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# The emotional sequelae of nonmarital relationship dissolution: Analysis of change and intraindividual variability over time

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## Abstract

This paper examined the emotional sequelae of nonmarital relationship dissolution among 58 young adults. Participants were recruited while in a serious dating relationship, and when it ended, were signaled randomly with beepers for 28 days to complete an emotions diary. Compared to participants in intact dating relationships, dissolution participants reported more emotional volatility, especially immediately following the breakup. Multilevel growth modeling showed a linear decline in love and curvilinear patterns for sadness, anger, and relief. Contact with a former partner slowed the decline for love and sadness, and attachment style and the impact of the breakup predicted the emotional start-points and rate(s) of change over time. The results are discussed in terms of the functional role of postrelationship emotions as well as the importance of understanding patterns of intraindividual variability and differential predictors of emotional change.

The end of a romantic relationship—be it the breakup of a first serious love affair or divorce after years of marriage—is associated with a wide range of emotional reactions. For those who are left without warning, a breakup can be devastating (Amato, 2000; Emery, 1994; Frazier & Cook, 1993; Hetherington & Kelly, 2002; Sprecher, 1994; Wang & Amato, 2000; Weiss, 1975, 1976). For the leavers, in contrast, ending a relationship can be positive and associated with a sense of happiness, relief, and freedom (Sprecher, Felmlee, Metts, Fehr, & Vanni, 1998), although guilt, regret, and sometimes shame over hurting one's partner also can accompany the choice to end the relationship (Emery, 1994; Vaughan, 1986). Even when stressful, many people view breakup and divorce experiences as opportunities

to find inner strength and renewed meaning in life (Emery, 2004; Marks, 1996; Monroe et al., 1999; Tashiro & Frazier, 2003).

Despite the range of affective experience, few empirical investigations have studied how negative emotions decline or how positive emotions emerge following the severing of a romantic relationship. Yet, when adults discuss their reactions, emotional topics are among the most frequently talked about issues: “How long will it take me to get over this breakup?” “How will I react or feel if I talk on the phone, see, or have sex with my ex?” Underpinning both questions is the element of time. While it may take weeks, months, or even years to grieve lost love, the emotional sequelae of contact with a former partner is likely to be more immediate. Accidentally bumping into a former partner at the grocery store or receiving a surprise phone call, for instance, may reactivate or amplify the sadness, anger, or pining that had slowly dissipated since the initial separation. These types of experiences also may disturb the balance of positive emotions, staunching feelings of freedom or relief.

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Research on the correlates of distress following a breakup highlights factors that are associated with better or worse adjustment. In terms of postdissolution adjustment, persons reporting secure attachment styles typically fare better than their insecure counterparts (Frazier & Cook, 1993), as do individuals who reported that they initiated the separation (Thompson & Spanier, 1983). No studies, however, have examined the emotional change process itself. How do feelings of love, sadness, anger, or relief persist, desist, and/or emerge in the wake of a dissolution experience? Despite a lack of empirical evidence, guiding theory is available to formulate specific hypotheses on the nature of emotional change. Emery (1994, 2004) and Sbarra and Emery (in press) have proposed that the emotional experience following relationship dissolution is akin to the grief following the death of one's spouse. A critical difference, however, is that, unlike death, the loss and breakup of a relationship is theoretically revocable, and this makes grieving relationship dissolution much more cyclical than linear (cf. Kubler-Ross, 1969). Contact with one's former partner, for instance, can stall the emotional adjustment process and reactivate many painful emotions. Consistent with contemporary perspectives on bereavement and attachment theory (Bowlby, 1980; Stroebe & Schut, 2001), the model predicts changes in emotions over time to fluctuate, often widely. The model specifically suggests that people will vacillate a great deal in their experience of three key emotions: love, sadness, and anger, and rather than demonstrating linear adjustment over time, emotional change is expected to be curvilinear or uneven.

In addition, the model predicts postdissolution emotional experience to vary considerably between people. Within one individual, for example, decreases in sadness may be followed by sharp rises in this emotion, levels of love may stay relatively high, and positive emotions may emerge more slowly over time. For persons leaving the relationship, positive affect may begin and remain high, as leavers experience intermittent and milder sadness and longing. Over time, as individuals adjust to the separation and reach a degree of reso-

lution, negative affect and within-person variation is expected to decline. From this perspective, poor adjustment can be viewed as the persistence of high negative affect, large within-person variability, or a combination of the two (Emery, 1994).

This viewpoint is consistent with Kernis and colleagues (Kernis & Goldman, 2003; Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000) who demonstrate that low levels of self-esteem and self-esteem stability are associated with poor psychological outcomes. Moreover, theoretical and empirical research in life span developmental psychology holds that stable patterns of within-person or intraindividual variability can be considered important predictors of between-persons outcomes (Eizenman, Nesselroade, Fetherman, & Rowe, 1997; Nesselroade & Ghisletta, 2000). The extent to which individuals maintain a high degree of emotional variability in negative affect—frequently oscillating between feeling less and more distressed—is therefore believed to predict prolonged distress (Emery, 1994, 2004).

### *The present study*

The present investigation addresses the emotional sequelae of nonmarital relationship dissolution in three primary ways. First, to examine the hypothesis that a breakup experience is emotionally dysregulating, we compare reports of love, anger, and sadness following dissolution to a sample of individuals in intact dating relationships, thus allowing for a direct comparison of emotions inside and outside of relationships. We predicted that dissolution participants would report greater mean levels of anger and sadness but less love compared to individuals in intact dating relationships. We also compared rates of variability between the samples, predicting more within-person variation for all three emotions within the dissolution sample. Second, we used multilevel modeling to analyze changes in self-reported emotional experience within the dissolution sample over time. Based on theory suggesting that emotional change processes are uneven and varied over time, we hypothesized that love,

sadness, and anger would demonstrate curvilinear (rather than linear) patterns of decline. Because there is little guiding theory, we made no specific predictions about changes in positive affect over time. Following the determination of the best fitting growth models, we hypothesized that certain covariates would predict the speed of emotional change. Specifically, we expected slower rates of decline among individuals who dated longer, were left by their partner, were less securely attached, reported a greater psychological impact of the breakup, and reported more longing for their former partner at the beginning of the study. We also expected contact with one's former partner (a time-varying covariate) to stall the rate of decline in the negative emotions. Third and finally, we computed a within-person variability score as a measure of emotional stability. We hypothesized that high levels of emotional variability would predict psychological adjustment at the study's end after controlling for relevant covariates.

## Method

### *Participants*

The participants for this study were 58 undergraduate students attending the University of Virginia who had, within 2 weeks prior to entering the study, ended a close dating relationship lasting longer than 4 months. Participants were recruited from a larger project (the Virginia Dating Study [VDS]) that they were told prospectively examined closeness and stability in college dating relationships. The primary intention of the VDS was to follow individuals until their relationships dissolved. At intake, participants in the VDS completed a very brief demographic questionnaire but no measures of relationship satisfaction or other potential predictors of dissolution. Thus, the only substantive focus of the VDS was to serve as a participant pool from which to identify and recruit individuals from recently dissolved relationships. The status of VDS participants' relationships was followed using a system of face-valid weekly e-mails. If individuals indicated their relationship dissolved or was dissolving, they

were invited to participate in the present study of emotions following breakups (the Dissolution Study). Hence, a key and relatively unique aspect of the VDS/Dissolution Study combination was the ability to be in close contact with individuals who recently ended a relationship. All 58 participants were recruited into the Dissolution Study within 2 weeks of stating (in the weekly e-mails) that their relationship was ending or had ended ( $M = 10.92$  days,  $SD = 3.48$  days; range = 2–13 days). Participants entered the Dissolution Study as individuals, and no attempts were made to collect data from both members of the couple. Overall, the final sample consisted of 48 women and 10 men aged on average 18 years 9 months ( $SD = 1$  year, 1 month; range = 17–22 years) and reported an average of 1.5 years of college ( $SD = .86$ ; range = 1–4 years). Four participants self-identified as Asian/Asian American, 7 as African American, 3 checked multiple categories, and 44 were Caucasian. On a categorical item, 33 of the participants indicated that they initiated the breakup, 12 reported that decision was mutual, and 13 indicated that their partner chose to end the relationship. The average relationship length prior to the breakup was 20 months ( $SD = 13.79$  months;  $Mdn = 19.5$  months; range = 4–80 months).

In addition to participants in the main Dissolution Study, a comparison sample of 30 individuals in an intact dating relationship completed the daily diary. Participants in intact relationships completed the same diary procedure as the dissolution sample, with two exceptions. First, the dating sample completed the diary for only 7 days (vs. 28 days for the dissolution sample). Second, due to a clerical error, the four emotion items assessing Relief (relieved, free, courageous, and strong) were omitted from the dating sample diaries. Overall, the dating sample consisted of 23 women and 7 men, who aged on average 19 years 1 month ( $SD = 1$  year, 10 months; range = 18–27 years), in their second year of college ( $M = 2.17$  years,  $SD = 1.30$  years; range = 1–5 years, with 5 being a first year graduate student), and reported dating their current partner for an average of 22 months ( $SD = 16.41$  months;  $Mdn = 18$

months; range = 4–70 months). There were no significant differences between the dissolution and dating samples on age, year in school, or length of relationship.

