JUST SOMEBODY THAT YOU USED TO KNOW? THE LONG-TERM STABILITY OF
ATTACHMENT BONDS AFTER ROMANTIC SEPARATION

BY

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DISSERTATION

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ABSTRACT

According to attachment theory (Bowlby, 1969/1982), people develop emotional bonds with close others who provide comfort and support in times of distress. But what happens to those bonds when the relationship ends? One common assumption is that once an attachment bond is established, it is maintained in an enduring way, such that former partners continue to fulfill attachment-related needs to some degree even long after the relationship has ended. In contrast, another approach assumes that attachment bonds to former partners are eventually relinquished such that there is no residual bond or tie after a period of time. The present study (N = 320) adjudicates between these fundamentally incompatible assumptions by examining the long-term continuity of attachment bonds following romantic separation. Results from non-linear regression models indicate that people report a minimal, non-zero level of desire to use former romantic partners for attachment-related needs. However, those levels are comparable to the extent to which they would use strangers for attachment-related functions, suggesting that the bond eventually (with a halfway point of 4.18 years) fades to a point of insignificance. Thus, the data more closely aligns with the theoretical idea that attachment bonds are gradually (e.g., with 4.18 years as a mid-point) relinquished after the termination of a relationship: People's former partners simply become someone they used to know. Theoretical implications and future research directions of assessing changes in disrupted close relationship bonds are discussed.

To my patient and loving husband, Wilson Wong,

and to our very good dog, Maxwell Appa of the Wong-Chong clan.

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CHAPTER 1: INTRODUCTION

There are few experiences that rival the intense distress and misery induced by the prolonged separation of loved ones (Dunlop, Harake, & Wilkinson, 2021; Holmes & Rahe, 1967). In Bowlby's (1969/1982) theory of attachment and loss, he proposed that people build deep affectional bonds with close others (i.e., attachment figures) and depend on them for comfort, protection, and support in times of need. Although people increasingly rely on mental representations of their attachment figures as they grow older and can therefore spend extended periods of times away from close others, the prolonged emotional or physical inaccessibility of an attachment figure is likely to activate powerful feelings of distress and anxiety. Thus, when people perceive the disengagement of an attachment figure, they initiate various attachment behaviors (e.g., protest, clinging, crying) in an effort to regulate emotion and re-establish proximity to the attachment figure.

In the context of romantic relationships, partners who have ended their relationship often find themselves in an acutely distressing situation while at the same time bereft of the person who they would have most relied on for support (Bowlby, 1980). Nevertheless, most people who are experiencing separation from a former significant other continue to have feelings of attachment towards their ex-partners (Weiss, 1975). But as time passes, the desire to use a former partner for attachment-related functions (i.e., proximity maintenance, a safe haven, a base of security from which to explore) decreases. That is, with the passage of time, people generally move forward in their lives and gradually diminish in their reliance of former partners in fulfilling attachment-related needs (Bowlby, 1980).

But to what extent does the attachment system remain sensitive and readily activated in response to cues relevant to a former partner on a long-term basis? Different ideas regarding this

question have been put forth in the existing literature. One approach rests on the assumption that there is an "imprinted quality" to attachment and posits that, once an attachment bond is established, former partners continue to be targets of attachment behavior over time (e.g., Bowlby, 1980; Weiss, 1975). Although people may acquire new attachment figures and increasingly direct attachment functions to those new people, the previous bond never fully goes away; it persists and can continue to shape people's feelings and behavior. Another approach implies that attachment bonds to previous romantic figures are gradually relinquished as people encounter new experiences and develop new relationships. Although this process may not take place rapidly for most people, this idea assumes that, at some point, the former partner no longer serves any attachment functions.

Although these alternative ways of thinking have emerged independently from one another in the literature, they have not been articulated as distinctive and incompatible positions per se. Nonetheless, the fact that this incongruity exists suggests that scholars have yet to appreciate the fact that these ideas require reconciliation. The current research empirically investigates these alternative ideas by examining the long-term continuity and nature of affective bonds after the loss of a romantic attachment figure. The present research helps to reconcile these distinctive views and provides new insight into the way attachment bonds are dissolved following the breakup of romantic relationships.

1.1 A Brief Overview of the Origins and Central Tenets of Attachment Theory

Bowlby (1969/1982) developed attachment theory while investigating the psychological consequences that unwilling separations and the loss of an attachment figure have on personality development. Bowlby observed that infants have a strong propensity to seek proximity and maintain contact with their attachment figures. He argued that this tendency to seek out close

others arose from a motivational behavioral system that monitors the infant's distance from an attachment figure and prompts proximity-seeking behavior when faced with a threat. When the attachment figure is available and in close vicinity, a sense of *felt security* is achieved and other behavioral systems take precedence (e.g., exploration; Sroufe & Waters, 1977). However, if the attachment figure is unavailable or distant, the infant experiences distress and will engage in behaviors that serve to regain proximity to the attachment figure, such as clinging or crying. In short, Bowlby believed that the attachment behavioral system evolved to increase chances of survival to reproductive age for infants, who are likely to perish without the care and protection of an attachment figure.

Although infants typically seek the protection and support of attachment figures when threatened, children in unreliable caregiving environments tend to develop secondary strategies to seek care more effectively. Ainsworth and her colleagues (1978) observed and classified these alternative strategies using a laboratory paradigm called the Strange Situation procedure, during which children and their caregivers undergo a series of brief separations and reunions. During the Strange Situation procedure, a majority of the children readily explored the environment around them in the presence of their caregivers. These children, whom Ainsworth et al. referred to as *securely attached*, were visibly upset when their caregiver left, but easily placated once their caregiver returned. However, some children were not as reassured by the presence or return of their attachment figure and exhibited defensive strategies in response to separation and reunion phases. These *avoidantly attached* children engaged in behavior that emphasized self-reliance and independence (e.g., turning away or ignoring their caregivers). When their caregivers left the room, avoidantly attached children appeared to give little heed to the departure of their caregiver. Moreover, the return of an avoidant child's caregiver was typically met with

apathy and pointed indifference. Conversely, *anxiously attached* children were characterized by their needy and demanding demeanors when interacting with caregivers. These children were greatly distressed at the prospect of their caregivers leaving, but were resistant to the efforts made to soothe them upon the caregivers' return. Although anxiously attached children signaled a desire for closer proximity by crying or reaching out to their caregivers, the children's interactions with their caregivers were often characterized by an angry or ambivalent quality during the reunion phase.

Bowlby (1969/1982) and Ainsworth et al. (1978) believed that the patterns of attachment behavior displayed by children during the Strange Situation procedure were, to a large extent, shaped by their history of early experiences with attachment figures. Specifically, based on their early experiences with caregivers, children form mental representations (i.e., internal working models) that organize expectations about the self and others. For example, securely attached children tend to have caregivers who are sensitive and responsive to their needs, such that secure children are generally confident in their caregiver's availability and responsiveness in threatening situations. This belief encourages secure children to not only readily seek out their caregivers for protection when a threat is perceived, but also explore their surroundings in times of safety. However, insecure children (i.e., avoidant and anxious) were theorized to have inconsistent or unavailable caregivers. Consequently, insecure children tend to use defensive strategies, such as deactivation or intense protest, to help regulate their emotions and more effectively obtain care when it is uncertain whether their attachment figures will respond sensitively and appropriately in threatening circumstances. A number of researchers have since reported empirical evidence supporting the link between early caregiver sensitivity and attachment security (e.g., Belsky, Rovine, & Taylor, 1984). In sum, the internal working models

developed from repeated interactions with early caregivers organize thoughts, feelings, and behaviors with respect to the self and others. These internal working models guide the way in which people regulate their emotion and interact with others in subsequent social relationships.

1.2 The Application of Attachment Theory Across the Lifespan

Bowlby (1969/1982) emphasized that attachment-related phenomena occur from "the cradle to the grave" (p. 208) and that the way in which the attachment behavioral system functions in childhood is also highly applicable to personal relationships in adulthood. Several studies have provided evidence that support this assertion (e.g., Hazan & Shaver, 1987; Shaver, Hazan, & Bradshaw, 1988). These studies have demonstrated that both adults and children prefer to have their attachment figures nearby and accessible and that negative affect is experienced when people of all ages are separated from their attachment figures. Moreover, although affective bonds with parents continue to act as sources of emotional support, peers and romantic partners play increasingly prominent roles in fulfilling attachment-related needs as people enter adulthood (Doherty & Feeney, 2004; Fraley & Davis, 1997; Hazan & Zeifman, 1994; Nickerson & Nagle, 2005; Trinke & Bartholomew, 1997).

In adulthood, individual differences in attachment orientations are commonly represented in a two-dimensional space (Bartholomew & Horowitz, 1991; Brennan, Clark, & Shaver, 1998; Fraley & Waller, 1998). The first dimension, *anxiety*, reflects the degree to which one is concerned about the availability or responsiveness of attachment figures. Namely, those who score higher in attachment anxiety often worry that their attachment figures will abandon or reject them. The second dimension of *avoidance* corresponds to a preference for autonomy and self-sufficiency. People who have high avoidance scores tend to have difficulties with emotional intimacy and depending on others. Adults who are securely attached are on the low end of both

dimensions. Securely attached people trust that their attachment figures will respond sensitively when needed and are more comfortable offering and receiving support from others.

Additionally, a fully-fledged attachment bond throughout the lifespan is characterized by three defining features and functions: *proximity seeking* (i.e., the tendency for people to seek close contact with their attachment figures, particularly when feeling threatened or distressed), *safe haven* (i.e., retreating to attachment figures when frightened to regain a sense of comfort), and *secure base* (i.e., exploring novel environments or activities with the knowledge that one can fall back on attachment figures as needed; Hazan & Shaver, 1994; Hazan & Zeifman, 1994). The process of forming an attachment bond involves the emergence of these features in an ordered sequence (Hazan, Campa, & Gur-Yaish, 2006; Heffernan, Fraley, Vicary, & Brumbaugh, 2012). It was originally believed that it takes approximately 2 years for people to use romantic partners for proximity seeking, safe haven, and secure base functions (Fraley & Davis, 1997; Hazan & Zeifman, 1994), but recent evidence suggests that people begin using their romantic partners as attachment figures in a much shorter period of time (Heffernan et al., 2012).

1.3 Relationship Loss and the Experience of Grief and Mourning from an Attachment Theoretical Perspective

One of the central questions in attachment theory is why people behave the way that they do when they lose a loved one. In his three-volume series *Attachment and Loss*, Bowlby (1969/1982, 1973, 1980) explains that the attachment behavioral system that governs the behavioral and affective responses of infants who are separated from their primary caregivers continues to regulate people's reactions to losing a romantic attachment figure in adulthood. Thus, the overall pattern of responses that infants exhibit in response to separation from their attachment figures is comparable to those shown by adults who have lost a romantic partner.

In the final volume of his trilogy, Bowlby (1980) outlined a series of mourning phases that adults predictably undergo when a separation becomes permanent. He described the initial response as a fleeting phase of *numbing* or shock characterized by intermittent outbursts of intense distress or anger. Following this short numbing phase, prolonged unavailability of a significant other instinctively elicits a proximity-seeking response during the *protest* phase. In this second phase, there is an agitated yearning and preoccupation with the absent figure, usually accompanied by compulsive searching and attempts to restore contact (e.g., begging, weeping, angry coercion). It is also not uncommon to have vivid dreams of the lost person during the protest phase. Searching may include closely attending to signs of the missing person in the surrounding environment, particularly in places where the person is known to frequent. For instance, strangers passing by may be mistaken as the former partner due to minor resemblances. In modern times, searching may involve a more technological element, such as following a former partner's social media updates to reduce uncertainty after a breakup (Fox & Tokunaga, 2015; Marshall, 2012; Tong, 2013). Of note, even when the act of increasing proximity to the attachment figure is recognized to be futile or irrational, it is typical for people nonetheless to find themselves compelled to restlessly search and recover the lost person.

Eventually, if efforts to restore proximity prove fruitless, the phase of *despair* sets in and active efforts to recover the lost partner wanes. In fact, the pining for the attachment figure has not diminished, but it is at this point in which one realizes that there is little hope of the lost figure's return and, coming to the gradual acceptance of the permanent loss, one becomes listless and in a state of mental disorganization. This phase is usually characterized by a depressed mood, apathy, and reduced activity.

In addition to pining and searching for the lost figure, as well as coming to the gradual acceptance that the loss is permanent, people often experience a phase that Bowlby originally termed *detachment* in his earlier work on mourning in infancy. However, the term "detachment" has been a source of ambiguity and confusion in the literature. Some scholars have taken it to imply that the central task of grieving is to detach from the former attachment object. This interpretation, which has its roots in psychoanalytic thinking (Freud, 1917/1957), views the process of recovery as the untethering of one's emotional investment from the lost object so that emotional energy can be reallocated towards a new object. Because successful recovery involves reaching a point at which the object is no longer serving attachment-related functions, failing to fully detach from the object can be seen as a failure to recover from the disrupted relationship.

However, Bowlby did not necessarily intend for the term "detachment" to imply a complete removal of one's emotional investment in an object. On the contrary, he noted that the alienation of attachment figures after a protracted separation serves a defensive purpose of suppressing attachment responses, but will often fall away to sudden upheavals of attachment behavior. Consequently, "detachment" as posed by Bowlby was not meant to convey the weakening or casting off of emotional ties, but a defensive response to the prolonged unavailability of an attachment figure (Fraley & Shaver, 1999). In such cases, the bond remains, despite the person's apparent indifference to the attachment figure. In describing mourning in adulthood, Bowlby amended the terminology to *reorganization* instead of detachment to describe the way in which people reconcile the loss of an important person. Having accepted that the target towards which one had directed past attachment-related behavior is now gone and cannot be recovered, people going through this phase are obliged to shed their old patterns of thinking, feeling, and acting to better complement a future without the lost person. Additionally, Bowlby

believed that the process of reorganization is one in which internal working models of the self and the world are reshaped to better reflect the changes in the severed relationship and altered life situation of the grieving person.

Reorganization, in fact, implies that the bond still exists, but is not necessarily given a leading role on the psychological stage. After a romantic separation, most people continue to bear feelings of attachment towards their former partners even if the relationship had been dissolved on disagreeable terms (Kitson, 1982; Weiss, 1975). As people process their grief, they can oscillate back and forth between the different phases rather than moving in one fixed direction through the phases. Moreover, patterns of grief do not necessarily have a single linear trajectory and can vary in how they look across different people (Bonnano, Boerner, & Wortman, 2008; Sbarra & Emery, 2005). That is to say, mourning does not consist of a set of rigid phases to pass through, and there are notable individual differences in how people respond to the loss of a close other (Bonanno & Kaltman, 1999; Wortman & Silver, 1989). In the attachment and relationship dissolution literature, some of the factors that help to account for individual differences in response to loss include, but are not limited to, attachment style, quality of the relationship prior to dissolution, initiation of the breakup, conditions under which the relationship ended, communication between former partners, and entering a new relationship (Birnbaum et al., 1997; Davis, Shaver, & Vernon, 2003; Fagundes, 2012; Kellas, Bean, Cunningham, & Yun, 2008; Kitson, 1982; Sbarra & Emery, 2005; Sprecher et al., 1998). In terms of relationship length, once an attachment bond is fully formed, coming to terms with the loss of an attachment figure becomes as difficult for those together for a few years as it is for those who have been in a relationship for decades (Weiss, 1975).

