychological and interpersonal functioning through distinct affect regulation strategies. Furthermore, a large amount of the variance (36% of the variance in negative mood and 75% of the variance in interpersonal problems) was explained by these attachment dimensions (anxiety and avoidance) and their affective regulation strategies (emotional reactivity and emotional cutoff).

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