### Measures

All nondiary measures were completed at entry into the study (Day 1). Participants in the dissolution sample completed their first daily diary that day and each day for the next 27 days (yielding a total of 28 days of diary assessments). On the final day of the study (Day 28), participants completed the Acceptance of Relationship Termination (ART) Scale, the Mood and Anxiety Symptom Questionnaire (MASQ), and the Impact of Events (IES) Scale for a second time.

*Acceptance of relationship termination.* The ART scale is a modified version of Kitson's (1982) Acceptance of Marital Termination scale consisting of 11 four-point items tapping a range of thoughts and feelings about accepting the end of a relationship (e.g., "I spend a lot of time wondering about my former partner") and yielding a single summary score (ranging from 11 to 44), with higher scores indicating greater nonacceptance or longing for one's former partner. The ART is a reliable assessment tool and highly correlated with depression during the divorce process (Kitson; Wang & Amato, 2000). In the present study, ART alphas were .62 for Day 1 and .67 for Day 28.

*Daily diary.* The daily diary contained 33 questions tapping the affective states of Love, Sadness, Anger, and Relief. Participants responded to the same set of questions each day for the 28-day study period. To assess Love, Rubin's (1973) Liking and Loving Scale (LLS) was used, which consists of nine items rated on a 9-point scale assessing the amount of love expressed for a dating partner (e.g., "I would be miserable without him/her."; "If I were lonely, my first thought would be to seek them out."). In previous research, the LLS was found to have high internal consistency for both men and women ( $\alpha$ s > .89) and to be a strong predictor of relationship stability (Bersheid et al., 1989).

Anger and Sadness were measured using items from the Profile of Mood States (McNair, Lorr, & Droppleman, 1981) Anger and Depression scales. The Anger scale consisted of nine items (angry, peeved, spiteful, resentful, furious, deceived, bad tempered, annoyed, and grouchy), and the Sadness scale consisted of five items (sad, blue, unhappy, discouraged, and lonely). Nacross, Guadagnoli, & Prochaska (1984) reported reliability coefficients above .80 for these scales, and several published reports indicate that the Depression and Anger scales correlate highly with other measures of the same constructs (Nyenhuis, Yamamoto, Luchetta, Terrien, & Parmentier, 1999). Relief was assessed via four items (relieved, free, courageous, and strong), which were added to the present study to include coverage of the potential positive aspects of ending a relationship. On Day 1, the alpha reliabilities were .85 (Love), .89 (Anger), .80 (Sadness), and .84 (Relief). In order to ease interpretation, the summary scores were transformed to a 100-point basis, with individual scores representing a percentage of the total possible score on that scale.<sup>1</sup> Because the Love composite used a 9-point scale, scores ranged from 9 to 81, and rescaled scores ranged from .11 to 1. For each of the other scales, the rescaled scores ranged from .20 to 1. In addition to the emotion scales, a single diary item assessed whether participants had any contact with their former partners. Participants were instructed to endorse this dichotomous item (yes/no) if they had a phone conversation or in-person contact with their former partner that day.

*Impact of events scale.* The IES is a widely used 15-item questionnaire assessing the emotional sequelae of distressing events and symptoms that are typically associated with posttraumatic stress disorder but not specific

1. This type of rescaling does not change the distribution of a variable or affect its relations to other variables. Additionally, although many of the diary variables evidenced positive skew, the emotional composites were not transformed. Square root and logarithmic transformations did not normalize the data, and given the difficulty of interpreting transformed data, the data were left in their original condition.

to diagnosis of this syndrome (Horowitz, Wilner, & Alvarez, 1979; McDonald, 1997). The emotional intrusion subscale was used in the present study (e.g., I thought about it when I didn't mean to; I had trouble falling asleep or staying asleep because pictures or thoughts about it come into my mind). Test-retest correlations for this measure are high ( $r > .85$ ) for periods less than 2 weeks, and the measure has demonstrated strong sensitivity by capturing changes in clinical presentation over time (Horowitz et al., 1979) and reflecting greater subjective distress among more traumatic experiences (Sundin & Horowitz, 2002). In the present study, IES alphas were .67 for emotional intrusion at Day 1 and .86 at Day 28.

*Mood and anxiety symptom questionnaire.* This self-report scale asks participants to rate their experience in the past week of 90 symptom items associated with depression and anxiety on a 5-point scale (0 = *not at all*, 4 = *extremely*). The MASQ is based on Watson and Clark's (1991) tripartite model of depression and anxiety and yields a number of subscales specific to both depression and anxiety. In the present study, only the General Disturbance (GD) and Positive Affect (PA) scales were used. The GD scale contains 15 items that appear in the criteria for both mood and anxiety disorders (e.g., feelings of irritability and confusion; insomnia; difficulty concentrating). The PA scale contains items measuring the presence of hedonia (e.g., felt cheerful; felt like I had a lot to look forward to; was proud of myself). Extensive psychometric evaluation of the MASQ demonstrated that the GD scale is highly correlated with different measures of the same constructs and that the anxiety- and depression-specific subscales differentiated between patient and nonpatient samples (Watson et al., 1995). In the present study, the reliabilities ranged from .88 (for GD at Day 1) to .95 (for PA at Day 28).

*Relationship styles questionnaire.* The Relationship Styles Questionnaire (RSQ; Griffin & Bartholomew, 1994) is a 30-item measure yielding four continuous attachment style subscales: secure, fearful, dismissing, and pre-

occupied, all of which were used in the present study. The RSQ assesses individuals along with respect to their working models of self (as worthy of love and support or not) and models of others (as trustworthy and available vs. unreliable and rejecting). *Secure* individuals typically endorse items indicating a sense of lovability and others as responsive and accepting. *Fearful-avoidance* is characterized by a sense of unlovability and an expectation that others will be rejecting and untrustworthy, while *dismissing-avoidance* involves a positive view of oneself coupled with an unfavorable and negative disposition toward others. The *preoccupied* category is conceptually similar to ambivalent attachment and involves a lack of positive self-regard and a positive and idealized view of others and relationships in general. Empirical evidence supports the existence of four-category attachment model (Bartholomew & Horowitz, 1991), and the RSQ is consistently found to have strong test-retest reliabilities and discriminant validity (Fraley & Shaver, 1997). In the present study, alpha reliabilities ranged from .65 (for security) to .82 (for fearful-avoidance).

*Revised ways of coping checklist.* The Revised Ways of Coping Checklist (RWCCCL; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985) is a widely used 57-item self-report measure designed to assess the range of cognitive and emotional strategies people use to manage stressful life events. For the present study, respondents were asked to recall their recent breakup and rate the degree to which they engage in specific coping actions on a 4-point scale (responses range from *never used* to *regularly used*). The checklist yields eight scales, two of which are used in the present study: Self-blame (e.g., "Realized I brought the problem on myself") and Avoidance (e.g., "Went on as if nothing had happened"). Vitaliano et al. (1985) reported mean alphas of .80 for the RWCCCL scales and concluded the measure evidences adequate construct validity. In addition, Mikulincer, Florian, and Tolmatz (1990) reported internal consistencies from .72 to .82 for the RWCCCL scales. In the present study, the alpha coefficients were .65 for Self-blame and .72 for Avoidance.

### *Experience-sampling procedure*

This study employed a pretest-diary-posttest design. Participants in the dissolution sample completed an initial battery of questionnaire materials at an intake interview, which was conducted as soon as possible after they indicated their relationship had ended. At this interview, the practical aspects of the Experience-Sampling Method (ESM; Larson & Csikszentmihalyi, 1983) were explained and participants were provided a Motorola™ electronic beeper/signaling device and a small, wallet-size paper diary. When signaled, they were asked to respond as soon as possible and rate themselves on 33 brief mood states and two contextual questions each day for the next 27 days.<sup>2</sup> Importantly, individuals were told to rate their current feelings *as they experienced them at the moment they read the diary questions* and to answer all questions with respect to their feelings about their former partner (if in the dissolution sample) or current partner (if in the dating sample). The signals were sent at random times between 10 a.m. and 10 p.m., and participants were told that the first signal would occur later that day. For signaling purposes, random times within 12 hr this window were generated in 10-min increments. Participants were asked to keep the beeper with them as much as possible, although it was recognized that having it with them at all times would be impossible and that it was acceptable to leave the device behind for special situations (e.g., an exam, job interview, etc.).

Participants were instructed that if they missed a signal entirely or believed a signal never came for a particular day, they should rate themselves upon realizing no signal had come. Similarly, if they were late to responding to a signal (e.g., they were in class when signaled and realized 2 hr later), they were instructed to rate themselves as soon as they realized they missed the signal. Finally, instructions were provided on how to make

diary entries should the person go out of signal range. (The beeper devices were programmed to work only in the local area and would not receive signals if students left the general university vicinity.) After 3 days, participants were contacted to monitor and assist their record keeping. Diaries were collected and exchanged every 2 weeks. ESM is a reliable, valid, and frequently used time-sampling procedure for assessing the frequency and patterning of mental processes in everyday life situations through random signaling (Bolger, Davis, & Rafaeli, 2003; Bolger & Eckenrode, 1995; Csikszentmihalyi & Larson, 1992; Marco, Neale, Schwartz, Shiffman, & Stone, 1999; Reis & Gable, 2000; Tennen, Affleck, Amerli, & Carney, 2000).