Bowlby was primarily concerned with loss due to death as a springboard for his theoretical discussions, but asserted that there are basic patterns of grief responses regardless of the cause of loss. To be clear, that is not to say that the context of loss does not create critical distinctions in the circumstances surrounding the mourning process. For example, relationships ended by a breakup could theoretically be repaired with a living partner, thus bearing the hope for reconciliation and potentially prolonging the grief process (i.e., protracted yearning, on-off relationships; Dailey et al., 2009; Weiss, 1975), whereas a loss due to death is irrevocable. Moreover, hopes and plans for a future with a lost partner become incongruous to the changed relationship following both death and a breakup, but the loss of a living partner allows the opportunity to forge a modified relationship with the same person. Nonetheless, despite the unique hardships in mourning that may arise from differences in the cause of separation, Bowlby (1980) maintained that, as a whole, responses to loss caused by varying reasons share the same mourning process. Furthermore, variations in responses to relationship loss of different kinds are merely "variations on a single theme" (p. 76). Empirical research has backed this theoretical concept with reports of striking similarities between adjusting to separation from a romantic partner and grief responses when a partner has died (e.g., Robak & Weitzman, 1995). However, it remains unclear what varies between the attachment dissolution process as a result of loss from the death of a partner compared to the severing of a romantic relationship (i.e., a breakup).

1.4 Alternative Predictions of the Persistence of Attachment Bonds

For several decades, scholars have debated the nature of attachment bonds after losing a loved one. Although empirical evidence regarding the long-term stability of attachment bonds after relationship loss remains sparse, it is generally agreed among grief and mourning scholars that the intensity and frequency of grief responses diminish over time. Healthy mourning

requires, at least to some extent, a gradual withdrawal of emotional investment from a lost attachment figure to make way for new relationships. However, there are disagreements in the literature on the way in which this is accomplished and whether former attachment figures continue to serve attachment-related functions symbolically. For example, based on Bowlby's (1980) theoretical contributions, some scholars believe that recovery from the loss of an attachment figure entails a reorganization of mental representations regarding the self and the lost figure, as well as making sense of a life in which the attachment figure is physically and emotionally absent (see also Klass, Silverman, & Nickman, 1996; Parkes, 1972; Rando, 1991; Weiss, 1975; Worden, 1991). By doing so, it becomes possible to reconstruct the nature of the attachment bond with a lost figure and, furthermore, continue to use that bond as a source of security to fulfill attachment-related needs symbolically (e.g., finding comfort in positive memories of a former partner).

In addition, after time has passed following relationship termination and attempts to restore the lost attachment figure are unsuccessful, these attempts will abate, but are not entirely extinguished. Rather, the attachment behavioral system continues to be perpetually primed towards the lost figure. As Bowlby (1980) notes, after attachment figure loss "…the acute state of mourning will subside, [but] we also know we shall remain inconsolable and will never find a substitute. No matter what may fill the gap, even if it be filled completely, it nevertheless remains something else" (p. 23). That is, there persists an urge or desire to be able to rely on a former partner to fulfill attachment functions, though such desires may be shunned rationally and not carried out behaviorally. Moreover, surges of attachment-related feelings can be felt anew after reconstructing one's life following the loss of a lover (i.e., after "moving on" from a breakup). Even many years after a loss, feelings of grief and the compulsion to search for a lost

figure can be triggered by reminders of a former significant other (e.g., photographs, songs, anniversaries). According to this theoretical approach, the long-term trajectory of an attachment bond after relationship loss is like a sprained knee injury that has ostensibly recovered such that the knee can be used on a day-to-day basis without issue. However, long after the injury has appeared to have healed, certain contexts such as cold weather can cause the knee to flare up with lingering pain and aches. In sum, this approach suggests that, after the initial decay of the attachment bond in the earlier stages of mourning loss, attachment between former partners continues to remain intact and relatively impervious to the passing of time.

It is important to note, however, that Bowlby and Weiss' inferences were primarily drawn from anecdotal observations and that the predictions they made from short glimpses into people's lives best describe how people felt at that particular instance in time. Because anecdotal evidence is limited in scope, it cannot speak to the long-term continuity of attachment bonds. Along these lines, there is an alternative way of thinking that is grounded in the idea that the resolution of an attachment relationship is marked by the complete severing of the emotional bond (Freud, 1913/1938, 1917/1957; Lindemann, 1944; Raphael, 1983; Raphael & Nunn, 1988; Sanders, 1989). Specifically, attachment bonds to lost attachment figures erode so completely that cues of a former partner are no longer capable of provoking attachment-related feelings and there is no compulsion to direct attachment behaviors towards the former partner. In essence, the attachment bond between former partners wears away to a point of insignificance, such that there is little to no desire to seek proximity to a former partner, nor to use them as a haven of safety or a secure base from which to explore the world. This is not to say that the lost person is erased from memory or that the significance of the lost relationship is necessarily discarded, but rather that, in due course, there is acceptance that the lost figure cannot be restored and is no longer

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used as a source of security henceforth. In contrast to the previous example of a sprained knee that continues to be a source of lingering pain, this idea is analogous to a knee that has completely recovered and no longer troubles the person henceforth. Indeed, there remains no physical indication whatsoever indicating that the injury has occurred. Likewise, this approach suggests that people's inclinations to rely on former partners wear away completely over time such that they no longer serve any attachment-related functions.

But how does one quantify what it means for former partners to no longer serve attachment-related functions? It is unknown what a "true zero" attachment relationship looks like, but one intuitive method to operationalizing "true zero" is to refer to the zero point on a Likert-type scale. Although this approach is elegant in its simplicity, a constraint of a rating scale with a "true zero" response option is that some participants may be reluctant to endorse responses at the lowest end of the rating scale. As a result, with an adequately powered design, it will always be possible to rule out the hypothesis that the population value is zero, even if, in fact, the extent to which people use former partners as attachment figures truly decays to zero. Alternatively, one might reasonably assume that a stranger or an acquaintance--such as a relatively unfamiliar coworker or classmate--would be a fair counterfactual for comparison. That is, even if some form of response bias is present in ratings, that bias will affect ratings of former partners and strangers. Moreover, one can argue that, even if people report using their former partners for attachment-related functions to some extent, that extent is not especially meaningful psychologically if it is comparable to the extent to which they would use strangers or acquaintances for those functions. Thus, in the present study, a stranger or acquaintance is used as a second standard of reference against which former partners will be compared to determine the presence or absence of an attachment bond.

In summary, there are diverging theoretical assumptions in the literature regarding attachment bonds and relationship loss. One approach maintains that an attachment bond continuously persists after relationship loss, whereas another approach suggests that attachment bonds are eventually relinquished such that, akin to how one might feel towards a stranger or an acquaintance, there is no residual pining for the missing person and no reliance on them for attachment-related functions. Yet, the literature shows little appreciation of the fundamental incompatibility of these ideas--an attachment bond cannot both meaningfully endure in the long-term following relationship dissolution, while at the same time decay to a point of insignificance. The current research seeks to advance the theoretical debate regarding the long-term continuity of attachment bonds after the disruption of close relationships by examining the time-course of attachment over varying between-person time intervals.

1.5 Moderator Variables

It should be noted that the current research examines the nature of disrupted attachment bonds for the average person and, based on leading theoretical explanations, assumes that there is a typical outcome for how attachment bonds change after romantic dissolution. However, it is possible that the study data will indicate considerable variation between people in the degree to which they use former partners as attachment figures in the long run. This would suggest that there are moderator variables that lead people to diverge in whether--and to what extent--they discard or hold on to disrupted attachment bonds. It would be valuable then, as a subsequent step, to explore whether individual differences in attachment bond dissolution vary as a function of relevant factors that have been commonly identified in the literature.

For example, one factor that could potentially contribute to varying patterns of long-term adjustment is the quality of people's attachment to close others. Therefore, auxiliary analyses

will be conducted to examine how people's trajectories might vary as a function of attachment styles. Of note, global attachment styles will be used to assess variation in trajectories because retrospective reports of attachment security in terms of a former partner may be subject to issues of validity, particularly if there is no attachment bond. In terms of how trajectories might differ based on attachment styles, it is likely that secure people feel distressed when a close relationship is disrupted, but continue to feel comfortable leaning on positive memories and thoughts of former attachment figures as sources of support long after the romantic relationship has ended (i.e., secure people's trajectories will not approach zero over time). With respect to attachment-related anxiety, Bowlby (1980) believed that anxiously attached people are more likely to show prolonged or chronic grief. Thus, higher attachment anxiety scores may predict greater tendencies to persist in relying on former partners for attachment-related functions.

Additionally, with regards to avoidance, it is important to distinguish between linear combinations of high anxiety and high avoidance (i.e., fearful avoidance) and low anxiety and high avoidance (i.e., dismissive avoidance; Bartholomew & Horowitz, 1991; Fraley & Waller, 1998). Anxious attachment is theoretically related with the subjective appraisal of threats and the experience of distress, whereas avoidant attachment is primarily concerned with the regulation of behavioral strategies in the face of a threat (Fraley & Shaver, 2000; Fraley & Spieker, 2003; Pietromonaco & Feldman Barrett, 2000). Therefore, fearful avoidance should be associated with poor adjustment to attachment disruption and elevated urges to search for a former partner that endure over time. However, dismissive avoidance is likely to be associated with subdued grief responses by means of what Bowlby called defensive exclusion, or the redirection of attention away from painful memories and experiences to avoid psychological pain. Dismissively avoidant people should therefore report little desire to seek out a former partner as time passes.

Another kind of factor that could contribute to long-term adjustment is the conditions under which the relationship ended. In particular, people may respond differently to a breakup depending on whether or not they were the one to initiate the separation. Although the end of a romantic relationship is distressing even for initiators (Rhoades et al., 2011), it can be particularly upsetting and difficult to adjust for those who did not initiate the breakup (Perilloux & Buss, 2008). Indeed, a review of marital separation studies by Vormbrock (1993) found that traveling spouses were less likely to exhibit the distress and intense attachment behaviors shown by spouses left at home. In light of these findings, separation initiative may be associated with greater tendencies in letting go of a former partner attachment bond compared to non-initiators.

However, the literature also suggests that initiators carry greater feelings of guilt for ending a relationship (Kiiski, Määttä, & Uusiautti, 2013). Initiators may feel a sense of responsibility and concern for their former partner in the wake of a separation, especially if the partner has coped poorly in response to being left by the initiator. Moreover, feelings of guilt may hinder reorganization of one's identity after separation (Weiss, 1975). Thus, an alternative argument can be made that the guilt of initiating a separation may foster continued feelings of attachment and make it harder to adjust to new circumstances in life after a breakup (e.g., Walters-Chapman, Price, & Serovich, 2008).

Additionally, another factor that is potentially relevant to attachment bond change after separation is whether one has entered a new relationship since the separation. A study by Buunk and Mutsaers (1999) indicated that a continuing attachment with a former spouse impedes the development of a satisfying relationship with a new partner, such that people may feel pressured to relinquish former attachment bonds with old partners lest the continuing attachment threatens the current relationship. Moreover, research has shown that mental representations of old

attachment relationships are used to guide people as they approach new relationships and that people may automatically apply interpersonal patterns from a previous relationship to new ones via the process of transference (Andersen & Baum, 1994; Brumbaugh & Fraley, 2006). This transference of attachment feelings following the introduction of a new partner may help to fill the emotional gap left by a previous partner. Thus, the development of a fresh attachment relationship with a new romantic partner could promote further disengagement from a previous relationship and greater resolution in attachment feelings with respect to a former partner.

1.6 Overview of the Present Research

The goal of the present research is to empirically investigate the long-term continuity of former romantic attachment bonds after relationship termination. Using a customary definition of an attachment bond (i.e., proximity seeking, safe haven, secure base; Hazan, Campa, & Gur-Yaish, 2006), the current research evaluates common assumptions in the grief and loss literature. The first approach implies that an attachment bond, once established, has the permanent capacity to trigger attachment-related processes. The second approach suggests that the potential for former partners to elicit attachment-related processes approaches zero over time. By evaluating the way in which attachment functions change following romantic breakups, the current study elucidates the dynamics of attachment-related processes in the aftermath of relationship dissolution, as well as provides greater insight with respect to the attachment-related functions that affective bonds to former romantic figures may--or may not--serve in the long run.

CHAPTER 2: METHOD

2.1 Participants

To determine the sample size for the present cross-sectional study, power analyses were conducted to examine the size of the sample needed to ensure approximately 80% statistical power to detect a small (.2), medium (.5), and large (.8) Cohen's d population effect size. Respectively, the power analyses indicated that samples of 265, 125, and 100 are needed to reach adequate statistical power. The current study aimed to recruit at least 265 participants to obtain sufficient power to detect a small population effect size. Of note, however, is that the pilot data (discussed in further detail below) suggested an effect size of about $d = .48$. Therefore, a sample size of approximately 125 participants would be well-powered to detect an effect size of such a magnitude.

Participants were recruited from the university credit subject pool and Amazon MTurk between March and July of 2022. Only participants who met the following eligibility requirements were included in the analytic sample: (a) at least 18 years old; (b) in the past, been in at least one significant romantic relationship for more than 2 years; (c) no longer in the aforementioned relationship; and (d) to their knowledge, their former partner has not passed away. To ensure data quality, the data were examined to exclude instances of highly conspicuous or nonsensical responses (e.g., providing definitions or general advice instead of responding appropriately to open-ended questions; reporting relationship lengths that were comparable to or greater than their current age). Moreover, participants must have passed an attention check confirming their eligibility at the beginning of the survey. Specifically, participants were presented the list of eligibility requirements and asked to "…please select the letter corresponding to the second eligibility requirement, b." Study materials are available in the

online supplementary materials

(https://osf.io/58fmg/?view_only=7d85de2e7cff4a1aad4604f6408ba809).

Overall, 320 eligible participants (57% women) completed the survey with a mean age of 32.20 years ($SD = 12.19$). Approximately 59% of the sample were White or Caucasian, 16% were Asian or Pacific Islander, 13% were Hispanic or Latino, 10% were Black or African-American, and 2% reported Other or declined to answer. Participants were predominantly single at the time of the survey (never married; 37%), married (23%), in an exclusive and committed dating relationship (19%), divorced or separated (10%); or other (e.g., in a non-committed or casual dating relationship, engaged, widowed; 11%). Moreover, those who were currently in a relationship had been with their partner for an average of 72.43 months (i.e., 6.03 years; $SD = 81.41$).

Overall, 46% of the participants had experienced at least one other prior romantic breakup with an average of 2.44 former partners ($SD = 1.60$). With respect to a specific previous relationship, most of the participants had been in an exclusive, committed dating relationship with their former partner (70%), although some reported being married (14%) or engaged (11%) prior to separation. On average, participants had been with their former partner for 56.26 months (i.e., 4.69 years; $SD = 53.98$) and reported that the breakup had occurred 61.16 months (i.e., 5.10 years; $SD = 71.73$) prior to survey completion. When asked how significant the breakup had been to the participant and how much participants wanted to continue the relationship before the breakup, the average response was 5.32 ($SD = 1.84$) and 4.75 ($SD = 2.08$) on a 1 to 7 scale, respectively.

2.2 Measures

　　See Appendix A for full measures. Various assessments were administered to participants regarding basic demographics (e.g., age, gender, ethnicity), relationship information (e.g., time since breakup, context of breakup, relationship status since the breakup), additional thoughts and emotion concerning former partners (e.g., yearning, anger, guilt), and reorganization after relationship dissolution. The variables of interest for the current study are described in further detail below.

　　Attachment-related Functions. The presence of an attachment bond is commonly measured based on the extent to which people *actually* use their attachment figures to fulfill attachment-related functions (e.g., "Who is the person you most like to spend time with?"; Fraley & Davis, 1997; Hazan, Hutt, Sturgeon, & Bricker, 1991), but such an approach dismisses the tendency to avoid reminders of the loss by stifling proximity-seeking actions and communication with lost partners. Because former partners are usually perceived as distant or inaccessible after separation, people are often ambivalent with respect to relying on former partners to serve attachment-related functions. Furthermore, as noted earlier regarding detachment, those who have endured a major separation often display an inhibition or deactivation of the attachment system in an effort to temper their frustrated attachment-related needs. Altogether, people are less likely to make effective use of a lost attachment figure post-relationship dissolution. Therefore, operationalizing the presence of an attachment bond on concrete or observable behavior is likely to lead to misleading inferences. The current research addresses this by using questionnaire items adapted from existing attachment function measures (WHOTO and Attachment Network Questionnaire [ANQ]; Fraley & Davis, 1997; Hazan et al., 1991; Trinke & Bartholomew, 1997) that assess people's thoughts, feelings, and inclinations with respect to

using former partners to fulfill attachment-related functions (e.g., "Whether or not I actually interact with them, I would like to be able to see or talk to my former partner"). These items were tested in a pilot study before final decisions were made regarding the items and response scale.

Moreover, two response scales were piloted: One of which is an agree-disagree scale and the other based on frequency in the past 12 months. The agree-disagree scale has the response options of strongly disagree (1), disagree (2), somewhat disagree (3), neither agree nor disagree (4), somewhat agree (5), agree (6), and strongly agree (7). The frequency scale asks participants to respond to the items with regards to the past 12 months using not at all (0), rarely (1), sometimes (2), often (3), or always (4). Based on the pilot data, the two responses scales were comparable in terms of reliability (α = .89-.97). Thus, the current study used the frequency scale, which has a true zero point that allows for easy interpretation.

Additionally, the pilot study explored what it means to be "not attached" to a person, as well as the degree to which, on average, several targets vary in terms of the extent to which they are used as attachment figures. To do so, participants were administered a measure of attachment-related functions targeting a stranger or acquaintance that participants know but are not close with (e.g., coworker, classmate; $M = 1.03$, $SD = 0.97$), as well as their former partner ($M = 1.55$, $SD = 1.11$), best friend ($M = 2.66$, $SD = 0.90$), mother or mother-like figure ($M = 2.89$, $SD = 1.05$), and father or father-like figure ($M = 2.45$, $SD = 1.28$; $\alpha_{targets} = 0.94\text{-}0.97$). Although the main analyses consider a rating of zero or "not at all" to be an indicator of zero attachment, obtaining data of several targets of varying emotional closeness allows the opportunity to investigate the extent to which former partners are relied on as attachment figures compared to other kinds of relationships in people's lives.

Moderator Variables. Three moderator variables were assessed to examine the ways in which people might diverge from typical patterns of attachment bond adjustment after romantic separation. First, global attachment scores were assessed using the Experiences in Close Relationships-Relationship Structures (ECR-RS; Fraley et al., 2011) with 9 items targeting close relationships in general (e.g., "It helps to turn to people in times of need"; $\alpha_{avoidance} = 0.85$, $\alpha_{anxiety} = 0.93$). Second, participants were asked to report which partner had initiated the breakup (i.e., "Who initiated the breakup?"). Lastly, participants were asked whether they have been involved in romantic relationship with a new partner since the breakup (i.e., "Have you been involved in a committed romantic relationship with someone else since the breakup?").

2.3 Data Analysis

Data analysis was conducted in R (R Core Team, 2022). The R script used for analyses is available as an online supplementary material.

Composites. Because the measure of attachment-related functions for this study was primarily designed on the theoretical grounds that each function is conceptually distinct from the other, items related to each function were assessed for reliability using Cronbach's alpha and then aggregated into three separate composites. However, research has demonstrated that items designed to assess attachment-related functions tend to be moderately to highly correlated and generally load onto a single latent factor (e.g., Feeney & Hohaus, 2001; Trinke & Bartholomew, 1997). Therefore, for the sake of comprehensiveness, additional composites were created and analyzed if an exploratory factor analysis (EFA) indicated that the items load onto fewer than three factors. Specifically, a scree plot was inspected for evidence of a different factor solution, as indicated by a parallel analysis (PA). An EFA using oblimin rotation was then conducted to extract additional factor solutions and items loading greater than .30 on each latent factor were

composited and used as outcome variables in further analyses (Costello & Osborne, 2005;

Tabachnick & Fidell, 2001). Items that had a factor loading of less than .30 were discarded from

further analyses. Items that cross-loaded across different factors were included with the factor

with the highest loading.

  Primary Analyses. Using the composites described above, a series of regression models

were conducted to test people's compulsion to use a former partner for attachment-related needs

as a function of the between-person time variable of the years elapsed since breakup. From a

mathematical perspective, both theoretical approaches suggest that the use of a former partner for

attachment-related functions decays exponentially over time. However, each assumption has

different predictions with respect to whether the association between time since breakup and

attachment-related function asymptotically approaches the lowest point of the rating scale or 0

(i.e., former partners cease to serve any attachment-related functions; see the dashed line in

Figure 1) or a value greater than 0 over time (i.e., former partners continue to serve attachment-

related functions to some degree; see the solid line in Figure 1).

Figure 1

A Visual Representation of Alternative Predictions Regarding the Long-Term Continuity of Attachment Bonds After Relationship Dissolution
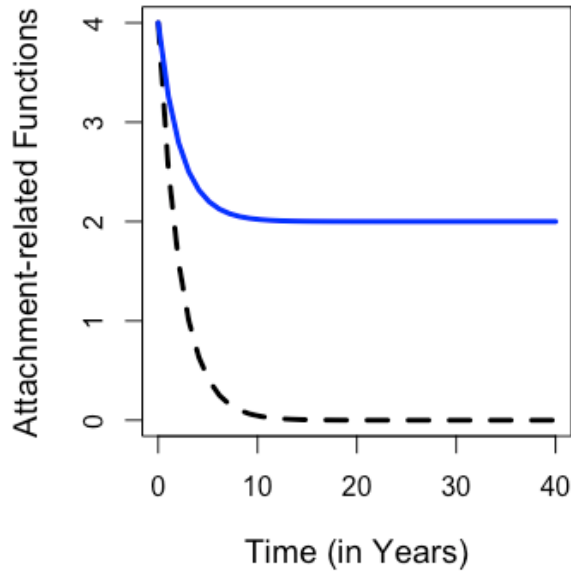
Note. The solid line in the figure depicts the expected pattern of associations corresponding to the theoretical idea that attachment bonds continue to persist over time after relationship loss. The dashed line shows the predicted curve of an alternative theoretical approach, which argues that emotional bonds to previous attachment figures are relinquished over time.

Thus, exponential decay trajectories were examined to determine asymptotic values using a statistical method similar to Orth (2018). Below is an example of the equation for testing exponential decay in the use of former partners as attachment figures.

$$FormerPartnerProximity = a + (c - a) \times e^{-b \times \text{TimeSinceBreakup}} + \varepsilon_i$$

In the equation, the outcome variable is the attachment-related function (e.g., proximity seeking). Additionally, a indicates the asymptote, c represents the intercept of people's attachment-related function rating at the time of breakup, e is the exponential constant, b is the rate of decay (i.e., how quickly people stop using former partners as attachment figures), *TimeSinceBreakup* is the between-person variable of time that has elapsed since people separated from their romantic partners, and ε_i represents the error term.

Moreover, using a second standard of reference to conceptualize the absence of an attachment bond, further analyses were conducted in which former partner data was mean centered around the average attachment-related function rating for strangers or acquaintances. That is, former partner attachment ratings were interpreted with respect to stranger attachment ratings (i.e., when the mean of stranger ratings is set at 0). Other supplemental analyses regressed attachment-related functions on the potential moderators of adult attachment orientations, breakup initiation status, and involvement with a new relationship partner. Below is an example of the equation with respect to examining global attachment as a moderator.

$$FormerPartnerProximity = a + (c - a) \times e^{-b \times \text{TimeSinceBreakup}} + \text{anx} + \text{avo} + (a + (c - a)$$
$$\times e^{-b \times \text{TimeSinceBreakup}})*\text{anx} + (a + (c - a) \times e^{-b \times \text{TimeSinceBreakup}})*\text{avo} + \varepsilon_i$$

CHAPTER 3: RESULTS

Means, standard deviations, and zero-order correlations are reported in Table 1.

Table 1

Descriptive Statistics and Zero-order Correlation

	1	2	3	4	5	6	7	8	9	10	11	12
1. Time since breakup (in years)												
2. Global attachment anxiety	**-.22***											
3. Global attachment avoidance	-.07	**.36***										
4. Breakup initiation status (Initiated = 1)	-.03	-.04	.01									
5. New relationship status (In a new relationship = 1)	**.35***	-.02	-.11	.08								
6. Proximity seeking (theory-based)	**-.19***	**.16***	.03	**-.19***	**-.18***							
7. Safe haven (theory-based)	**-.17***	**.13***	-.02	**-.22***	**-.14***	**.86***						
8. Secure base (theory-based)	**-.20***	.10	-.02	**-.18***	**-.17***	**.83***	**.90***					
9. Proximity seeking (3-factor)	**-.19***	**.16***	.03	**-.18***	**-.18***	**.99***	**.83***	**.81***				
10. Safe haven (3-factor)	**-.18***	**.14***	-.01	**-.21***	**-.16***	**.91***	**.98***	**.92***	**.87***			
11. Secure base (3-factor)	**-.18***	.06	-.04	**-.15***	**-.16***	**.71***	**.78***	**.94***	**.71***	**.78***		
12. Attachment function (1-factor)	**-.19***	**.14***	-.01	**-.18***	**-.16***	**.93***	**.93***	**.95***	**.92***	**.94***	**.88***	
Mean	5.10	3.98	3.14	0.36	0.58	1.74	1.25	1.40	1.83	1.33	1.45	1.55
SD	5.98	1.87	1.20	0.48	0.49	1.13	1.21	1.18	1.15	1.17	1.26	1.11

Notes. $*p < .05$. All attachment function variables are with respect to participants' former partners as the target.

3.1 Composites

Although a parallel analysis confirmed that the observed covariance structure is best explained by three underlying factors, an EFA using oblimin rotation to extract 3 factors suggests that some of the items designed to tap the proximity seeking (e.g., "I have a sense of continued connection with this person") and secure base constructs (e.g., "Whether or not I actually interact with them, I would like to be able to count on this person to be there for me") instead loaded higher on the same latent factor as the safe haven items (eigenvalues = 16.55, 1.40, 0.89). See Table 2 for the loadings of a 3-factor solution. Therefore, in addition to the three composites based on theory (henceforth referred to as the "theory-based composites"), three additional attachment function composites were created based on the EFA results (henceforth called the "3-factor composites"). Additionally, though the PA did not indicate a single-factor solution as optimal, a 1-factor composite was analyzed to account for empirical reports of strong correlations between attachment-related functions. Par the course, all attachment function items loaded above .30 on a single factor (see Table 3).

Table 2
Item Loadings for a 3-factor EFA model

	Factor 1	Factor 2	Factor 3
Item 14: I find myself thinking about what it would be like to go to this person when I am feeling upset or down.	.95		
Item 13: Whether or not I actually interact with them, I would like to be able to go to this person when I am feeling upset or down.	.88		
Item 15: Going to this person would make me feel better when I am feeling upset or down.	.85		
Item 20: I find myself thinking about what it would be like to count on this person to be there for me.	.80		

Table 2 (cont.)
Item Loadings for a 3-factor EFA model

Item			
Item 18: The memories I have of this person and our relationship bring me comfort when I am feeling upset or down.	.78		
Item 21: I feel at ease when thinking about counting on this person to be there for me.	.76		
Item 17: I think about this person and our relationship when I am feeling upset or down.	.75		
Item 16: The memories I have of this person and our relationship keep me going when I am feeling upset or down.	.74		
Item 19: Whether or not I actually interact with them, I would like to be able to count on this person to be there for me.	.65		
Item 11: I have dreams about this person.	.58		
Item 10: I have a sense of continued connection with this person.	.58	.38	
Item 9: I have deep feelings for this person.	.57	.41	
Item 4: Whether or not I actually act on it, I would like to know how this person is doing.		.93	
Item 5: I find myself wondering how this person is doing.		.92	
Item 2: I find myself thinking about what it would be like to see or talk to this person.		.78	
Item 3: I miss seeing or talking to this person.		.68	
Item 8: I find myself thinking about this person.		.66	
Item 7: This person holds a special place in my heart.		.64	
Item 1: Whether or not I actually interact with them, I would like to be able to see or talk to this person.		.63	

Table 2 (cont.)
Item Loadings for a 3-factor EFA model

Item 6: I am eager to hear about how this person is doing.		.62	
Item 12: I care about this person.		.59	
Item 22: The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted.			.84
Item 23: The memories I have of this person and our relationship gives me the sense that the world is a good place and that people can generally be trusted.			.80
Item 24: The memories I have of this person and our relationship make me feel confident that I will be fine no matter what new experiences come my way.			.60

Table 3
Item Loadings for a 1-factor EFA model

	Factor 1
Item 15: Going to this person would make me feel better when I am feeling upset or down.	.89
Item 13: Whether or not I actually interact with them, I would like to be able to go to this person when I am feeling upset or down.	.89
Item 14: I find myself thinking about what it would be like to go to this person when I am feeling upset or down.	.89
Item 23: The memories I have of this person and our relationship gives me the sense that the world is a good place and that people can generally be trusted.	.81
Item 22: The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted.	.79

Table 3 (cont.)
Item Loadings for a 1-factor EFA model

Item 5: I find myself wondering how this person is doing.	.78
Item 4: Whether or not I actually act on it, I would like to know how this person is doing.	.75
Item 2: I find myself thinking about what it would be like to see or talk to this person.	.75
Item 24: The memories I have of this person and our relationship make me feel confident that I will be fine no matter what new experiences come my way.	.68

3.2 Primary Analyses: Determining the Extent to Which Former Partners are Used as Attachment Figures

A series of regression models were conducted to test people's compulsion to use a former partner for proximity seeking, safe haven, and secure base functions over time. Specifically, a total of seven non-linear regression models were analyzed using three composites reflecting the theoretical distinction between the attachment-related functions, three composites based on a 3-factor EFA model, and a 1-factor composite. Table 4 reports the results of the non-linear regression models.