*Missing data and time-of-day effects.* The daily experience sampling yielded 1,624 occasions of measurement (58 participants, 28 occasions each). Only 19 diary entries were entirely blank (i.e., individuals recorded no responses for the entire day), which is approximately 1% of the total possible occasions of daily measurement. The low percentage of missing data is likely due to the instructions given to participants when they entered the study. The importance of making a diary entry each day was stressed, and participants were asked to rate themselves even if they missed a signal, if the beeper failed, or if they believed a signal never came. In addition to missed occasions, 97 other observations were missing; most of the missing data were skipped in the course of completing the diary and several instances in which the final items on a page or the last page of a daily entry were missed.

Several situations required participants to rate themselves when they did not receive a signal. An important question is whether this systematically influenced their reports of daily emotion. Each diary entry required participants to rate the time they were signaled and the time they rated themselves. Thus, it is possible to examine potential differences in the diary reports when participants did and did not receive a signal. Of the 1,605 possible occasions (total occasions, less the number of entirely missed days), participants reported

2. Participants in the dating sample were instructed to complete the diary following their first signal later that day and for the next 6 days thereafter for a total of 7 assessments.

not receiving a signal on 496 days, which is slightly more than 31% of the total occasions (as indicated by the presence of a diary entry and no entry for the time signaled). Unfortunately, there is no way to tell if participants received a signal but failed to make a record of the time. To analyze whether there was a potential method effect on emotion ratings (i.e., whether participants recorded significantly different ratings on occasions when they reported they were or were not beeper signaled), we conducted four multilevel analyses using SAS Proc Mixed (Little, Lilliken, Stroup, & Wolfinger, 1996). Participants reported significantly more Love (for their former partner) when rating themselves in situations when they received a beeper signal compared to when they made a self-initiated rating,  $\gamma_{01} = 1.78$ ,  $SE = .55$ ,  $t(1556) = 3.20$ ,  $p < .001$ . No mean differences between types of ratings were observed for Sadness,  $t(1556) = .22$ ,  $p = .82$ ; Anger,  $t(1556) = .98$ ,  $p = .32$ ; or Relief,  $t(1556) = .41$ ,  $p = .68$ . In addition, the random beeping procedure and record of diary entries allow for testing potential time-of-day signaling effects, or whether participants reported systematic differences in their emotional experiences, depending on when they rated themselves. We split the ratings into three groups that roughly corresponded to morning (4 a.m.–1 p.m.), afternoon (1:01 p.m.–6 p.m.), and night (6:01 p.m.–3:59 a.m.) ratings. Using dummy codes within Proc Mixed, we found evidence for one time-of-day effect: Participants reported greater mean Love scores when rating themselves in the afternoon and night compared to the morning,  $t(1445) = -3.15$ ,  $p < .01$ . No difference was observed between the afternoon and night ratings on the Love variable.

### Analyses

In order to evaluate the extent to which daily emotions are disturbed from their normative baseline following a breakup, mean comparisons were made between the dissolution and dating samples for each emotional composite. Similar analyses were conducted to compare within-person variability in the two samples. The analysis of change was conducted using

SAS Proc Mixed (Little et al., 1996), a flexible software program for fitting multilevel or random effects models (Little et al.; Singer, 1998). The multilevel growth model is equivalent to a two-factor, covariance-based model except that the level and slope factors are assumed to have means (i.e., a mean level and a mean slope) that represent group change as well as deviations around these means (i.e., a deviation around the level and a deviation around the slopes) that represent stochastic individual differences around group means (Raudenbush, 2001). Together, these parameters describe the average starting point across the sample, the average rate of range across the same, the average deviation from the starting level, and the average deviation around the rate of change.

To analyze change, four Level 1 models were fit to each of the four outcome variables in this study: (a) an unconditional means model, which quantifies the extent to which the outcome varies over the 28 occasions of measurement but does not examine systematic variation or change; (b) a linear growth model, which explores systematic changes in the outcome variable, assuming decline is linear over time; (c) a quadratic growth model, which explores curvilinear rates of change and acceleration (e.g., increases followed by decreases in emotions, or decreases followed by increases); and (d) following the determination of the best fitting growth model, an autoregressive parameter was added to examine the possible effect of correlated errors over time. We rescaled Time, the Level 1 temporal predictor, by subtracting 1 (i.e.,  $\text{Time} - 1$ ) so that the intercept describes the value of the outcome at the first occasion of measurement. The best fitting model was determined by evaluating relative improvement in Akaike's information criteria (AIC) under full maximum likelihood (ML) estimation procedures (for a technical discussion, see Singer, 1998).

Following the determination of the best fitting unconditional growth model, a series of models were fit using the time-invariant (i.e., Level 2) and time-varying covariates (i.e., additional Level 1 variables). The focus of these models is on determining whether

the initial level of each emotion, rate(s) of change, and within-occasion outcomes could be reliably predicted by the covariates. For these models, we examined the effect of 11 time-invariant and 3 time-varying covariates: secure attachment, dismissing attachment, fearful attachment, preoccupied attachment, coping avoidance, coping self-blame, length of the relationship, initiator status (whether one initiated the breakup or was left by their partner, which was measured continuously), nonacceptance at intake, emotional intrusion at intake, daily contact (with one's former partner, a diary item), and three within-occasion emotions. All covariates were entered into the models as fixed effects (predicting the initial level, rate of change variable(s), or, if a time-varying covariate, within-occasion scores on the outcome variable), and non-significant variables were eliminated in a forward stepwise fashion until a final model with only significant covariates remained. To facilitate interpretation, all time-invariant covariates were parameterized by centering the Level 2 variables around their grand mean.

In the final set of analyses, hierarchical regressions were conducted to determine whether within-person variability in the diary composites explained additional variance in the four nondiary outcomes (i.e., nonacceptance, generalized distress, impact of event, and positive affect) at Day 28 after controlling for attachment security, coping self-blame, and coping avoidance (each of which was highly related to the four outcome variables in cross-sectional analyses). For these analyses, the independent variables were entered in hierarchical regressions in three blocks: (a) attachment security, coping self-blame, and coping avoidance; (b) mean Love, Sadness, Anger, and Relief scores; and (c) mean variability scores, which were computed as the average deviation around one's own mean over the entire 28-day study period. In order to reduce the number of estimated parameters, the full models were run, nonsignificant items were removed (except in the case of mean scores when variability was significant; we wanted to control for mean scores when assessing the predic-

tive utility of variability), and the models were rerun with fewer independent variables. Overall, this approach seeks to identify the specific items associated with each nondiary outcome out of the set of 11 covariates (i.e., attachment security, coping self-blame, coping avoidance; mean of Love, Sadness, Anger, and Relief; and mean variability in Love, Sadness, Anger, and Relief).<sup>3</sup>

## Results

### *Comparisons with the dating sample*

Participants in the dating study reported significantly more mean Love compared to mean scores across all occasions of the dissolution study,  $t(87) = 7.81, p < .001, d = -1.88$ , scores over the first week of the dissolution study,  $t(87) = 7.41, p < .001, d = -1.69$ , and scores over the final week of the dissolution study,  $t(87) = 8.06, p < .001, d = -1.93$ . Participants in the dissolution study reported higher levels of mean Sadness than their dating study counterparts across all occasions,  $t(87) = 2.94, p < .01, d = .76$ , and the first week of the dissolution study,  $t(87) = 4.26, p < .001, d = 1.05$ . However, the difference between the last week of the dissolution study and the mean dating sample scores was not significant,  $t(87) = 1.60, p = .12, d = .32$ . By the end of the 28 days in this study, dissolution participants reported Sadness scores comparable to the scores of their dating study counterparts. Participants in the dissolution study reported significantly more Anger in all comparisons with the dating sample, including mean scores across all occasions of the dissolution study,  $t(87) = 2.57, p < .05, d = .77$ , scores over the first week of the dissolution study,  $t(87) = 5.81, p < .001, d = 1.62$ , and scores over the final week of the dissolution study,  $t(87) = 4.86, p < .001, d = 1.27$ .

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3. Given the short duration of the study, we elected to not control for the Day 1 outcomes in these models. Controlling for Day 1 outcomes accounts for almost all explained variance in Day 28 outcomes, with no significant effects remaining for the independent variables of interest.



To assess within-person variation, the same three comparisons were made: mean variability among the dating participants versus mean variability over the entire dissolution study, mean variability in the first week of the dissolution study, and mean variability in the final week of the dissolution study. Compared to individuals in intact relationships, participants in the dissolution study evidenced significantly greater variability across all occasions of measurement for Love,  $t(87) = 3.85, p < .001, d = .86$ ; Sadness,  $t(87) = 2.85, p < .01, d = .59$ ; and Anger,  $t(87) = 3.31, p < .001, d = .801$ . These significant relations also held when comparing the dating study to variability during the first week of the dissolution study for Love,  $t(87) = 2.80, p < .01, d = .63$ ; Sadness,  $t(87) = 2.93, p < .01, d = .60$ ; and Anger,  $t(87) = 2.34, p < .01, d = .55$ . By the end of the dissolution study, however, no significant group differences were found for Love,  $t(87) = .92, p = .35, d = -.21$ ; Sadness,  $t(87) = .07, p = .93, d = .01$ ; or Anger,  $t(87) = .09, p = .92, d = .04$ . After the 28-day study period, individuals who recently dissolved a relationship reported comparable patterns of within-person variability to participants in intact relationships.