Table 4

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures

	B	SE	t	p	95% CI
Theory-based composites					
Model 1: Proximity seeking					
Asymptote (A)	**1.29**	**0.20**	**6.56**	**<0.001**	**0.90, 1.67**
Rate of decay (B)	0.23	0.14	1.67	0.10	-0.04, 0.50
Y-intercept (C)	**2.23**	**0.18**	**12.53**	**<0.001**	**1.88, 2.58**
Model 2: Safe haven					
Asymptote (A)	**0.76**	**0.31**	**2.47**	**0.01**	**0.16, 1.36**
Rate of decay (B)	0.15	0.14	1.10	0.27	-0.12, 0.42
Y-intercept (C)	**1.59**	**0.17**	**9.45**	**<0.001**	**1.26, 1.92**
Model 3: Secure base					
Asymptote (A)	**0.83**	**0.30**	**2.78**	**0.006**	**0.24, 1.41**
Rate of decay (B)	0.15	0.11	1.34	0.18	-0.07, 0.37
Y-intercept (C)	**1.81**	**0.16**	**11.04**	**<0.001**	**1.49, 2.13**
3-factor composites					
Model 4: Proximity seeking					
Asymptote (A)	**1.37**	**0.19**	**7.19**	**<0.001**	**1.00, 1.74**
Rate of decay (B)	0.25	0.14	1.76	0.08	-0.03, 0.52
Y-intercept (C)	**2.35**	**0.18**	**12.81**	**<0.001**	**1.99, 2.71**
Model 5: Safe haven					
Asymptote (A)	**0.81**	**0.30**	**2.73**	**0.01**	**0.23, 1.39**
Rate of decay (B)	0.15	0.12	1.22	0.22	-0.09, 0.39
Y-intercept (C)	**1.70**	**0.16**	**10.45**	**<0.001**	**1.38, 2.01**
Model 6: Secure base					
Asymptote (A)	**0.94**	**0.27**	**3.45**	**<0.001**	**0.41, 1.48**
Rate of decay (B)	0.18	0.14	1.29	0.20	-0.09, 0.45
Y-intercept (C)	**1.86**	**0.18**	**10.15**	**<0.001**	**1.50, 2.22**
1-factor composite					
Model 7: All attachment functions					
Asymptote (A)	**1.07**	**0.22**	**4.77**	**<0.001**	**0.63, 1.51**
Rate of decay (B)	0.19	0.13	1.50	0.14	-0.06, 0.44
Y-intercept (C)	**1.97**	**0.16**	**11.97**	**<0.001**	**1.65, 2.29**

Notes. $p < .05$ results are presented in bold. For all models, *df* = 317.

Across all the models and regardless of how attachment function items were composited as outcome variables, the asymptote for former partner ratings were significantly different from 0 ("not at all") on the attachment function scale. This suggests that when using a "true zero" attachment relationship as a standard of reference--at least in terms of a rating scale--there is a lingering attachment bond after separation that compels people to direct attachment-related behavior towards former partners. Thus, people have a propensity to continue targeting former partners for attachment functions at a non-zero level after relationship dissolution.

Moreover, in reference to the 1-factor composite model for the sake of simplicity, a visual inspection of the graph (see bottom row of Figure 2) suggests that the decay of attachment function ratings towards former partners occurs over an extraordinarily long span of time, particularly when compared to the average former relationship length ($M = 4.69$, $SD = 4.50$). To quantitatively explain "how long" it takes for bonds to decay here and elsewhere, I will report the point at which the curve is halfway to its asymptotic value (i.e., the "half-life" or the mid-point between the Y-intercept and the asymptotic value). The approximate value in this case was 1.52. The half-life of attachment bonds was about 44.10 months. That is to say, the current data suggests that it takes people 3.68 years on average to reach a point at which they have only just halfway "moved on" from a former romantic partner (i.e., the deterioration of the attachment bond is no longer as conspicuous with the passing of time).

Figure 2

The Long-term Continuity of Attachment Bonds Towards Former Partners Over Time
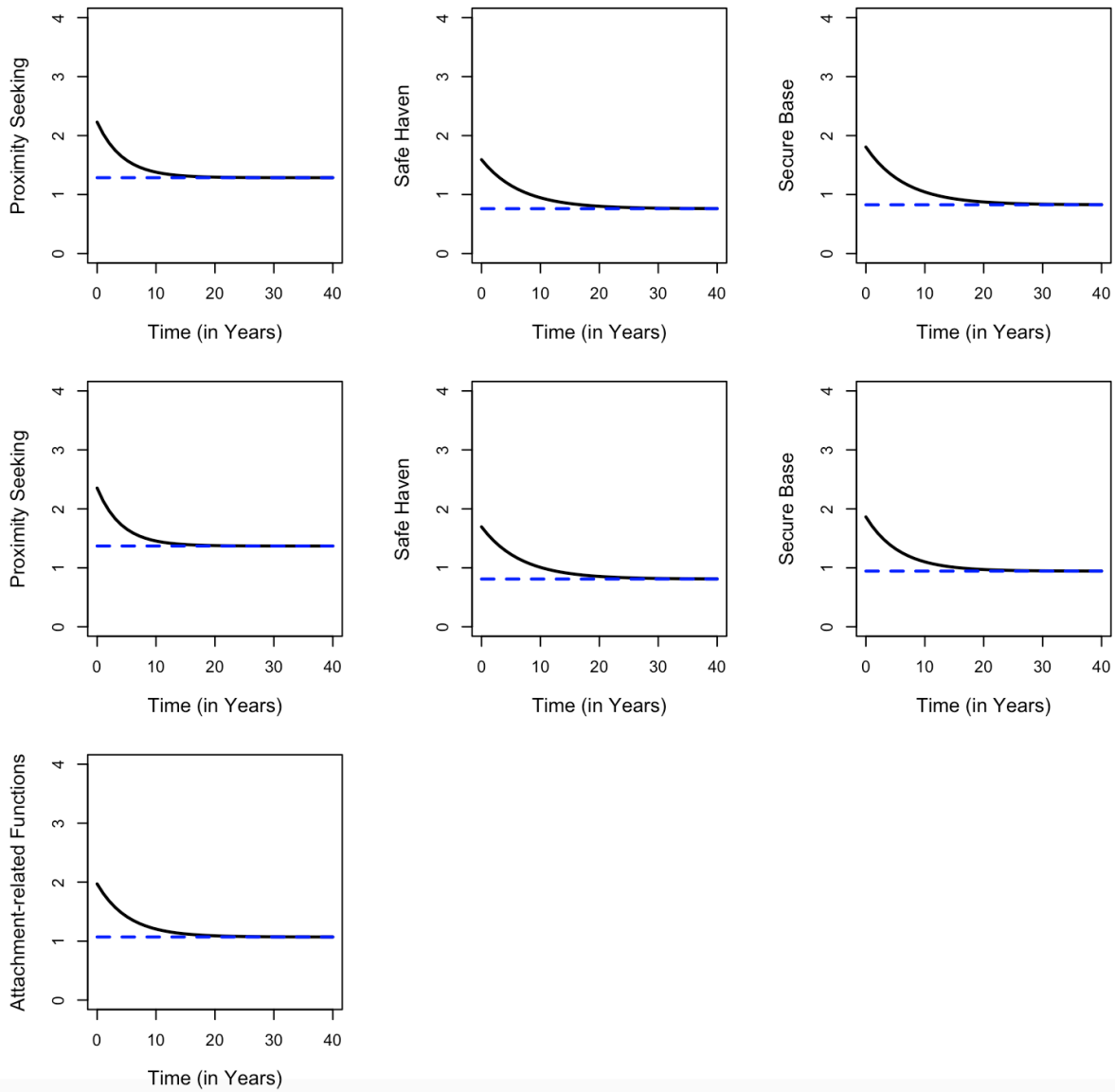
Notes. From left to right, the first row depicts the use of former partners for proximity seeking, safe haven, and secure base functions with respect to the theory-based composites. The second and third row show the attachment-related functions in terms of the 3- and 1-factor EFA composites, respectively. The dashed blue line marks the asymptotic value.

Stranger-centered Outcome Variables. All dependent variables were centered around the mean of attachment function ratings for strangers, such that former partner ratings were

interpreted with strangers as the standard of reference (i.e., the mean of strangers is set at 0). Across all the models with centered outcome variables, former partner ratings did not significantly differ from stranger ratings (see Table 5). In other words, in the long run, an attachment bond towards former partners decays to the point where former partners and strangers begin to function in similar ways in terms of attachment. Additionally, the graph for the centered 1-factor composite model (see Figure 3) begins flattening out at a half-point value of approximately 0.45 for attachment function ratings, which corresponds to a predicted value of about 50.11 months. That is, by around the 4-year mark after a breakup, the average person will reach a point at which they are halfway to using a former partner and a stranger similarly for attachment functions.

At first glance, it may seem that the results of the analyses using "true zero" and stranger ratings as standards of comparison indicate different outcomes regarding former partner attachment bonds. Specifically, using a "true zero" standard, the results suggest that people were willing to use former partners for attachment-related functions at non-zero level, whereas the stranger-centered analyses show that over time people are as likely to want to use former partners for attachment-related needs as they would a stranger. However, the results from the "true zero" and stranger ratings analyses in fact complement one another, given that the data indicate that people were also willing to rely on strangers for attachment-related functions at a non-zero level, $t(319) = 18.94$, $p < 0.001$. In sum, people's reports of wanting to use former partners at a non-zero level regardless of how much time has passed since the breakup only reflects the same degree of willingness for people to use strangers at a non-zero level as well. Thus, stranger ratings will be used as the standard of comparison henceforth for the remaining analyses.

Table 5

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with Outcome Variables Centered Around Strangers

Theory-based composites, centered					
	B	*SE*	*t*	*p*	95% *CI*
Model 8: Proximity seeking					
Asymptote (A)	0.25	0.20	1.30	0.20	-0.13, 0.64
Rate of decay (B)	0.23	0.14	1.67	0.10	-0.04, 0.50
Y-intercept (C)	**1.20**	**0.18**	**6.73**	**<0.001**	**0.85, 1.55**
Model 9: Safe haven					
Asymptote (A)	-0.02	0.31	-0.07	0.95	-0.62, 0.58
Rate of decay (B)	0.15	0.14	1.10	0.27	-0.12, 0.42
Y-intercept (C)	**0.81**	**0.17**	**4.81**	**<0.001**	**0.48, 1.14**
Model 10: Secure base					
Asymptote (A)	-0.15	0.30	-0.51	0.61	-0.73, 0.43
Rate of decay (B)	0.15	0.11	1.34	0.18	-0.07, 0.37
Y-intercept (C)	**0.83**	**0.16**	**5.07**	**<0.001**	**0.51, 1.15**
3-factor composites, centered					
	B	*SE*	*t*	*p*	95% *CI*
Model 11: Proximity seeking					
Asymptote (A)	0.23	0.19	1.20	0.23	-0.14, 0.60
Rate of decay (B)	0.25	0.14	1.76	0.08	-0.03, 0.52
Y-intercept (C)	**1.21**	**0.18**	**6.60**	**<0.001**	**0.85, 1.57**
Model 12: Safe haven					
Asymptote (A)	0.02	0.30	0.06	0.96	-0.56, 0.60
Rate of decay (B)	0.15	0.12	1.22	0.22	-0.09, 0.39
Y-intercept (C)	**0.90**	**0.16**	**5.56**	**<0.001**	**0.58, 1.22**
Model 13: Secure base					
Asymptote (A)	-0.10	0.27	-0.36	0.72	-0.64, 0.44
Rate of decay (B)	0.18	0.14	1.29	0.20	-0.09, 0.45
Y-intercept (C)	**0.82**	**0.18**	**4.47**	**<0.001**	**0.46, 1.18**
1-factor composite, centered					
	B	*SE*	*t*	*p*	95% *CI*
Model 14: All attachment functions					
Asymptote (A)	0.04	0.22	0.19	0.85	-0.40, 0.48
Rate of decay (B)	0.19	0.13	1.50	0.14	-0.06, 0.44
Y-intercept (C)	**0.94**	**0.16**	**5.72**	**<0.001**	**0.62, 1.26**

Notes. p < .05 results are presented in bold. For all models, *df* = 317.

Figure 3

The Long-term Continuity of Attachment Bonds Towards Former Partners Over Time with Outcome Variables Centered Around Strangers
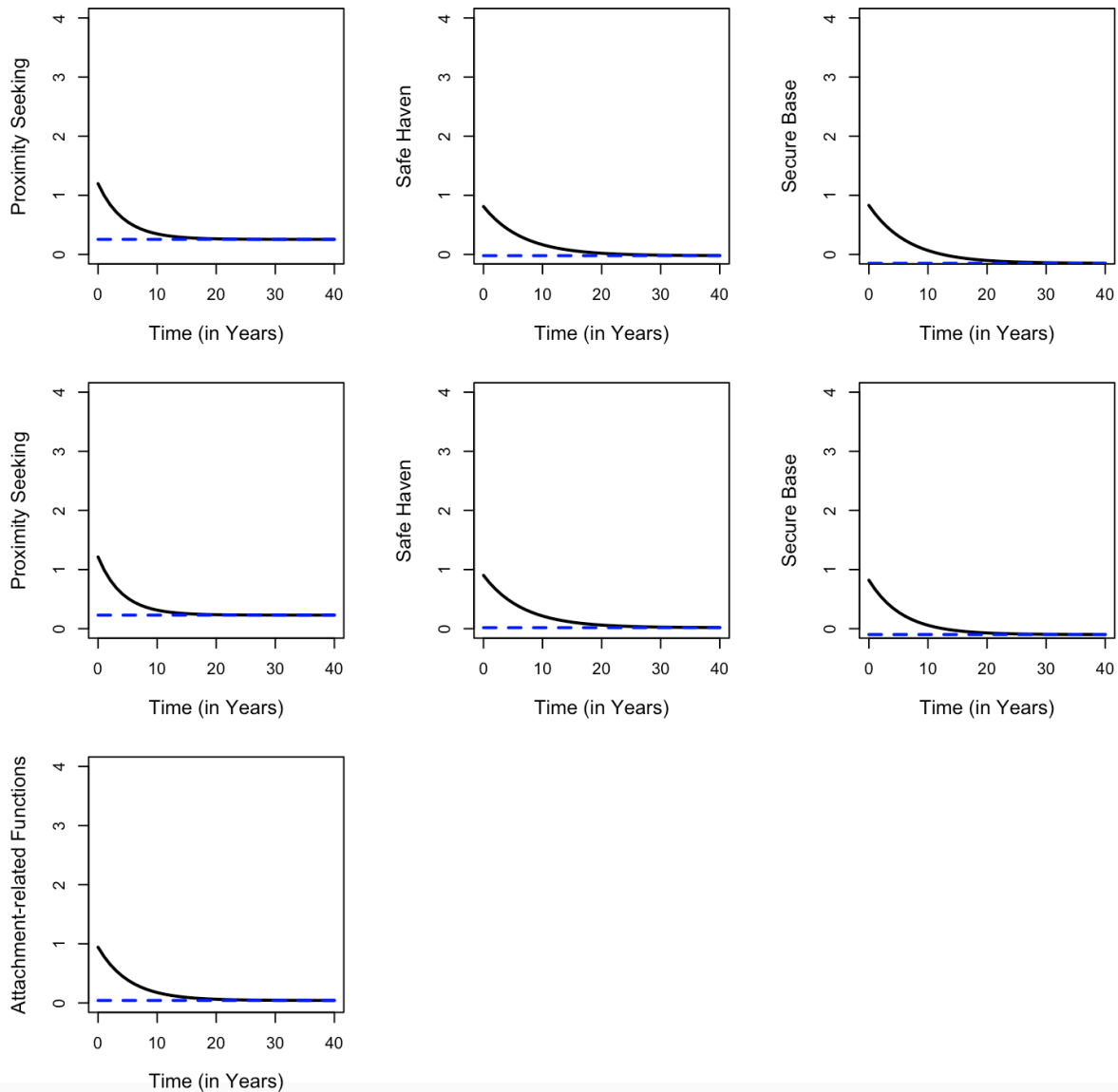
Notes. All outcome variables were centered around stranger means for each attachment function. From left to right, the first row depicts the use of former partners for proximity seeking, safe haven, and secure base functions with respect to the theory-based composites. The second and third row show the attachment-related functions in terms of the 3- and 1-factor EFA composites, respectively. The dashed blue line marks the asymptotic value.