*Analysis of change*

Prior to evaluating change, we fit a series of unconditional means models, which served as a baseline for examining the extent to which the emotion diary composites vary over time and the percent of within-person variance explained by the addition of the Time variable. Table 1 presents the means for each

emotional composite at weekly intervals. If the systematic change models (examined next) do not improve upon the unconditional means models, any change over time can be considered unsystematic random error. The unconditional means model indicated that there was substantial variability around grand mean and there was substantial variability over time, which points toward systematic change.

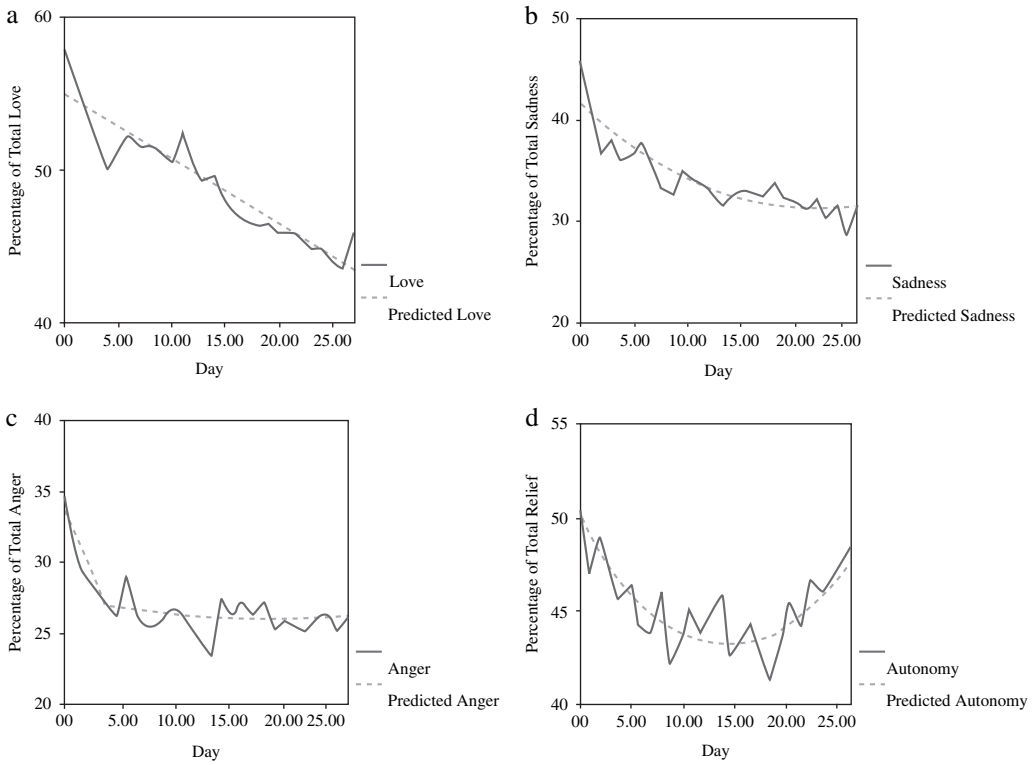
*Unconditional growth.* The next series of Level 1 models examined an additional fixed effect, Time, to assess systematic change over the 28 days of the study. For each emotion, three change models were evaluated by including a linear trend, a quadratic trend, and the addition of an autoregressive parameter to the best fitting model. Within the unconditional growth model, specified by the following equation,  $Y_{ij} = \pi_{0j} + \pi_{1j}(\text{Time}) + r_{ij}$ ,  $\pi_{0j}$  equals the fixed intercept ( $\beta_{00}$ ), describing the average value of the emotion at entry into the study and  $u_{0j}$ , estimating random variation around the initial level;  $\pi_{1j}$  equals the fixed slope ( $\beta_{10}$ ), describing the rate of change across occasions, and  $u_{0j}$ , estimating random variation around the slope. Significance tests of these parameters determine whether individuals vary in their initial starting points and underlying patterns of change over time. Finally, the unconditional growth model also includes a covariance parameter ( $\sigma_0$ ) describing the relation between the initial level and rate of change.

For Love, the quadratic change model yielded a larger AIC under full ML estimation, and the quadratic growth parameter was not a significant predictor of Love over time,

**Table 1.** Weekly means (and standard deviations) for the four diary scales

Emotion	Day 1	Day 7	Day 14	Day 21	Day 28
Love	57 (16)	52 (19)	49 (20)	49 (23)	45 (23)
Sadness	46 (16)	37 (18)	32 (15)	32 (16)	31 (15)
Anger	35 (15)	28 (15)	24 (08)	25 (10)	26 (13)
Relief	50 (18)	44 (20)	44 (22)	43 (21)	48 (24)

*Note.* To facilitate comparisons across scales, scores were transformed to represent percentages of the total possible on that measure. Because the Love composite is computed on a 9-point scale, the scores range from .11 to 1. Each of the other three scales range from .20 to 1.



**Figure 1.** (a–d) Mean and predicted trajectories over time for Love, Sadness, Anger, and Relief diary variables.

which indicates that an accelerated growth model failed to improve upon the linear change specification. Adding the autoregressive parameter to the linear growth model resulted in an overall improvement in model fit, and this parameter was highly significant. Thus, the autoregressive linear change model was retained as the best fitting specification for Love over time.<sup>4</sup> Figure 1a–d illustrates the pattern of observed data for each emotion as well as resulting trajectories from the best fitting growth models. For the Love fixed effects, participants entered the study with a mean score of 55.21 on the Love scale an average of  $-.43$  over each day. The intercept and rate of change were highly variable as evidenced by significant random variation around the initial level and slope. The level/slope covariance estimate was nonsignificant ( $r =$

.11), which indicates that there was no association between participants' rates of change and their initial start points on the Love scale. The decline in the within-person variance component,  $r_{ij}$  (from 80.33 in the unconditional means model to 54.05 in the unconditional growth model), can be used to determine the percentage of within-person variation that is explained by the addition of the Time parameter (by dividing the decrease in residual variability by initial variability from the unconditional means model). For Love, 33% of the within-person variation, which is considered residual variance in the unconditional means model, is explained by the addition of the Time parameter in the unconditional growth model. The AR parameter indicates that Love scores on any given occasion are a function of not only one's level and the rate of change but also scores on the day before (operating through a correlated error structure).

4. The parameter estimates for all of the unconditional growth models available from the authors.

For Sadness, the quadratic model provided a better fit to the data. Participants entered the study with a mean score of 41.59 on the Sadness scale and reported significant linear and quadratic changes over time. The intercept and linear and quadratic rates of change were highly variable across people. The covariance between the level and the linear change parameter was significant and negative, indicating that participants who reported high initial rates of Sadness also reported *slower* linear decreases over time ( $r = -.41$ ). The relation between the level and quadratic change parameter was nonsignificant. Finally, the covariance between the linear and quadratic trends was negative and very strong ( $r = -.94$ ), indicating that almost all participants who had a positive linear slope also had a negative quadratic slope, whereas participants with a negative linear slope were equally likely to have a positive pattern of quadratic change. For Sadness, 31% of the within-person variation was explained by the addition of the change parameters.

Like the model for Sadness, the addition of the quadratic parameter led to a significant improvement in fit for the Anger data. However, this two-parameter, fixed-effect model failed to adequately capture the initial rate of decline, which can be described as piecewise or splined: a sharp initial decline followed by a gradual deceleration in reports of Anger over time (see Figure 1c). In order to better fit these data, we added a third fixed effect to the Anger model that captures the sharp initial rate of decline observed in the first 5 days of the study. To do so, we coded the first parameter as a 28-day vector that included linear decline over the first 4 days of the study, followed by no change for the remainder of the occasions. This was done as follows: Day 1 = 0, Day 2 = 1, Day 3 = 2, Day 4 = 4, Day 5 = 4, Day 6 = 4 ... Day 28 = 4. To complete the piecewise quadratic growth model, this vector, called Initial\_Trend, was entered as the first fixed effect (after the intercept/level) followed by the Time and Time<sup>2</sup> parameters. This model, without an AR(1) structure, provided the best fit to the data. The piecewise quadratic growth model estimates four fixed effects, four random var-

iability parameters, seven covariance parameters, and a single within-person residual error. Participants entered the study with an average Anger score of 33.75 and evidenced a mean decline of  $-1.59$  points per day over the first 5 days of the study (i.e., the parameter estimate for the Initial\_Trend vector). Once the Initial\_Trend vector is taken into account, the linear and quadratic rates of change are nonsignificant. However, the variability around all four of the fixed parameters is significant. Taken together, this model indicates that, for the average person, all change in Anger takes place in the first 5 days of the study and the variability over the remainder to the 28-day period is best understood as unsystematic random error. For participants with linear and quadratic rates of change above the mean parameter estimates, declines after day 5 may continue to be substantial, thus retaining these parameters is warranted. Thirty-two percent of the within-person variation in Anger is explained by the addition of the three change parameters.

For Relief, the combination of linear and quadratic parameters (without an autoregressive error structure) provided the best fit to the data. Participants entering the study report an average Relief score of 49.34 and changed as a combination of the linear and quadratic change parameters, which were significantly negatively correlated ( $r = -.81$ ). The variability of the three fixed effects was significant; participants varied significantly around the mean level and linear and quadratic rates of change. The covariance of the initial level and linear rate of change was nonsignificant ( $r = -.17$ ), as was the covariance between the linear and quadratic change parameters ( $r = .04$ ). For Relief, 33% of the within-person residual variance was explained by including the two fixed-effect change parameters in the model.

*Conditional growth.* For the next series of models, we added the covariates to examine whether variation in the initial emotion levels and slopes was related to other theoretically relevant variables. In addition to 11 Level 2 variables, we also considered the role of four time-varying covariates (contact and three

emotion variables) to examine whether these variables were associated with within-occasion reports of the emotion outcomes. As mentioned above, the conditional growth models were built using forward stepwise regression: Each set of covariates was entered into the model, the model was run, and, if significant and leading to improved model fit, the variables were retained for the next model. The results of the final conditional growth models are illustrated in Figures 2a–d, which highlight the role of Level 2 variables predicting Level 1 outcomes (with the Level 1 outcomes denoted by circles and the emotion outcome of interest denoted by a circle with a shadow). In Figure 2a, for example, the Love scores at any occasion are predicted as a linear combination of the Intercept (which is predicted by an intercept, emotional intrusion, and random variation), the linear trend (which is predicted by an intercept, dismissing attachment style, and random variation), contact with one's former partner (predicted by an intercept), within-occasion sadness (predicted by an intercept), and within-occasion anger (predicted by an intercept).

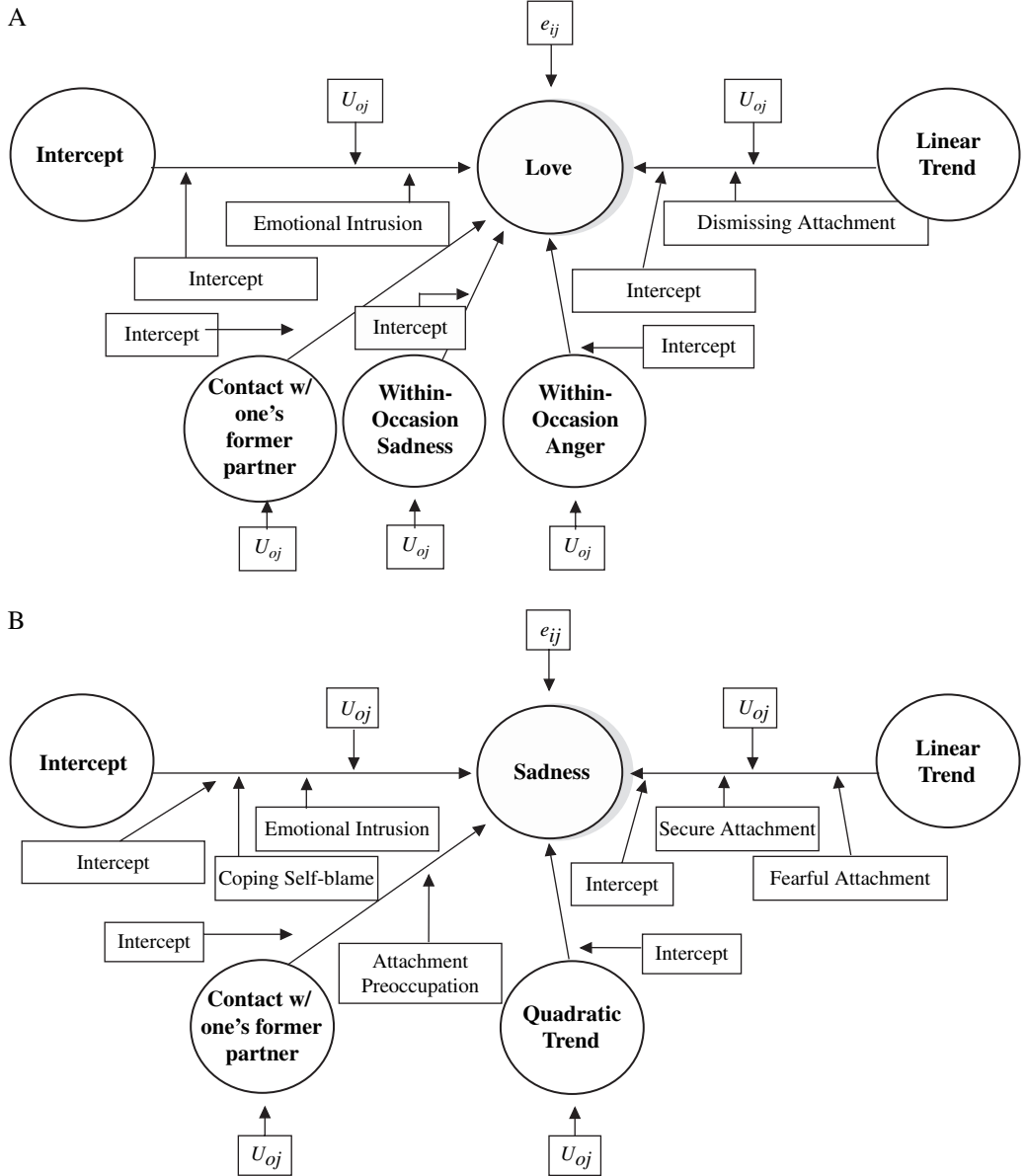
Participants reporting more emotional intrusion of the breakup experience at entry into the study also reported higher initial levels of Love,  $\gamma_{01} = .88$ ,  $SE = .44$ ,  $t(56) = 3.69$ ,  $p < .001$ . Once the IES emotional intrusion scale was entered into the regression model, no other variables were significant predictors of the initial level. Individuals reporting higher scores on the dismissing attachment scale evidenced significantly slower rates of decline in Love over time,  $\gamma_{11} = .44$ ,  $SE = .08$ ,  $t(1542) = 2.11$ ,  $p < .05$ . No other variables were significantly associated with the linear change parameter. Three of the time-varying covariates were significantly associated with within-occasion reports of Love: Individuals reporting more daily contact with their former partners and greater Sadness at the same occasion had higher levels of Love,  $\beta_{3j} = .66$ ,  $SE = .22$ ,  $t(1542) = 2.90$ ,  $p < .01$ ,  $\beta_{4j} = 1.95$ ,  $SE = .41$ ,  $t(1542) = 4.70$ ,  $p < .0001$ , respectively. Conversely, within-occasion reports of Anger were negatively associated with Love,  $\beta_{5j} = -.11$ ,  $SE = .04$ ,  $t(1542) = -3.15$ ,  $p < .01$ ,

indicating that participants who reported greater amounts of Love at any occasion were significantly more likely to report less Anger (and vice versa).

Participants reporting greater emotional intrusion of the breakup experience also entered the study with a higher initial level of Sadness,  $\gamma_{01} = .58$ ,  $SE = 1.55$ ,  $t(55) = 3.84$ ,  $p < .001$ , as did individuals who reported adopting a self-blaming coping style,  $\gamma_{02} = 4.62$ ,  $SE = 1.54$ ,  $t(55) = 2.99$ ,  $p < .01$ . Self-reported attachment security,  $\gamma_{11} = -.28$ ,  $SE = .10$ ,  $t(1543) = -2.92$ ,  $p < .01$ , and fearfulness,  $\gamma_{12} = -.14$ ,  $SE = .06$ ,  $t(1543) = -2.46$ ,  $p < .05$ , were both significant negative predictors of the linear change parameter. Participants endorsing more secure and fearful attachment styles evidenced significantly faster rates of decline in Sadness over time. Contact with one's former partner was a significant time-varying covariate; individuals who reported having contact with their partners also reported greater within-occasion Sadness,  $\beta_{3j} = .62$ ,  $SE = .21$ ,  $t(1543) = 2.11$ ,  $p < .05$ . In addition, attachment preoccupation was a significant between-person predictor of contact. Participants reporting higher levels of attachment preoccupation also reported more daily contact with their former partners,  $\gamma_{31} = .67$ ,  $SE = .28$ ,  $t(1543) = -2.32$ ,  $p < .01$ .

For Anger, we regressed only the level and Initial\_Trend variables on the covariates (because the linear and quadratic trends were not significant). Self-reported attachment security,  $\gamma_{02} = -4.31$ ,  $SE = 1.64$ ,  $t(55) = -2.63$ ,  $p < .05$ , and dismissing attachment,  $\gamma_{03} = -5.94$ ,  $SE = 2.67$ ,  $t(55) = -2.22$ ,  $p < .05$ , were both significant negative predictors of the Anger level. Dismissing attachment also was positively associated with the Initial\_Trend variable,  $\gamma_{11} = 1.59$ ,  $SE = .63$ ,  $t(1553) = 2.38$ ,  $p < .05$ , indicating that participants high on this variable reported slower rates of decline in Anger over the first 6 days of the study.