3.3 Supplemental Analyses

    Moderator Variables. Stranger-centered attachment function variables were regressed on global attachment style, breakup initiation status, and entering a new relationship. Table 6, 7, and 8 report the parameter estimates for each of these models, respectively.

    Global Attachment Styles. Both the main effects for global anxiety and avoidance were statistically significant across all the models, except for the secure base models (see Table 6). These results suggest that those who are higher in attachment anxiety have a greater yearning to use former partners as a target for proximity seeking and safe haven functions in the long run. Conversely, higher attachment avoidance predicted a decreased desire to seek out former partners or to use them for safe haven functions.

    However, only avoidance was significant for the model regressing the theory-based secure base composite on global attachment style. Moreover, neither anxiety nor avoidance were significant for the secure base model using the composite based on the 3-factor EFA solution. A model predicting a composite of three items regarding being able to count on the former partner (e.g., "Whether or not I actually interact with them, I would like to be able to count on this person to be there for me") show that these items are significantly associated with avoidance. These questions are considered secure base items in the theory-based composite, but load onto the safe haven factor for the 3-factor EFA composite. Thus, it seems that once the three items regarding "counting on" a former partner is omitted to create the secure base 3-factor EFA model composite, the remaining items regarding whether participants are able to rely on memories of a former partner to move forward in the world are no longer significantly associated with either dimensions of global attachment (e.g., "The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place

and that people can be generally trusted"). Moreover, there were no significant interactions

between the time elapsed since the breakup and global attachment style. Thus, global attachment

style did not moderate the association between time since breakup and attachment function

ratings.

Table 6
Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with Global Attachment Style as a Moderator

Theory-based composites, centered					
	B	*SE*	*t*	*p*	*95% CI*
Model 15: Proximity seeking					
Asymptote (A)	0.12	0.10	1.22	0.22	-0.08, 0.32
Rate of decay (B)	**0.29**	**0.15**	**1.94**	**0.05**	**-0.003, 0.58**
Y-intercept (C)	0.15	0.55	0.28	0.78	-0.93, 1.24
Anxiety (D)	**0.15**	**0.06**	**2.50**	**0.01**	**0.03, 0.28**
Avoidance (E)	**-0.20**	**0.10**	**-2.05**	**0.04**	**-0.39, -0.01**
$A + (C - A) \times e^{-b \times}$ YearsSinceBreakup $\times$ Anxiety (F)	-5.39	110.37	-0.05	0.96	-221.71, 210.93
$A + (C - A) \times e^{-b \times}$ YearsSinceBreakup $\times$ Avoidance (G)	15.45	325.18	0.05	0.96	-621.89, 652.80
Model 16: Safe haven					
Asymptote (A)	0.10	0.12	0.83	0.41	-0.14, 0.34
Rate of decay (B)	0.22	0.16	1.34	0.18	-0.10, 0.53
Y-intercept (C)	0.12	0.58	0.22	0.83	-1.01, 1.26
Anxiety (D)	**0.16**	**0.08**	**2.03**	**0.04**	**0.01, 0.31**
Avoidance (E)	**-0.25**	**0.13**	**-1.98**	**0.05**	**-0.50, -0.003**
$A + (C - A) \times e^{-b \times}$ YearsSinceBreakup $\times$ Anxiety (F)	-6.83	196.31	-0.03	0.97	-391.59, 377.93
$A + (C - A) \times e^{-b \times}$ YearsSinceBreakup $\times$ Avoidance (G)	17.69	520.50	0.03	0.97	-1002.49, 1037.88
Model 17: Secure base					
Asymptote (A)	0.09	0.13	0.71	0.48	-0.17, 0.35
Rate of decay (B)	0.16	0.11	1.43	0.15	-0.06, 0.38
Y-intercept (C)	0.18	0.55	0.33	0.74	-0.90, 1.27
Anxiety (D)	0.14	0.09	1.64	0.10	-0.03, 0.31
Avoidance (E)	**-0.29**	**0.15**	**-1.94**	**0.05**	**-0.59, 0.003**
$A + (C - A) \times e^{-b \times}$ YearsSinceBreakup $\times$ Anxiety (F)	-1.82	13.33	-0.14	0.89	-27.95, 24.30
$A + (C - A) \times e^{-b \times}$ YearsSinceBreakup $\times$ Avoidance (G)	5.23	41.34	0.13	0.90	-75.80, 86.25

Table 6 (cont.)

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with Global Attachment Style as a Moderator

	B	SE	t	p	95% CI
3-factor composites, centered					
Model 18: Proximity seeking					
Asymptote (A)	0.12	0.10	1.15	0.25	-0.08, 0.32
Rate of decay (B)	**0.29**	**0.15**	**2.00**	**0.05**	**0.007, 0.58**
Y-intercept (C)	0.18	0.56	0.32	0.75	-0.93, 1.28
Anxiety (D)	**0.15**	**0.06**	**2.40**	**0.02**	**0.03, 0.27**
Avoidance (E)	**-0.20**	**0.10**	**-2.04**	**0.04**	**-0.39, -0.01**
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Anxiety (F)	-2.63	26.43	-0.10	0.92	-54.43, 49.18
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Avoidance (G)	7.66	81.41	0.09	0.93	-151.91, 167.23
Model 19: Safe haven					
Asymptote (A)	0.11	0.12	0.93	0.35	-0.12, 0.34
Rate of decay (B)	0.22	0.15	1.52	0.13	-0.07, 0.51
Y-intercept (C)	0.10	0.56	0.17	0.86	-1.00, 1.19
Anxiety (D)	**0.17**	**0.07**	**2.26**	**0.02**	**0.02, 0.31**
Avoidance (E)	**-0.25**	**0.12**	**-2.08**	**0.04**	**-0.49, -0.01**
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Anxiety (F)	13.94	748.14	0.02	0.99	-1452.42, 1480.30
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Avoidance (G)	-37.01	1964.48	-0.02	0.98	-3887.39, 3813.36
Model 20: Secure base					
Asymptote (A)	0.10	0.15	0.65	0.51	-0.20, 0.40
Rate of decay (B)	0.14	0.12	1.16	0.25	-0.09, 0.37
Y-intercept (C)	0.32	0.60	0.54	0.59	-0.85, 1.49
Anxiety (D)	0.11	0.10	1.09	0.28	-0.09, 0.31
Avoidance (E)	-0.28	0.18	-1.56	0.12	-0.62, 0.07
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Anxiety (F)	-0.60	1.78	-0.34	0.74	-4.10, 2.90
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Avoidance (G)	1.74	6.35	0.27	0.78	-10.71, 14.18

Table 6 (cont.)

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with Global Attachment Style as a Moderator

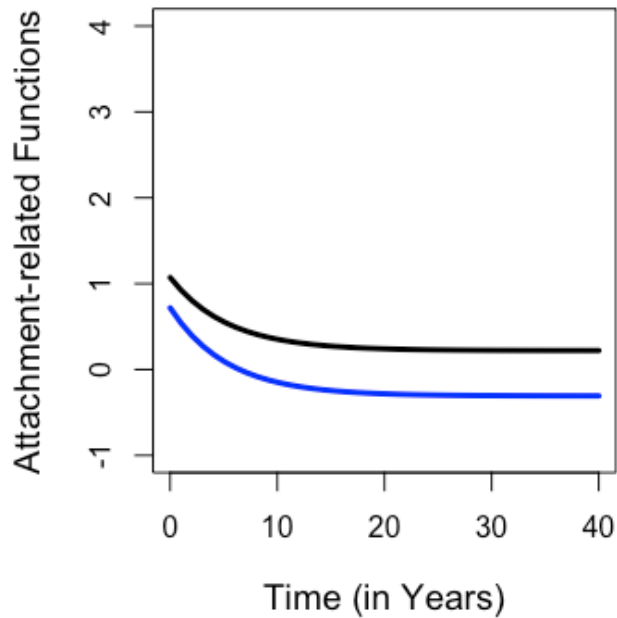|	**1-factor composite, centered**				
	B	*SE*	*t*	*p*	95% *CI*
Model 21: All attachment functions					
Asymptote (A)	0.11	0.11	1.02	0.31	-0.10, 0.33
Rate of decay (B)	0.22	0.14	1.65	0.10	-0.04, 0.49
Y-intercept (C)	0.10	0.53	0.19	0.85	-0.93, 1.13
Anxiety (D)	**0.14**	**0.07**	**2.05**	**0.04**	**0.01, 0.27**
Avoidance (E)	**-0.24**	**0.11**	**-2.17**	**0.03**	**-0.46, -0.02**
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Anxiety (F)	9.41	425.37	0.02	0.98	-824.30, 843.13
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Avoidance (G)	-30.80	1370.90	-0.02	0.98	-2717.77, 2656.16

Notes. p < .05 results are presented in bold, *df* = 313. Interaction terms are the product of global attachment style and the standard exponential equation from the primary analysis: $A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$.

Figure 4

The Long-term Continuity of Attachment Bonds Towards Former Partners Over Time with
Global Attachment Style as a Moderator
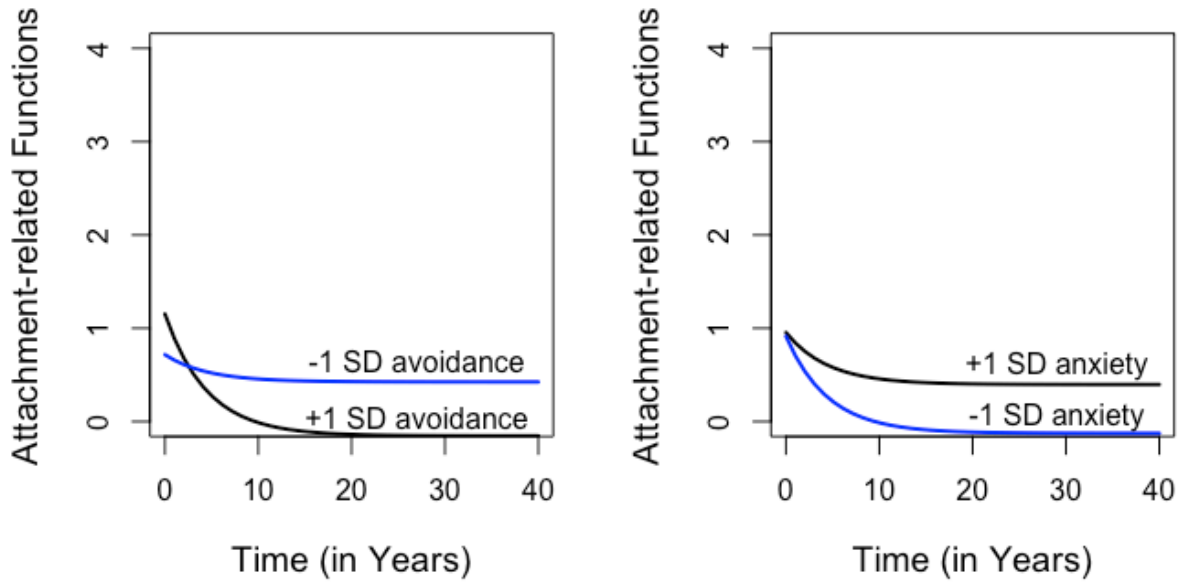
Breakup Initiation Status. With respect to who initiated the breakup, 36% of participants reported that they had been the ones to ask for the separation. Overall, breakup initiation status did not significantly predict the use of former partners as attachment figures (see Table 7). However, there was an exception for proximity seeking, such that those who initiated the breakup were less inclined to seek proximity to their former partner, $B = -0.58$, $p = 0.02$, 95%CI[-1.08, -0.08].

Table 7

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with Breakup Initiation Status as a Moderator

Theory-based composites, centered					
	B	*SE*	*t*	*p*	*95% CI*
Model 22: Proximity seeking					
Asymptote (A)	**0.23**	**0.10**	**2.38**	**0.02**	**0.04, 0.42**
Rate of decay (B)	0.24	0.14	1.73	0.08	-0.03, 0.50
Y-intercept (C)	**1.08**	**0.21**	**5.05**	**<0.001**	**0.66, 1.50**
Breakup initiation (D; Yes = 1)	**-0.58**	**0.25**	**-2.27**	**0.02**	**-1.08, -0.08**
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Breakup initiation status (E)	0.32	0.59	0.55	0.58	-0.83, 1.48
Model 23: Safe haven					
Asymptote (A)	0.08	0.16	0.51	0.61	-0.24, 0.40
Rate of decay (B)	0.14	0.13	1.12	0.27	-0.11, 0.39
Y-intercept (C)	**0.92**	**0.22**	**4.23**	**<0.001**	**0.49, 1.34**
Breakup initiation (D; Yes = 1)	-0.61	0.34	-1.76	0.08	-1.28, 0.07
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Breakup initiation status (E)	0.09	0.64	0.14	0.89	-1.16, 1.34
Model 24: Secure base					
Asymptote (A)	-0.01	0.16	-0.09	0.93	-0.34, 0.31
Rate of decay (B)	0.14	0.11	1.34	0.18	-0.07, 0.35
Y-intercept (C)	**1.01**	**0.21**	**4.75**	**<0.001**	**0.59, 1.43**
Breakup initiation (D; Yes = 1)	-0.42	0.33	-1.28	0.20	-1.07, 0.23
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$ Breakup initiation status (E)	-0.05	0.48	-0.10	0.92	-0.99, 0.90

Table 7 (cont.)