The conditional growth model for Relief indicated that both attachment security,  $\gamma_{02} = 6.14$ ,  $SE = 3.12$ ,  $t(55) = 1.97$ ,  $p < .05$ , and emotional intrusion from the breakup experience,  $\gamma_{03} = -.69$ ,  $SE = .24$ ,  $t(55) = -2.78$ ,  $p < .01$ , were significant predictors of the initial level, although these variables operated in



**Figure 2.** (a) Schematic diagram illustrating conditional multilevel growth modeling predicting daily scores on the Love variable. Level 1 variables are depicted by circles; Level 2 variables by rectangles loading on circles. Level 1 outcome variable is denoted as a circle with a shadow. (b) Schematic diagram illustrating conditional multilevel growth modeling predicting daily scores on the Sadness variable. Level 1 variables are depicted by circles; Level 2 variables by rectangles loading on circles. The Level 1 outcome variable is denoted by a circle with a shadow. (c) Schematic diagram illustrating conditional multilevel growth modeling predicting daily scores on the Anger variable. Level 1 variables are depicted by circles; Level 2 variables by rectangles loading on circles. The Level 1 outcome variable is denoted by a circle with a shadow. (d) Schematic diagram illustrating conditional multilevel growth modeling predicting daily scores on the Relief variable. Level 1 variables are depicted by circles; Level 2 variables by rectangles loading on circles. The Level 1 outcome variable is denoted by a circle with a shadow.

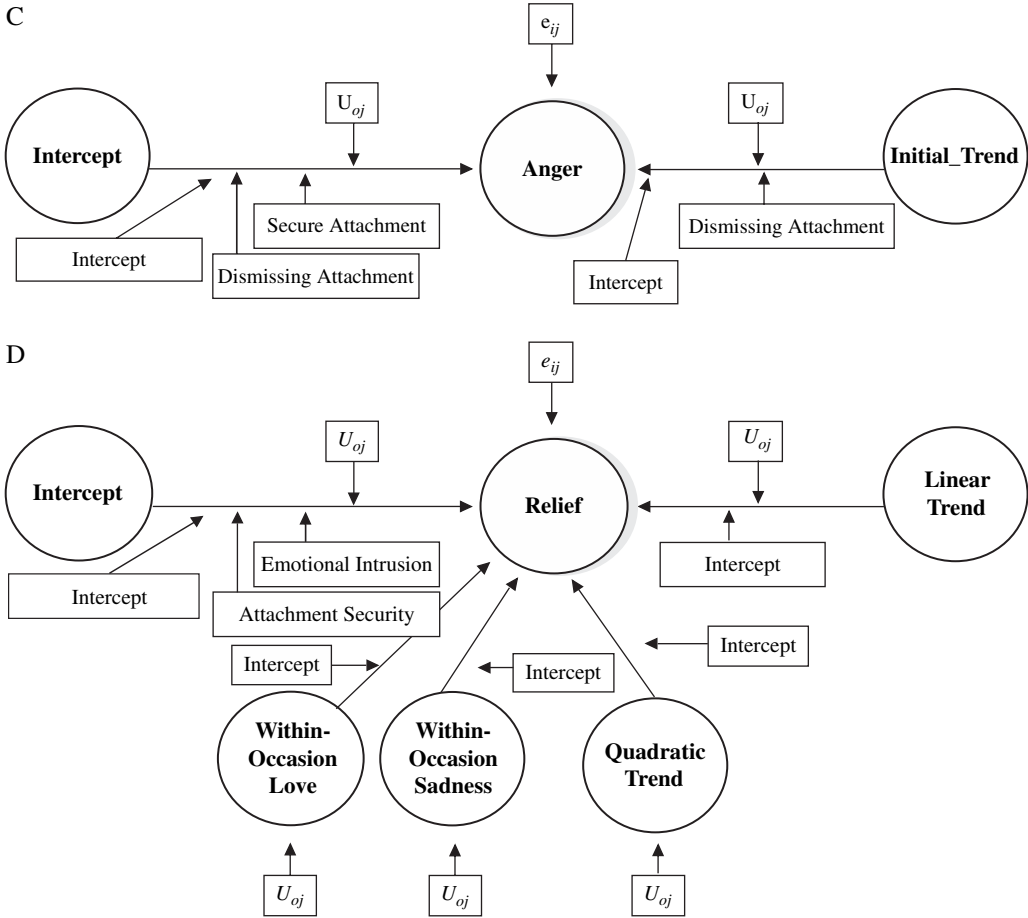


Figure 2. (Continued)

different directions: Participants reporting greater attachment security entered the study with higher levels of self-reported Relief, whereas individuals experiencing greater emotional intrusion of the breakup experience reported less Relief. Love and Sadness were significant predictors of within-occasion Relief. Participants reporting greater Love,  $\gamma_{20} = -.11, SE = .04, t(1549) = -2.94, p < .001$ , and Sadness,  $\gamma_{30} = -3.70, SE = .42, t(1549) = -8.80, p < .001$ , reported significantly less within-occasion Relief.

*Predicting between-persons outcomes using within-person variability*

Table 2 displays the results of the hierarchical regression analyses predicting the four

nondary outcomes using mean variability. Regression diagnostics using the variance inflation factor indicated that multicollinearity among the predictor variables was not outside of acceptable limits for these models. For the ART scale, two items explained 27% of the adjusted variance in the Day 28 outcome. Individuals reporting more self-blame and greater mean Love reported more non-acceptance of relationship termination after a month of study participation. For GD, three items explained 46% of the adjusted variance in the Day 28 outcome. Individuals who reported adopting an avoidant coping style, who reported greater mean Sadness, and greater variability in Sadness ( $r_{\text{effect size}} = .357$ ) also reported more generalized affective disturbance after a month of study partic-

**Table 2.** Summary statistics for best fitting hierarchical regressions predicting nondiary outcomes at Day 28

Model	$\beta$	Adjusted $R^2$	Overall $F$	$\Delta R^2$	$F$ for $\Delta R^2$
ART					
Block 1: Self-blame	.40**	.22	16.59***		
Block 2: Mean Love	.26*	.27	11.24***	.06	4.59*
GD					
Block 1: Avoidance	.48***	.22	16.69***		
Block 2: Mean Sadness	.43**	.39	18.90***	.17	16.40**
Block 3: Sadness	.39***	.46	16.78***	.07	7.98**
Variability					
IES					
Block 1: Self-blame	.41***	.15	11.23***		
Block 2: Mean Sadness	.54***	.47	21.47***	.32	26.35***
PA					
Block 1		.33	14.64**		
Attachment Security	.26*				
Self-blame	-.44**				
Block 2		.37	9.26***	.04	2.86
Mean Love	.07				
Mean Relief	.35**				
Block 3		.42	7.46***	.05	3.20*
Love Variability	.24*				
Relief Variability	-.22*				

Note. All outcome variables were assessed at the final exit interview, Day 28. ART = Acceptance of Relationship Termination; GD = Mood and Anxiety Symptom Questionnaire, General Disturbance; IES = Impact of Events, Intrusion Scale; PA = Mood and Anxiety Symptom Questionnaire, Positive Affect.

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

ipation. For the IES, two items explained 47% of the adjusted variance in the Day 28 outcome. Mean Sadness explained an additional 32% of the variance in emotional intrusion scores beyond that explained by self-blame. Individuals reporting greater self-blame and greater mean Sadness reported significantly more breakup-related emotional intrusion after a month of study participation. For PA, six items explained 42% of the adjusted variance. The second block of variables, which included mean diary reports of Sadness and Relief, did not explain significant variance above the first block of two covariates; however, these items were retained in the model to control for mean scores when considering variability. Individuals reporting greater attachment security, less self-blame, greater variability in Love ( $r_{effect\ size} = .215$ ), and less variability in

Relief ( $r_{effect\ size} = -.201$ ) reported greater levels of hedonia after a month of study participation.

**Discussion**

To our knowledge, this is the first prospective investigation of emotional experience following a nonmarital breakup and the first to use an intact couple comparison group. Compared to dating individuals, dissolution participants reported significantly more negative affect and fewer feelings of love or closeness to their former partners. Individuals in the dissolution sample reported significantly more anger and less love throughout the month-long study. In contrast, dissolution study participants' sadness declined substantially over time and, by the end the study, did not differ from that of individuals in intact

relationships. The dissolution sample also evidenced greater variability in daily emotion, especially during the first week after the breakup. Over time, the degree of variability decreased and was comparable to the variability within intact relationships roughly 40 days after a breakup. (Participants entered the dissolution study an average of 11 days after the relationship ended.)