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with Breakup Initiation Status as a Moderator

3-factor composites, centered					
	B	*SE*	*t*	*p*	*95% CI*
Model 25: Proximity seeking					
Asymptote (A)	**0.22**	**0.09**	**2.39**	**0.02**	**0.04, 0.41**
Rate of decay (B)	0.25	0.14	1.83	0.07	-0.02, 0.52
Y-intercept (C)	**1.09**	**0.22**	**4.94**	**<0.001**	**0.66, 1.52**
Breakup initiation (D; Yes = 1)	**-0.60**	**0.25**	**-2.38**	**0.02**	**-1.10, -0.11**
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$					
Breakup initiation status (E)	0.40	0.60	0.66	0.51	-0.78, 1.58
Model 26: Safe haven					
Asymptote (A)	0.10	0.16	0.63	0.53	-0.21, 0.40
Rate of decay (B)	0.14	0.12	1.23	0.22	-0.08, 0.37
Y-intercept (C)	**0.98**	**0.21**	**4.66**	**<0.001**	**0.57, 1.39**
Breakup initiation (D; Yes = 1)	-0.57	0.33	-1.73	0.08	-1.22, 0.08
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$					
Breakup initiation status (E)	0.10	0.59	0.18	0.86	-1.04, 1.25
Model 27: Secure base					
Asymptote (A)	-0.01	0.15	-0.03	0.97	-0.30, 0.29
Rate of decay (B)	0.18	0.13	1.33	0.19	-0.08, 0.44
Y-intercept (C)	**1.02**	**0.23**	**4.44**	**<0.001**	**0.57, 1.47**
Breakup initiation (D; Yes = 1)	-0.27	0.32	-0.83	0.41	-0.89, 0.36
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$					
Breakup initiation status (E)	-0.26	0.46	-0.56	0.57	-1.16, 0.64

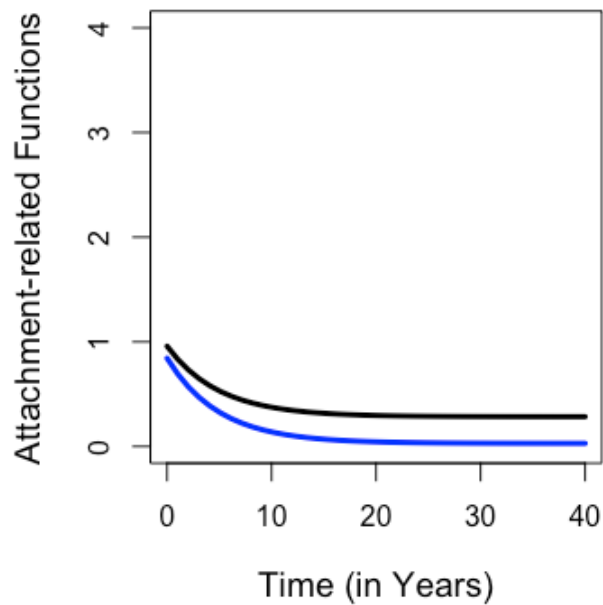| 1-factor composite, centered					
	B	*SE*	*t*	*p*	*95% CI*
Model 28: All attachment functions					
Asymptote (A)	0.11	0.11	0.96	0.34	-0.11, 0.34
Rate of decay (B)	0.19	0.12	1.52	0.13	-0.05, 0.43
Y-intercept (C)	**0.96**	**0.20**	**4.76**	**<0.001**	**0.57, 1.36**
Breakup initiation (D; Yes = 1)	-0.53	0.28	-1.91	0.06	-1.07, 0.01
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}} \times$					
Breakup initiation status (E)	0.20	0.57	0.36	0.72	-0.90, 1.31

Notes. $p < .05$ results are presented in bold, $df = 315$. Interaction terms are the product of

breakup initiation status and the standard exponential equation from the primary analysis: $A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$.

Figure 5

The Long-term Continuity of Attachment Bonds Towards Former Partners Over Time with Breakup Initiation Status as a Moderator

Note. This plot is based on the 1-factor composite outcome variable. The black line indicates those who were broken up with and the blue line reflect those who initiated the breakup.

New Relationship Status. Fifty-eight percent of the participants indicated that they had entered a relationship with a new romantic partner since the breakup. The results for the non-linear regression model with new relationship status as the outcome variable indicate that there is neither a main nor interaction effect (see Table 8), though there was an exception for which those who had a new romantic partner were less likely to report wanting to use their former partner as a secure base with respect to the centered 3-factor composite, $B = -0.38$, $p = 0.01$, 95%CI[-0.67, -

0.09]. Thus, entering a new relationship is generally not associated with the extent to which

people's attachment relationship with their former partners change over time.

Table 8

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with New Relationship Status as a Moderator

Theory-based composites, centered					
	B	*SE*	*t*	*p*	*95% CI*
Model 29: Proximity seeking					
Asymptote (A)	0.21	0.20	1.04	0.30	-0.18, 0.60
Rate of decay (B)	0.21	0.18	1.19	0.23	-0.14, 0.56
Y-intercept (C)	**1.03**	**0.28**	**3.67**	**<0.001**	**0.48, 1.58**
New relationship (D; Yes = 1)	-0.19	0.34	-0.55	0.58	-0.86, 0.48
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$ × New relationship (E)	-0.08	0.65	-0.12	0.90	-1.35, 1.19
Model 30: Safe haven					
Asymptote (A)	0.02	0.37	0.05	0.96	-0.70, 0.73
Rate of decay (B)	0.12	0.17	0.75	0.46	-0.20, 0.45
Y-intercept (C)	**0.84**	**0.40**	**2.08**	**0.04**	**0.05, 1.64**
New relationship (D; Yes = 1)	-0.08	0.54	-0.15	0.88	-1.14, 0.98
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$ × New relationship (E)	-0.16	0.77	-0.21	0.83	-1.66, 1.34
Model 31: Secure base					
Asymptote (A)	0.05	0.27	0.18	0.86	-0.48, 0.58
Rate of decay (B)	0.14	0.14	0.98	0.33	-0.14, 0.43
Y-intercept (C)	**0.82**	**0.34**	**2.41**	**0.02**	**0.15, 1.48**
New relationship (D; Yes = 1)	-0.27	0.43	-0.63	0.53	-1.11, 0.57
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$ × New relationship (E)	0.10	0.89	0.12	0.91	-1.64, 1.85

Table 8 (cont.)

Parameter Estimates for Non-linear Regression Analyses of Former Partners as Attachment Figures with New Relationship Status as a Moderator

3-factor composites, centered					
	B	*SE*	*t*	*p*	95% CI
Model 32: Proximity seeking					
Asymptote (A)	0.23	0.17	1.40	0.16	-0.09, 0.56
Rate of decay (B)	0.26	0.19	1.37	0.17	-0.11, 0.62
Y-intercept (C)	**1.00**	**0.27**	**3.67**	**<0.001**	**0.47, 1.54**
New relationship (D; Yes = 1)	-0.25	0.30	-0.85	0.39	-0.84, 0.33
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$					
× New relationship (E)	0.13	0.76	0.17	0.87	-1.37, 1.62
Model 33: Safe haven					
Asymptote (A)	-0.01	0.44	-0.01	0.99	-0.86, 0.85
Rate of decay (B)	0.11	0.15	0.74	0.46	-0.18, 0.39
Y-intercept (C)	**0.97**	**0.46**	**2.14**	**0.03**	**0.08, 1.87**
New relationship (D; Yes = 1)	-0.02	0.63	-0.03	0.98	-1.25, 1.22
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$					
× New relationship (E)	-0.27	0.61	-0.45	0.65	-1.47, 0.92
Model 34: Secure base					
Asymptote (A)	**0.29**	**0.06**	**5.13**	**<0.001**	**0.18, 0.41**
Rate of decay (B)	7.59	7.78	0.98	0.33	-7.65, 22.84
Y-intercept (C)	1.49	1.37	1.09	0.28	-1.20, 4.17
New relationship (D; Yes = 1)	**-0.38**	**0.15**	**-2.58**	**0.01**	**-0.67, -0.09**
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$					
× New relationship (E)	7.36	15.15	0.49	0.63	-22.34, 37.06

1-factor composite, centered					
	B	*SE*	*t*	*p*	95% CI
Model 35: All attachment functions					
Asymptote (A)	0.14	0.19	0.76	0.44	-0.22, 0.51
Rate of decay (B)	0.20	0.17	1.19	0.24	-0.13, 0.53
Y-intercept (C)	**0.82**	**0.28**	**2.95**	**0.003**	**0.27, 1.36**
New relationship (D; Yes = 1)	-0.25	0.32	-0.79	0.43	-0.89, 0.38
$A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$					
× New relationship (E)	0.21	0.92	0.23	0.82	-1.59, 2.01

Notes. p < .05 results are presented in bold, *df* = 315. Interaction terms are the product of new relationship status and the standard exponential equation from the primary analysis: $A + (C - A) \times e^{-b \times \text{YearsSinceBreakup}}$.

Figure 6

The Long-term Continuity of Attachment Bonds Towards Former Partners Over Time with New Relationship Status as a Moderator

Note. This plot is based on the 1-factor composite outcome variable. The black line represents those who have not entered a new relationship since the breakup, whereas the blue line indicates those who have had a new partner since the breakup.

CHAPTER 4: DISCUSSION

Although it is generally agreed that emotional bonds begin to wither when a romantic relationship ends, there are diverging assumptions regarding whether residual attachment bonds after separation persist to a meaningful degree in the long run. One assumption holds that an attachment bond is never fully discarded once it is established. Former partners are likely to be superseded by new attachment figures as people venture out to explore fresh experiences and relationships after a breakup. Yet, the thought of a former partner lingers as a target to direct attachment needs, thus continuing to shape people's thoughts, feelings, and behavior in some fashion over time (i.e., the decay of an attachment bond approaches a non-zero asymptote). Alternatively, an alternative assumption contends that there is an expiration date for attachment bonds once romantic partners are separated. That is, former partners are abandoned as attachment figures and become irrelevant to the attachment system with the passage of time (i.e., an asymptote of zero). These two theoretical approaches are fundamentally incompatible: One demands the acknowledgement of a continuing attachment bond that becomes impervious to time whereas the other denies the presence of such a bond. The present study addresses this incongruity by evaluating which of these two assumptions aligns more closely with empirical data.

Using the lowest point of the rating scale (i.e., 0 or "not at all") as a standard of reference for the absence of an attachment bond, the results suggest that, regardless of how much time has passed, people wish to continue using former partner as attachment figures to a degree that is significantly different from a true zero rating. At face value, this implies that attachment bonds to former romantic figures are resistant to decaying to insignificance. However, it is possible that this outcome is merely an artifact of a response bias where participants were hesitant to select

response options at the extreme end of the rating scale. Thus, attachment function ratings of strangers were also used as the standard of reference to define "true zero" in a way that is robust to such a response bias. The results of comparing former partner and stranger ratings show that people are receptive to the thought of using a former partner for attachment-related needs at some non-zero level. Yet, people are also willing to use strangers for attachment-related functions at a non-zero level, suggesting that people's propensity to use a former partner to fulfill attachment needs reflects the same meaningfulness as wanting to reach out to a stranger in times of need. Thus, the data are most consistent with the theoretical idea that disrupted attachment bonds erode to a point at which there is minimal desire to seek out a former romantic partner or to use them for safe haven and secure base functions. Furthermore, regardless of whether "true zero" ratings (i.e., 0 in a rating scale) or stranger ratings are used as a frame of reference, it generally takes about 4 years on average for former partner attachment bonds to decay halfway to the point where those bonds function similarly to an acquaintanceship.

Additionally, greater (vs. lower) levels of attachment anxiety were associated with an increased longing to use former partners for proximity seeking and safe haven functions in the long-term after relationship dissolution. In contrast, higher (vs. lower) attachment avoidance was associated with a decreased desire over time to seek proximity to former partners or rely on them when feeling upset. These results support findings from other research studies establishing a theoretical link between attachment style and breakup responses (e.g., Davis et al., 2003). The secure base function was generally not associated with either attachment anxiety or avoidance over time, except when items related to being able to "count on" the former partner were included in the theory-based composite of secure base. Furthermore, except for a main effect of decreased proximity seeking associated with those who initiated the breakup, there was generally

no significant difference in long-term attachment bond continuity between those who broke up with their partners compared to non-initiators. In a similar vein, having a new romantic partner since the breakup did not moderate the association between time since the breakup and attachment function ratings. Thus, while former romantic attachment bonds ultimately regress to a state similar to that of a bond with strangers, the underlying mechanism of the decay process does not appear to be the transference of the affective bond and its accompanying functions to a new romantic partner.

4.1 Implications for Attachment Theory

The current research contributes to attachment theory by shedding light on ambiguities surrounding long-term outcomes of disrupted attachment bonds. The data corroborate the theoretical idea that attachment figures who become permanently unavailable are more or less abandoned as sources of security in the long-term. Specifically, the evidence suggests that attachment bonds are generally not sustained indefinitely (e.g., around 4.18 years to reach a halfway point before the exponential curves level out in the current sample) when a lost figure is unavailable for an extended period. Moreover, when an attachment relationship is not maintained, the desire to rely on an attachment figure eventually deteriorates to become comparable to wanting to rely on a stranger. In a nutshell, it seems a common theme in failed romantic relationships is that former partners meet and fall in love as strangers, only to become strangers once again in due time.

Although people who report higher attachment anxiety or avoidances scores may vary in greater or lesser longing for a past romantic partner, respectively, former partner ratings for the secure base function generally taper off and become comparable to stranger ratings regardless of attachment style. In particular, secure base items with language regarding using memories of a

former partner and the relationship to explore the world (e.g., "The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted") were not associated with either attachment anxiety or avoidance. This result, in combination with the minimal preference for using former partners as a secure base overall, implies that people in the current sample were not inclined to adjust a disrupted attachment bond to maintain a non-romantic emotional tie, much less retain a continuing bond at all. Indeed, only about 8% of the participants indicated that they considered their former partner a close friend.

However, one important consideration to note regarding these findings is that although former partners ratings do eventually resemble those of strangers, the deterioration of lost attachment bonds is remarkably protracted (i.e., 4.18 years to reach a mid-point to the asymptotic limit), especially considering that former relationships lasted an average of 4.69 years ($SD = 4.50$). It has been commonly assumed that people recover relatively quickly after a romantic loss such that they are expected to return to their usual daily functioning soon afterwards (e.g., Wortman & Silver, 1989), but it appears that in terms of resolving attachment feelings, post-breakup adjustment requires a longer recovery period. Thus, it is important to distinguish the timing in which attachment bonds are relinquished when examining the psychology of romantic dissolution and subsequent emotional adjustment.

4.2 Strengths, Limitations, and Future Directions

The current study is the first of which the credibility of two prevailing views regarding attachment bond dissolution are rigorously and empirically investigated. Research regarding changes in attachment bonds after loss has typically relied on anecdotal evidence and observations from small samples (e.g., support groups, case studies), which limit the validity of

the conclusions drawn. Moreover, data are usually obtained relatively soon after participants'

breakups, rely on participants' memories by administering questions regarding past feelings of

the breakup, or deliberately exclude breakups from long ago to prevent retrospective bias. The

present study uses a cross-sectional design to investigate long-term changes in attachment bonds

with greater variation in time since breakup by assessing people's *current* feelings towards

former partners. Another strength of the present research is that the measure used to assess

attachment function evaluates the *desire* to depend on a past romantic partner, whereas previous

measures have focused on actual behavior. Additionally, the data allowed for attachment bonds

towards former partners to be compared not only to a "true zero" rating but also to stranger

ratings, which permit a more comprehensive interpretation of long-term attachment bond

outcomes.

Despite these methodological strengths, the study has several limitations. First,

participants were self-selected into a study about romantic breakups. Therefore, people who were

more interested in discussing a former romantic relationship, such as those who had a more

recent or meaningful breakup, may have been more willing to participate in the study. To address

this limitation, it would be valuable for future research to examine the long-term continuity of

disrupted attachment bonds using a longitudinal study design, which could more naturally obtain

data before and after romantic breakups. Moreover, although the current data suggests that

attachment function ratings decline over a relatively extended period, a longitudinal study would

also allow for a more precise time estimate for people who may have anticipated a breakup

before it occurred.

Another limitation is that the conclusions from the current research were drawn absent of

an experimental design. Although the evidence indicates that disrupted attachment bonds decay

to become comparable to an acquaintanceship, it is unclear if direct reminders of former partners (e.g., pictures, music, scents) remain capable of eliciting attachment-related thoughts and feelings. It could be that former partners and strangers, at first glance, appear to be similar in attachment function preference, but that former partners differ from strangers in that reminders could produce a temporary boost in attachment function ratings, whereas strangers would not. Future studies should investigate the ways in which former partners and strangers might differ despite appearing to function in similar ways as attachment targets.

Furthermore, a future research direction should consider how long-term responses to attachment bond loss may differ depending on relationship context. For example, although each romantic relationship may have its own unique characteristics, it is quite possible to replace a romantic loss with a new partner. Indeed, even in the current sample, participants reported an average of more than two partners prior to reported relationship. In contrast, even if other caregivers step in to fill a parental role, mothers and fathers are largely thought to be difficult--if not impossible--to replace. This distinction may shape the way in which attachment bonds change after the loss of a romantic partner compared to a parent.

In sum, the present study adjudicates between conflicting theoretical approaches with respect to the long-term continuity of attachment bonds after the loss of a close relationship. Results from the current study indicate that attachment bonds are gradually relinquished after romantic loss and people begin to view former lovers as just somebody that they used to know over time. These findings provide a deeper understanding of the complexities of long-term attachment bond change and facilitate future research regarding the intrapersonal dynamics that occur in the final phases of an attachment bond.

CHAPTER 5: REFERENCES

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation.* Hillsdale, NJ: Erlbaum.

Andersen, S. M., & Baum, A. (1994). Transference in interpersonal relations: Inferences and affect based on significant-other representations. *Journal of personality*, *62*, 459–497. https://doi.org/10.1111/j.1467-6494.1994.tb00306.x

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61,* 226-244. http://dx.doi.org/10.1037/0022-3514.61.2.226

Belsky, J., Rovine, M., & Taylor, D. (1984). The Pennsylvania Infant and Family Development Project: III. The origins of individual differences in infant-mother attachment: Maternal and infant contributions. *Child Development, 55*, 718-728. https://doi.org/10.2307/1131024

Birnbaum, G. E., Orr, I., Mikulincer, M., & Florian, V. (1997). When marriage breaks up: Does attachment style contribute to coping and mental health? *Journal of Social and Personal Relationships, 14,* 643–654. https://doi.org/10.1177/0265407597145004

Bonanno, G. A., Boerner, K., & Wortman, C. B. (2008). Trajectories of grieving. In M. S. Stroebe, R. O. Hansson, H. Schut, & W. Stroebe (Eds.), *Handbook of bereavement research and practice: Advances in theory and intervention* (pp. 287–307). American Psychological Association. https://doi.org/10.1037/14498-014

Bonanno, G., & Kaltman, S. (1999). Toward an integrative perspective on bereavement. *Psychological Bulletin, 125,* 760-776. https://doi.org/10.1037//0033-2909.125.6.760

Bowlby, J. (1969/1982). *Attachment and loss. Vol 1: Attachment. 2ⁿᵈ ed.* New York: Basic

    Books.

Bowlby, J. (1973). *Attachment and loss, Vol. II: Separation: Anxiety and anger.* New York:

    Basic Books.

Bowlby, J. (1980). *Attachment and loss, Vol. III: Loss, sadness and depression.* New York:

    Basic Books.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult

    attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.),

    Attachment theory and close relationships (pp. 46-76). New York, NY, US: Guildford

    Press.

Brumbaugh, C. C., & Fraley, R. C. (2006). Transference and attachment: How do attachment

    patterns get carried forward from one relationship to the next? *Personality and Social*

    Psychology Bulletin, 32, 552–560. https://doi.org/10.1177/0146167205282740

Buunk, B. P., & Mutsaers, W. (1999). The nature of the relationship between remarried

    individuals and former spouses and its impact on marital satisfaction. *Journal of Family*

    Psychology, 13, 165–174. https://doi.org/10.1037/0893-3200.13.2.165

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four

    recommendations for getting the most from your analysis. *Practical Assessment,*

    Research & Evaluation, 10, 1–9.

Dailey, R. M., Pfiester, A., Jin, B., Beck, G., & Clark, G. (2009). On-again/off-again dating

    relationships: How are they different from other dating relationships? *Personal*

    Relationships, 16, 23–47. https://doi.org/10.1111/j.1475-6811.2009.01208.x

Davis, D., Shaver, P. R., & Vernon, M. L. (2003). Physical, emotional, and behavioral reactions

    to breaking up: The roles of gender, age, emotional involvement, and attachment style.

    Personality and Social Psychology Bulletin, 29, 871–884.

    https://doi.org/10.1177/0146167203029007006

Doherty, N.A., & Feeney, J.A. (2004). The composition of attachment networks throughout the

    adult years. *Personal Relationships, 11,* 469-488. https://doi.org/10.1111/j.1475-

    6811.2004.00093.x

Dunlop, W. L., Harake, L., & Wilkinson, D. (2021). Romantic heartbreak: Prevalence,

    personality traits, and personal stories. *Personal Relationships, 28,* 148-168.

    https://doi.org/10.1111/pere.12353

Fagundes, C. P. (2012). Getting over you: Contributions of attachment theory for postbreakup

    emotional adjustment. *Personal Relationships, 19*, 37–50. https://doi.org/10.1111/j.1475-

    6811.2010.01336.x

Feeney, J. A., & Hohaus, L. (2001). Attachment and spousal caregiving. *Personal*

    Relationships, *8*, 21-39. https://doi.org/10.1111/j.1475-6811.2001.tb00026.x

Fox, J., & Tokunaga, R. S. (2015). Romantic partner monitoring after breakups: Attachment,

    dependence, distress, and post-dissolution online surveillance via social networking

    sites. *Cyberpsychology, Behavior and Social Networking*, *18*, 491–498.

    https://doi.org/10.1089/cyber.2015.0123

Fraley, R. C., & Davis, K. E. (1997). Attachment formation and transfer in young adults' close

    friendships and romantic relationships. *Personal Relationships, 4,* 131-

    144. https://doi.org/10.1111/j.1475-6811.1997.tb00135.x

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The Experiences in Close Relationships-Relationship Structures questionnaire: A method for assessing attachment orientations across relationships. *Psychological Assessment, 23*, 615-625. http://dx.doi.org/10.1037/a0022898

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). The Guilford Press.

Fraley, R. C., & Shaver, P. R. (2000). Adult romantic attachment: Theoretical developments, emerging controversies, and unanswered questions. *Review of General Psychology, 4*, 132-154. http://dx.doi.org/10.1037//1089-2680.4.2.132

Fraley R. C., & Spieker, S. J. (2003). Are infant attachment patterns continuously or categorically distributed? A taxonomic analysis of strange situation behavior. *Developmental Psychology, 39,* 387-404. http://dx.doi.org/10.1037/0012-1649.39.3.387

Fraley, R. C., & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 77–114). The Guilford Press.

Freud, S. (1913/1938). *Totem and taboo.* (Transl. by A. A. Brill.) Pelican: Harmondsworth, U.K.

Freud, S. (1917/1957). Mourning and melancholia. In J. Strachey (Ed. And

Trans.), *The standard edition of the complete original works of Sigmund Freud* (Vol. 14, pp. 152-170). London: Hogarth Press.

Hazan, C., Campa, M., & Gur-Yaish, N. (2006). What Is Adult Attachment? In M. Mikulincer &

 G. S. Goodman (Eds.), *Dynamics of romantic love: Attachment, caregiving, and sex* (pp.

 47–70). The Guilford Press.

Hazan, C., Hutt, M. J., Sturgeon, J., & Bricker, T. (1991, April). *The process of relinquishing*

 parents as attachment figures. Paper presented at the biennial meetings of the Society for

 Research in Child Development, Seattle, WA.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process.

 Journal of Personality and Social Psychology, 52, 511-524.

 http://dx.doi.org/10.1037/0022-3514.52.3.511

Hazan, C. & Shaver, P. R. (1994). Attachment as an organizational framework for research on

 close relationships. *Psychological Inquiry, 5,* 1-22.

 https://doi.org/10.1207/s15327965pli0501_1

Hazan, C., & Zeifman, D. (1994). Sex and the psychological tether. In K. Bartholomew & D.

 Perlman (Eds.), *Attachment processes in adulthood* (pp. 151–178). Jessica Kingsley

 Publishers.

Heffernan, M., Fraley, R. C., Vicary, A., & Brumbaugh, C. (2012). Attachment features and

 functions in adult romantic relationships. *Journal of Social and Personal Relationships*,

 29, 671-693. https://doi.org/10.1177/0265407512443435

Holmes, T. H., & Rahe, R. H. (1967). The Social Readjustment Rating Scale. *Journal of*

 Psychosomatic Research, 11, 213–218. https://doi.org/10.1016/0022-3999(67)90010-4

Kellas, J. K., Bean, D., Cunningham, C., & Yun, K. (2008). The ex-files: Trajectories, turning

 points, and adjustment in the development of post-dissolutional relationships. *Journal of*

Social and Personal Relationships, 25, 23–50.

https://doi.org/10.1177/0265407507086804

Kiiski, J., Määttä, K., & Uusiautti, S. (2013). "For better and for worse, or until …": On divorce

and guilt. *Journal of Divorce & Remarriage, 54,* 519-536.

https://doi.org/10.1080/10502556.2013.828980

Kitson, G. C. (1982). Attachment to the spouse in divorce: A scale and its application. *Journal of*

Marriage and the Family, 44, 379–393. https://doi.org/10.2307/351547

Klass, D., Silverman, P., & Nickman, S. L. (Eds.). (1996). *Continuing bonds: New*

understandings of grief. Washington, DC: Taylor & Francis.

Lindemann, E. (1944). The symptomatology and management of acute grief. *American Journal*

of Psychiatry, 101, 141–148. https://doi.org/10.1176/ajp.101.2.141

Marshall, T. C. (2012). Facebook surveillance of former romantic partners: Associations with

postbreakup recovery and personal growth. *Cyberpsychology, Behavior, and Social*

Network, 15, 521-526.

Nickerson, A. B., & Nagle, R. J. (2005). Parent and peer attachment in late childhood and early

adolescence. *The Journal of Early Adolescence*, *25*, 223–

249. https://doi.org/10.1177/0272431604274174

Parkes, C.M. (1972). *Bereavement studies of grief in adult life.* New York: International

Universities Press, Inc.

Perilloux, C., & Buss, D. M. (2008). Breaking up romantic relationships: Costs experienced and

coping strategies deployed. *Evolutionary Psychology, 6*, 164–

181. https://doi.org/10.1177/147470490800600119

Pietromonaco, P. R., & Feldman Barrett, L. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of General Psychology, 4*, 155-175. https://doi.org/10.1037/1089-2680.4.2.155

R Core Team (2022). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL www.R-project.org/

Rando, T. A. (1991). *How to go on living when someone you love dies.* New York, Bantam Books.

Raphael, B. (1983). *The anatomy of bereavement.* New York: Basic Books.

Raphael, B., & Nunn, K. (1988). Counseling the bereaved. *Journal of Social Issues, 44,* 191-206.

Robak, R. W., & Weitzman, S. P. (1995). Grieving the loss of romantic relationships in young adults: An empirical study of disenfranchised grief. *OMEGA – Journal of Death and Dying*, 30, 269–281. https://doi.org/10.2190/CY1W-V6RL-0L5V-G4Q2

Rhoades, G. K., Kamp Dush, C. M., Atkins, D. C., Stanley, S. M., & Markman, H. J. (2011). Breaking up is hard to do: The impact of unmarried relationship dissolution on mental health and life satisfaction. *Journal of Family Psychology*, *25*, 366–374. https://doi.org/10.1037/a0023627

Sanders, C. (1989). *Grief: The mourning after.* New York: Wiley.

Sbarra, D. A., & Emery, R. E. (2005). The emotional sequelae of nonmarital relationship dissolution: Analysis of change and intraindividual variability over time. *Personal Relationships, 12*, 213–232. https://doi.org/10.1111/j.1350-4126.2005.00112.x

Shaver, P. R., Hazan, C., & Bradshaw, D. (1988). Love as attachment. In R. J. Sternberg & M. L. Barnes (Eds.), The psychology of love (pp. 68–99). Yale University Press.

Sprecher, S., Felmlee, D., Metts, S., Fehr, B., & Vanni, D. (1998). Factors associated with

    distress following the breakup of a close relationship. Journal of Social and Personal

    Relationships, 15, 791–809. https://doi.org/10.1177/0265407598156005

Sroufe, L. A., & Waters, E. (1977). Attachment as an organizational construct. *Child*

    Development, 48, 1184–1199. https://doi.org/10.2307/1128475

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics.* Boston, MA: Allyn &

    Bacon.

Tong, S. T. (2013). Facebook use during relationship termination: Uncertainty reduction and

    surveillance. Cyberpsychology, Behavior and Social networking, 16, 788–793.

    https://doi.org/10.1089/cyber.2012.0549

Trinke, S. J., & Bartholomew, K. (1997). Hierarchies of attachment relationships in young

    adulthood. Journal of Social and Personal Relationships, 14, 603–

    625. https://doi.org/10.1177/0265407597145002

Vormbrock, J. K. (1993). Attachment theory as applied to wartime and job-related marital

    separation. *Psychological Bulletin, 114*, 122–144. https://doi.org/10.1037/0033-

    2909.114.1.122

Walters-Chapman, S. F., Price, S. J., & Serovich, J. M. (1995). The effects of guilt on divorce

    adjustment. *Journal of Divorce & Remarriage, 22,* 163-

    177, https://doi.org/10.1300/J087v22n03_10

Weiss, R. S. (1975). *Marital separation.* New York: Basic Books.

Worden, J.W. (1991) *Grief counseling and grief therapy: A handbook for the mental health*

    practitioner (2nd edition). New York: Springer.

Wortman, C. B., & Silver, R. C. (1989). The myths of coping with loss. *Journal of Consulting and Clinical Psychology, 57*, 349–357. https://doi.org/10.1037/0022-006X.57.3.349

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consent
Informed Consent

Please read this consent agreement carefully. You must be 18 years old or older to participate.

Purpose: This study examines attachment and romantic relationships. The data collected for this study will allow us to better understand dynamics in close relationships. The primary investigator for this project is Dr. R. Chris Fraley (rcfraley@illinois.edu).

What you will do in this study: In this study, you will be asked to complete a questionnaire. We expect that participation in this study will take approximately 30 minutes.

Risk and benefits: There are no anticipated risks beyond those encountered in everyday life by participating in this study. Participants will receive .5 course credit (subject pool) or $2 (MTurk) as compensation for completing the study.

Voluntary Withdrawal: Your participation in this study is completely voluntary, and you may withdraw from the study at any time without incurring any penalty beyond the loss of the course credit or payment. You are under no obligation to complete the questionnaires. You may refuse to answer specific questions, and you may discontinue your participation at any time. The decision to participate, decline or withdraw from this study will not be held against you and will have no effect on your future relations with the University of Illinois.