Variability in sadness predicted generalized disturbance at Day 28 (after controlling for mean Sadness), supporting the notion that within-person variation can explain between-persons differences (Kernis et al., 2000). However, not all variability was associated with negative outcomes. After controlling for mean Love and Relief, high levels of Love Variability were associated with the presence of hedonia at the end of the dissolution study period (as was low variability in relief). One explanation for these findings is that, as individuals begin to adjust to their separation experiences (and reported increases in positive affect), they also report being less “stuck” on love or protracted pining for their former partners. This positive adaptation, in turn, can be manifested in greater daily variability as individuals begin letting go of their former partners and experiencing a great daily fluctuation in their feelings of love. For individuals stuck in any one emotional state, which has been described as an indicator of pathological or complicated grief (Emery, 1994; Stroebe & Schut, 1999), increases in emotional variability may also represent greater acceptance rather than prolonged distress.

The growth curve analyses provided mixed support for the hypotheses of curvilinear decline among the Love and negative emotion variables. For Love, the rate of decline was linear; for Sadness and Anger, curvilinear effects were found in the form of a quadratic deceleration parameter. An initial answer to the question “How long will it take to get over this breakup?” thus appears to depend on the emotion of interest. Feelings of Love decreased more slowly than feelings of sadness, which decreased slower still than feelings of anger. For Relief, the mean curve decreased and then increased by the end of the study period, which we attribute to two

offsetting patterns. Some participants reported high initial levels of relief that declined over time, while others reported low initial levels of relief that increased over time.

The considerable between-persons variability for relief points to an important, general issue. Large differences in trajectories across people can result in a mean trajectory with little substantive meaning (see Nesselroade & Featherman, 1991). Our guiding theory suggests that, while grief can be characterized generally by cycling between love, anger, and sadness, different patterns are expected immediately following a breakup, which can result in mean trajectories that obfuscate important within-person patterns. Specifying predictors of the course of grieving and empirically documenting different patterns of grieving is an extremely important, if methodologically challenging, task for future research.

The multilevel growth models for each of the emotions are clear in indicating that change over time was systematic and not simply random error of measurement. For the Love, Sadness, and Anger variables, the bulk of total change occurred within the first week of the study period. Participants reported a 41% decline in Love in the first week, a 60% decline in Sadness, and a 77% decline in Anger. Thus, although we observed curvilinear effects for Sadness and Anger in the form of a deceleration parameter, the final models for Love, Sadness, and Anger are not consistent with the expectations of gradual or truly varied change in post-dissolution adjustment (Emery, 1994) or more stage-like change suggested by attachment theory (Bowlby, 1980) and contemporary perspectives on bereavement (Stroebe & Schut, 1999).

One explanation for these findings is that emotional change is not the equivalent of general adjustment to one's breakup. While it is certainly the case that individuals who feel less Sadness, Anger, and pining for a former partner may have adjusted to the breakup, these specific emotions also need to be considered in light of their functional roles. Discrete systems models of emotion (Ellis & Malamuth, 2000) and evolutionary and attachment theories (Bowlby, 1980; Cosmides & Tooby, 2000) suggest that the experience of Love and Anger is facilitative, activating



approach-motivation systems. In the case of a breakup, love serves the purpose of motivating one's passions toward a particular individual, while anger provides the energy to seek a potential reunion (Bowlby, 1980). In contrast, sadness is a withdrawal state to which individuals retreat once the goals of reunion become impossible (Davis, Shaver, & Vernon, 2003).

Participants' emotional experiences depended largely on their general adjustment to the breakup. At entry into the study, individuals who reported experiencing more intrusive thoughts of the breakup also reported more love and sadness, and less relief. However, the impact of the event variable was not associated with general rates of decline for either love or sadness, indicating that these emotions changed independently of the overall psychological impact of the breakup experience. As expected, attachment security was negatively correlated with the anger level, positively correlated with the relief level, and negatively correlated with the linear trend in sadness, indicating that the individuals with a self-reported secure attachment style evidenced significantly faster rates of decline in Sadness over time. Evidence suggests that secure individuals regulate their emotions more effectively, especially in situations that present relationship-specific threats (Diamond, 2001; Feeney, 1995; Kobak & Sceery, 1988). With respect to a breakup, security appears to help individuals negotiate the transition without getting stuck on feelings of sadness.

Our hypotheses that individuals who reported dating longer and that their partner initiated the separation would evidence high levels of love and negative emotions and slower decline in these outcomes were not supported. Many of the participants dissolving the longest relationships reported little emotional distress, consistent with the idea that adaptation to and acceptance of a breakup can occur well before the actual event (Emery, 1994; Vaughan, 1986). We believe that the failure to support our hypotheses is due, at least in part, to various challenges involved in testing them empirically. For example, leavers may initiate the breakup and be emotionally prepared for the end of the relationship, but leavers also may cause the left to initiate the

breakup, perhaps in response to an affair. If this speculation is correct, whether or not one wanted the relationship to continue just before the breakup may be a better predictor of grief than initiator status.

On days when participants reported having telephone or in-person contact with their former partner, they also reported more love and sadness. While the direction of effect cannot be ruled out with these analyses (i.e., individuals may have sought contact *because* they felt more love or sadness), these findings do indicate that trajectories of change for love and sadness were stalled on days when individuals reported contact with their former partner. Hence, when individuals ask "How will I feel if I talk to or see my ex?", the results of the present study indicate that they will feel significantly more love and sadness, not less. Alternatively, one obvious way for a pining partner to monitor their ex's availability is to seek out contact. With either direction of effect, the results highlight the dilemma faced by many individuals after separation, especially divorced parents who, despite ending their romantic relationship, must maintain a degree of contact with one another because of their children.

Typically, researchers study individual emotions independent of one another (see, for instance, Ekman & Davidson, 1994). Ferrer and Nesselrode (2003) recently demonstrated that a bivariate perspective on emotional dynamics can shed light on the interplay between positive and negative affect. In the present study, higher levels of sadness and lower levels of anger predicted increases in love, whereas higher levels of love and sadness were associated with less within-occasion relief. Changes in emotion over time also were dependent on other emotions. Sadness slowed the decreases in love over time, while anger was associated with lower feelings of love. Individuals who reported greater love and sadness at any occasion also reported experiencing fewer positive feelings of relief.

### *Limitations*

Several limitations should be noted about this study. One concern is the extent to which

recording daily emotions influences grief. The act of assessment may be an intervention that alters emotional experience. Another concern is the disparity in female and male participation. Many eligible men refused to participate, citing not wanting to talk about the experience, not having time, or just “wanting to get over things and forget about it.” Our sample also is relatively small, although we gain power for the multilevel models through frequent repeated measures. These factors limit the overall generalizability of our results. A third consideration is that only limited prospective information was obtained from the sample before dissolution, thus we were unable to consider satisfaction or commitment prior to dissolution. A fourth issue of concern is the relatively low reliability found for several of our measures of overall adjustment and coping, which adds error to our measurement. Finally, we could question whether dimensions of attachment are reported differently when assessed immediately following a breakup.

Clearly, these are important methodological concerns, as are other issues raised earlier, particularly concerning the predictors of different patterns of grieving. Still, the study has notable strengths including its prospective nature, focus on specific emotions, random daily diary recordings, and the use of guiding theory. We do not expect a single study to confirm all theoretical predictions; indeed, the data reported here raise many important questions. Nevertheless, when understanding emotional experience following a breakup, or potentially revocable loss, the present findings point to the importance of the intertwined emotions of love, anger, sadness, and relief; the nonlinear nature of change in these emotions; and the intra- and interpersonal factors associated with unfolding of emotional grief over time.

## References

- Amato, P. R. (2000). The consequences of divorce for adults and children. *Journal of Marriage and the Family*, *62*, 1269–1287.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four category mode. *Journal of Personality and Social Psychology*, *61*, 226–244.
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, *54*, 579–616.
- Bolger, N., & Eckenrode, J. (1995). Daily and within day event measurement. In S. Cohen, R. C. Kessler, & L. G. Gordon (Eds.), *Measuring stress: A guide for health and social scientists* (pp. 80–101). New York: Oxford University Press.
- Bowlby, J. (1980). *Attachment and loss: Vol 3. Loss: Sadness and depression*. New York: Basic Books.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models*. Newbury Park, CA: Sage.
- Csikszentmihalyi, M., & Larson, R. (1992). Validity and reliability of the experience sampling method. In M. W. deVries (Ed.), *The experience of psychopathology: Investigating mental disorders in their natural settings* (pp. 43–57). Cambridge, England: Cambridge University Press.
- Davis, D., Shaver, P. R., & Vernon, M. L. (2003). Physical, emotional, and behavioral reactions to breaking up: The roles of gender, age, environmental involvement, and attachment style. *Personality & Social Psychology Bulletin*, *29*, 871–884.
- Diamond, L. M. (2001). Contributions of psychophysiology to research on adult attachment: Review and recommendations. *Personality and Social Psychology Review*, *5*, 276–295.
- Eizenman, D. R., Nesselroade, J. R., Fetherman, D. L., & Rowe, J. W. (1997). Intraindividual variability in perceived control in an older sample: The MacArthur Successful Aging Studies. *Psychology and Aging*, *12*, 489–502.
- Ekman, P., & Davidson, R. J. (Eds.). (1994). *The nature of emotion. Fundamental questions*. New York: Oxford University Press.
- Ellis, B. J., & Malamuth, N. M. (2000). Love and anger in romantic relationships: A discrete systems model. *Journal of Personality*, *68*, 525–556.
- Emery, R. E. (1994). *Renegotiating family relationships: Divorce, child custody, and mediation*. New York: Guilford.
- Emery, R. E. (2004). *The truth about children and divorce*. New York: Viking.
- Feeney, J. A. (1995). Adult attachment and emotional control. *Personal Relationships*, *2*, 143–159.
- Ferrer, E., & Nesselroade, J. R. (2003). Modeling affective processes in dyadic relations via dynamic factor analysis. *Emotion*, *3*, 344–360.
- Fraley, R. C., & Shaver, P. R. (1997). Adult attachment and the suppression of unwanted thoughts. *Journal of Personality and Social Psychology*, *73*, 1080–1091.
- Fraley, R. C., & Shaver, P. R. (1999). Loss and bereavement: Attachment theory and recent controversies concerning “grief work” and the nature of detachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 735–759). New York: Guilford.
- Frazier, P. A., & Cook, S. W. (1993). Correlates of distress following heterosexual relationship dissolution. *Journal of Social and Personal Relationships*, *10*, 55–67.
- Griffin, D. W., & Bartholomew, K. (1994). The metaphysics of measurement: The case of adult attachment. In K. Bartholomew & D. Perlman (Eds.),

- Advances in personal relationships: Attachment processes in adulthood* (pp. 17–52). London: Jessica Kingsley.
- Hetherington, E. M., & Kelly, J. (2002). *For better or for worse: Divorce reconsidered*. New York: Norton & Company.
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*, *11*, 213–218.
- Horowitz, M. J., Wilner, N., & Alvarez, W. (1979). Impact of event scale: A measure of subjective stress. *Psychosomatic Medicine*, *41*, 209–218.
- Kernis, M. H., & Goldman, B. M. (2003). Stability and variability in self-concept and self-esteem. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 106–127). New York: Guilford.
- Kernis, M. H., Paradise, A. W., Whitaker, D. J., Wheatman, S. R., & Goldman, B. N. (2000). Master of one's psychological domain? Not likely if one's self-esteem is unstable. *Personality & Social Psychology Bulletin*, *26*, 1297–1305.
- Kitson, G. C. (1982). Attachment to the spouse in divorce: A scale and its application. *Journal of Marriage and the Family*, *44*, 379–391.
- Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development*, *59*, 135–146.
- Kubler-Ross, E. (1969). *On death and dying*. New York: Macmillan.
- Larson, R., & Csikszentmihalyi, M. (1983). The experience sampling method. In H. T. Reis (Ed.), *Naturalistic approaches to studying social interaction: New directions for methodology of social and behavioral science* (pp. 41–56). San Francisco: Josey-Bass.
- Little, R. C., Lilliken, G. A., Stroup, W. W., & Wolfinger, R. D. (1996). *SAS system for linear mixed models*. Cary, NC: SAS Institute.
- Marco, C. A., Neale, J. M., Schwartz, J. E., Shiffman, S., & Stone, A. A. (1999). Coping with daily events and short-term mood changes: An unexpected failure to observe effects of coping. *Journal of Consulting and Clinical Psychology*, *67*, 755–764.
- Marks, N. F. (1996). Flying solo at midlife: Gender, marital status, and psychological wellbeing. *Journal of Marriage and the Family*, *58*, 917–932.
- McDonald, A. S. (1997). Factor structure of the impact of events scale in a non-clinical sample. *Personality and Individual Differences*, *23*, 419–424.
- McNair, D. M., Lorr, M., & Droppleman, F. (1981). *Profile of mood states*. San Diego: Educational and Industrial Testing Service.
- Mikulincer, M., Florian, V., & Tolmatz, R. (1990). Attachment styles, coping strategies, and posttraumatic psychological distress: The impact of the gulf war in Israel. *Journal of Personality and Social Psychology*, *64*, 817–826.
- Monroe, S. M., Rohde, P., Seeley, J. R., & Lewinsohn, P. M. (1999). Life events and depression in adolescence: Relationship loss as a prospective risk factor for first onset of major depressive disorder. *Journal of Abnormal Psychology*, *108*, 606–614.
- Nacross, J. C., Guadagnoli, E., & Prochaska, J. O. (1984). Factor structure of the Profile of Mood States (POMS): A partial replication. *Journal of Clinical Psychology*, *40*, 1270–1277.
- Nesselroade, J. R., & Featherman, D. L. (1991). Intra-individual variability in older adults' depression scores: Some implications for developmental theory and longitudinal research. In D. Magnusson, L. Bergman, G. Rudinger, & B. Torestad (Eds.), *Problems and methods in longitudinal research: Stability and change* (pp. 47–66). Cambridge, England: Cambridge University Press.
- Nesselroade, J. R., & Ghisletta, P. (2000). Beyond static concepts in modeling behavior. In L. R. Bergman & R. B. Cairns (Eds.), *Developmental science and the holistic approach* (pp. 121–135). New York: Lawrence Erlbaum.
- Nyenhuis, D. L., Yamamoto, C., Luchetta, L., Terrien, A., & Parmentier, A. (1999). Adult and geriatric normative data and validation of the profile of mood states. *Journal of Clinical Psychology*, *55*, 79–86.
- Raudenbush, S. W. (2001). Comparing personal trajectories and drawing causal inferences from longitudinal data. *Annual Review of Psychology*, *52*, 501–525.
- Reis, H. T., & Gable, S. L. (2000). Event-sampling and other methods for studying everyday experience. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 190–222). New York: Cambridge University Press.
- Rubin, Z. (1973). *Liking and loving: An invitation to social psychology*. New York: Holt, Rinehart, & Winston.
- Sbarra, D. A., & Emery, R. E. (2005). Co-parenting conflict, nonacceptance, and depression among divorced adults: Results from a 12-year follow-up study of child custody mediation using multiple imputation. *American Journal of Orthopsychiatry*, *75*, 22–37.
- Simpson, J. A. (1987). The dissolution of romantic relationships: Factors involved in relationship stability and emotional distress. *Journal of Personality and Social Psychology*, *53*, 683–692.
- Singer, J. D. (1998). Using SAS Proc Mixed to fit multi-level models, hierarchical models, and individual growth models. *Journal of Educational & Behavioral Statistics*, *23*, 323–355.
- Sprecher, S. (1994). Two sides of the breakup of dating relationships. *Personal Relationships*, *2*, 199–222.
- Sprecher, S., Felmlee, D., Metts, S., Fehr, B., & Vanni, D. (1998). Factors associated with distress following romantic relationship dissolution. *Personal Relationships*, *15*, 791–809.
- Stroebe, M., & Schut, H. W. (1999). The dual process model of coping: Rationale and description. *Death Studies*, *23*, 197–224.
- Stroebe, M. S., & Schut, H. (2001). Models of coping with bereavement: A review. In M. S. Stroebe, R. O. Hansson, W. Stroebe, & H. Schut (Eds.), *Handbook of bereavement research: Consequences, coping, and care* (pp. 375–404). Washington, DC: American Psychological Association.
- Sundin, E. C., & Horowitz, M. J. (2002). Impact of Event Scale: Psychometric properties. *British Journal of Psychiatry*, *180*, 205–209.
- Tashiro, T., & Frazier, P. A. (2003). "I'll never be in a relationship like that again": Personal growth following romantic relationship dissolution. *Personal Relationships*, *10*, 113–128.
- Tennen, H., Affleck, G., Amerli, S., & Carney, M. A. (2000). A daily process approach to coping. Linking theory, research, and practice. *American Psychologist*, *55*, 626–636.

- Thompson, L., & Spanier, G. B. (1983). The end of marriage and the acceptance of marital termination. *Journal of Marriage and the Family, 45*, 101–113.
- Vaughan, D. (1986). *Uncoupling: Turning points in intimate relationships*. New York: Vintage Books.
- Vitaliano, P. P., Russo, J., Carr, J. E., Maiuro, R. D., & Becker, J. (1985). The Ways of Coping Checklist: Revision and psychometric properties. *Multivariate Behavioral Research, 20*, 3–26.
- Wang, H., & Amato, P. R. (2000). Predictors of divorce adjustment: Stressors, resources, and definitions. *Journal of Marriage and the Family, 62*, 655–668.
- Watson, D., & Clark, L. A. (1991). *The Mood and Anxiety Symptom Questionnaire*. Unpublished manuscript, University of Iowa, Iowa City.
- Watson, D., Weber, K., Assenheimer, J. S., Clark, L. A., Strauss, M. E., & McCormick, R. A. (1995). Testing a tripartite model: I. Evaluating the convergent and discriminant validity of anxiety and depression symptom scales. *Journal of Abnormal Psychology, 104*, 3–14.
- Weiss, R. S. (1975). *Marital separation*. New York: Basic Books.
- Weiss, R. S. (1976). The emotional impact of marital separation. *Journal of Social Issues, 32*, 135–145.
- Weiss, R. S. (2001). Grief, bonds, and relationships. In M. Stroebe, R. O. Hansson, W. Stroebe, & H. Schut (Eds.), *Handbook of bereavement research: Consequences, coping, and care* (pp. 47–62). Washington, DC: American Psychological Association.