Confidentiality: Your participation in this study will remain confidential. Participants' confidentiality will be maintained through the use of subject code numbers. All data will be stored on password-protected computers and/or external hard drives in locked filing cabinets. All paper data will be stored under unidentifiable participant numbers and kept within locked storage rooms. Consent forms will be stored separately from any paper data to further ensure participant anonymity and data security. Only trained researchers will have access to these materials except as explained on this consent letter below. All data will only be reviewed and analyzed by researchers in a de-identified and composite manner. Your de-identified information could be used for future research without additional informed consent. When this research is discussed or published, no one will know that you were in the study without your explicit consent. However, laws and university rules might require us to disclose information about you. For example, if required by laws or University Policy, study information which identifies you may be seen or copied by the following people or groups: a) The university committee and office that reviews and approves research studies, the Institutional Review Board (IRB) and Office for Protection of Research Subjects; and b) University and state auditors, and Departments of the university responsible for oversight of research.

Further information about the study: If you have questions about this study, please contact Chris Fraley (rcfraley@illinois.edu) or Jia Chong (jchong10@illinois.edu).

Who to contact about your rights in this study: If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at (217) 333-2670 or e-mail OPRS at irb@illinois.edu.

Agreement: The purpose and nature of this research have been sufficiently explained and I signify that I am 18 years of age or older and agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty. I understand that I can request a copy of this form by emailing the researcher at jchong10@illinois.edu.

After reading the Informed Consent Form, do you agree to participant in this study?

○ Yes, I agree to the terms and consent to participate in this study. (1)

○ No, I do NOT consent to these terms and I wish to end the study. (0)

Page Break

eligibilitycheck PLEASE READ CAREFULLY the eligibility requirements for this study below. If you are eligible and would like to proceed with the study, please select the letter corresponding to the second eligibility requirement (b).

(a) You are 18 years of age or older

(b) You have been in a significant relationship with a romantic partner for **at least 2 years**

(c) You are no longer in the aforementioned relationship

(d) To your knowledge, your former partner has not passed away

    ○ a (1)

    ○ b (2)

    ○ c (3)

    ○ d (4)

End of Block: Consent

Start of Block: Demographics

age Enter your age in years.

_____

gender What is your gender?

    ○ Male (0)

    ○ Female (1)

    ○ Other (2) _____

    ○ Prefer not to say (3)

ethnicity What is your primary ethnic background?

○ White, Caucasian - Non-Hispanic (1)

○ Hispanic, Latino (2)

○ Black, African American (3)

○ Native American, American Indian (4)

○ Asian, Pacific Islander (5)

○ Other (6) _____

○ Prefer not to say (7)

Page Break

edu What is your highest level of education?

○ Less than high school (1)

○ High school degree or equivalent (2)

○ Some college (3)

○ College graduate (e.g., BA, BS) (4)

○ Master's degree (e.g., MA, MS) (5)

○ Doctoral degree (e.g., PhD, EdD) (6)

○ Other (7) _____

○ Prefer not to say (8)

---

sexual_orientation How would you describe your sexual orientation?

○ Heterosexual or straight (1)

○ Gay or lesbian (2)

○ Bisexual (3)

○ Other (4) _____

○ Prefer not to say (5)

---

rel_status What is your current relationship status?

○ Single (never married) (1)

○ Non-committed or casual dating (e.g., friends with benefits, hooking up) (2)

○ Exclusive, committed dating (3)

○ Engaged (4)

○ Married (5)

○ Divorced or separated (6)

○ Widowed (7)

current_rel_length Enter the number of year(s) and month(s) you have been with your current partner.

For example, if you have been with your current partner for one year, enter a 1 for Year(s) and a 0 for Month(s).

○ Year(s) (1) _____

○ Month(s) (2) _____

current_investment Please rate the following items with respect to how you view your relationship with your **current** partner in general.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I am committed to maintaining my relationship with my partner. (current_investment_1)	○	○	○	○	○	○	○
I am oriented toward the long-term future of my relationship (for example, I imagine being with my partner several years from now). (current_investment_2)	○	○	○	○	○	○	○
It is likely that I will date someone other than my partner within the next year. (current_investment_3)	○	○	○	○	○	○	○
I feel satisfied with our relationship. (current_investment_4)	○	○	○	○	○	○	○
Our relationship does a good job of fulfilling my needs for intimacy, companionship, etc. (current_investment_5)	○	○	○	○	○	○	○
My relationship is close to ideal. (current_investment_6)	○	○	○	○	○	○	○
If I weren't dating my partner, I would do fine—I would find another appealing person to date. (current_investment_7)	○	○	○	○	○	○	○

My needs for intimacy, companionship, etc. could easily be fulfilled in an alternative relationship. (current_investment_8)	○	○	○	○	○	○	○
The people other than my partner with whom I might become involved are very appealing. (current_investment_9)	○	○	○	○	○	○	○
I have put a great deal into our relationship that I would lose if the relationship were to end. (current_investment_10)	○	○	○	○	○	○	○
My relationships with friends and family members would be complicated if my partner and I were to break up (e.g., partner is friends with people I care about). (current_investment_11)	○	○	○	○	○	○	○
Many aspects of my life have become linked to my partner (recreational activities, etc.) and I would lose all of this if we were to break up. (current_investment_12)	○	○	○	○	○	○	○

formerpartner_name Think of a former partner with whom you were:

In a significant romantic relationship for **at least 2 years** and, to your knowledge, has not passed away.

Enter this former partner's initials for their first and last name below. (For example, Jordan Smith's initials would be JS).

_____

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ecr_instructions The following questions are designed to assess the way in which you mentally represent important people in your life.

You will be asked to answer questions about your friends, your romantic partners, and your parents. Please indicate the extent to which you agree or disagree with each statement by selecting a response for each item.

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ecr_global Please read each of the following statements and rate the extent to which you believe each statement best describes your feelings about **close relationships in general.**

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
It helps to turn to people in times of need. (ecr_global_1)	○	○	○	○	○	○	○
I usually discuss my problems and concerns with others. (ecr_global_2)	○	○	○	○	○	○	○
I talk things over with people. (ecr_global_3)	○	○	○	○	○	○	○
I find it easy to depend on others. (ecr_global_4)	○	○	○	○	○	○	○
I don't feel comfortable opening up to others. (ecr_global_5)	○	○	○	○	○	○	○
I prefer not to show others how I feel deep down. (ecr_global_6)	○	○	○	○	○	○	○
I often worry that other people do not really care for me. (ecr_global_7)	○	○	○	○	○	○	○
I'm afraid that other people may abandon me. (ecr_global_8)	○	○	○	○	○	○	○

I worry that others won't care about me as much as I care about them. (ecr_global_9)

○   ○   ○   ○   ○   ○   ○

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ecr_mother Please answer the following questions about **your mother or a mother-like figure.**

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
It helps to turn to this person in times of need. (ecr_mother_1)	○	○	○	○	○	○	○
I usually discuss my problems and concerns with this person. (ecr_mother_2)	○	○	○	○	○	○	○
I talk things over with this person. (ecr_mother_3)	○	○	○	○	○	○	○
I find it easy to depend on this person. (ecr_mother_4)	○	○	○	○	○	○	○
I don't feel comfortable opening up to this person. (ecr_mother_5)	○	○	○	○	○	○	○
I prefer not to show this person how I feel deep down. (ecr_mother_6)	○	○	○	○	○	○	○
I often worry that this person doesn't really care for me. (ecr_mother_7)	○	○	○	○	○	○	○
I'm afraid that this person may abandon me. (ecr_mother_8)	○	○	○	○	○	○	○

| I worry that this person won't care about me as much as I care about him or her. (ecr_mother_9) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

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ecr_father Please answer the following questions about **your father or a father-like figure.**

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
It helps to turn to this person in times of need. (ecr_father_1)	○	○	○	○	○	○	○
I usually discuss my problems and concerns with this person. (ecr_father_2)	○	○	○	○	○	○	○
I talk things over with this person. (ecr_father_3)	○	○	○	○	○	○	○
I find it easy to depend on this person. (ecr_father_4)	○	○	○	○	○	○	○
I don't feel comfortable opening up to this person. (ecr_father_5)	○	○	○	○	○	○	○
I prefer not to show this person how I feel deep down. (ecr_father_6)	○	○	○	○	○	○	○
I often worry that this person doesn't really care for me. (ecr_father_7)	○	○	○	○	○	○	○
I'm afraid that this person may abandon me. (ecr_father_8)	○	○	○	○	○	○	○

I worry that this person won't care about me as much as I care about him or her. (ecr_father_9)

○   ○   ○   ○   ○   ○   ○

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ecr_formerpartner

Please answer the following questions about **your former dating or marital partner, whose initials are ${formerpartner_name/ChoiceTextEntryValue}.**

Note: If you are not in contact with your former partner, respond to the following questions based on how you would feel or think if your former partner were to appear in front of you at this very moment.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
It helps to turn to this person in times of need. (ecr_formerpartner_1)	○	○	○	○	○	○	○
I usually discuss my problems and concerns with this person. (ecr_formerpartner_2)	○	○	○	○	○	○	○
I talk things over with this person. (ecr_formerpartner_3)	○	○	○	○	○	○	○
I find it easy to depend on this person. (ecr_formerpartner_4)	○	○	○	○	○	○	○
I don't feel comfortable opening up to this person. (ecr_formerpartner_5)	○	○	○	○	○	○	○
I prefer not to show this person how I feel deep down. (ecr_formerpartner_6)	○	○	○	○	○	○	○
I often worry that this person doesn't really care for me. (ecr_formerpartner_7)	○	○	○	○	○	○	○
I'm afraid that this person may abandon me. (ecr_formerpartner_8)	○	○	○	○	○	○	○
I worry that this person won't care about me as much as I care about him or her. (ecr_formerpartner_9)	○	○	○	○	○	○	○

ecr_bestfriend Please answer the following questions about **your best friend.**

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
It helps to turn to this person in times of need. (ecr_bestfriend_1)	○	○	○	○	○	○	○
I usually discuss my problems and concerns with this person. (ecr_bestfriend_2)	○	○	○	○	○	○	○
I talk things over with this person. (ecr_bestfriend_3)	○	○	○	○	○	○	○
I find it easy to depend on this person. (ecr_bestfriend_4)	○	○	○	○	○	○	○
I don't feel comfortable opening up to this person. (ecr_bestfriend_5)	○	○	○	○	○	○	○
I prefer not to show this person how I feel deep down. (ecr_bestfriend_6)	○	○	○	○	○	○	○
I often worry that this person doesn't really care for me. (ecr_bestfriend_7)	○	○	○	○	○	○	○
I'm afraid that this person may abandon me. (ecr_bestfriend_8)	○	○	○	○	○	○	○

| I worry that this person won't care about me as much as I care about him or her. (ecr_bestfriend_9) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Display This Question:

    If What is your current relationship status? = Non-committed or casual dating (e.g., friends with benefits, hooking up)

    Or What is your current relationship status? = Exclusive, committed dating

    Or What is your current relationship status? = Engaged

    Or What is your current relationship status? = Married

ecr_currentpartner Please answer the following questions about **your current dating or marital partner.**

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
It helps to turn to this person in times of need. (ecr_currentpartner_1)	○	○	○	○	○	○	○
I usually discuss my problems and concerns with this person. (ecr_currentpartner_2)	○	○	○	○	○	○	○
I talk things over with this person. (ecr_currentpartner_3)	○	○	○	○	○	○	○
I find it easy to depend on this person. (ecr_currentpartner_4)	○	○	○	○	○	○	○
I don't feel comfortable opening up to this person. (ecr_currentpartner_5)	○	○	○	○	○	○	○
I prefer not to show this person how I feel deep down. (ecr_currentpartner_6)	○	○	○	○	○	○	○
I often worry that this person doesn't really care for me. (ecr_currentpartner_7)	○	○	○	○	○	○	○
I'm afraid that this person may abandon me. (ecr_currentpartner_8)	○	○	○	○	○	○	○
I worry that this person won't care about me as much as I care about him or her. (ecr_currentpartner_9)	○	○	○	○	○	○	○

X→

partner_func Please read each of the following statements and rate the extent to which you believe each statement best describes your thoughts **in the past 12 months** towards:

Your former partner, whose initials are ${formerpartner_name/ChoiceTextEntryValue}.

Note: This should be the same former partner that you had previously selected to answer questions from earlier in the survey.

	Not at all (0)	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
Whether or not I actually interact with them, I would like to be able to see or talk to this person. (partner_func_freq_1)	○	○	○	○	○
I find myself thinking about what it would be like to see or talk to this person. (partner_func_freq_2)	○	○	○	○	○
I miss seeing or talking to this person. (partner_func_freq_3)	○	○	○	○	○
Whether or not I actually act on it, I would like to know how this person is doing. (partner_func_freq_4)	○	○	○	○	○
I find myself wondering how this person is doing. (partner_func_freq_5)	○	○	○	○	○
I am eager to hear about how this person is doing. (partner_func_freq_6)	○	○	○	○	○
This person holds a special place in my heart. (partner_func_freq_7)	○	○	○	○	○
I find myself thinking about this person. (partner_func_freq_8)	○	○	○	○	○
I have deep feelings for this person. (partner_func_freq_9)	○	○	○	○	○
I have a sense of continued connection with this person. (partner_func_freq_10)	○	○	○	○	○

I have dreams about this person. (partner_func_freq_11)	○	○	○	○	○
I care about this person. (partner_func_freq_12)	○	○	○	○	○
Whether or not I actually interact with them, I would like to be able to go to this person when I am feeling upset or down. (partner_func_freq_13)	○	○	○	○	○
I find myself thinking about what it would be like to go to this person when I am feeling upset or down. (partner_func_freq_14)	○	○	○	○	○
Going to this person would make me feel better when I am feeling upset or down. (partner_func_freq_15)	○	○	○	○	○
The memories I have of this person and our relationship keep me going when I am feeling upset or down. (partner_func_freq_16)	○	○	○	○	○
I think about this person and our relationship when I am feeling upset or down. (partner_func_freq_17)	○	○	○	○	○
The memories I have of this person and our relationship bring me comfort when I am feeling upset or down. (partner_func_freq_18)	○	○	○	○	○

Whether or not I actually interact with them, I would like to be able to count on this person to be there for me. (partner_func_freq_19)	○	○	○	○	○
I find myself thinking about what it would be like to count on this person to be there for me. (partner_func_freq_20)	○	○	○	○	○
I feel at ease when thinking about counting on this person to be there for me. (partner_func_freq_21)	○	○	○	○	○
The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted. (partner_func_freq_22)	○	○	○	○	○
The memories I have of this person and our relationship gives me the sense that the world is a good place and that people can generally be trusted. (partner_func_freq_23)	○	○	○	○	○
The memories I have of this person and our relationship make me feel confident that I will be fine no matter what new experiences come my way. (partner_func_freq_24)	○	○	○	○	○

acquaint_func Please read each of the following statements and rate the extent to which you believe each statement best describes your thoughts **in the past 12 months** towards:

A stranger or an acquaintance that you know but are not close with (e.g., coworker, classmate).

	Not at all (0)	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
Whether or not I actually interact with them, I would like to be able to see or talk to this person. (acquaint_func_freq_1)	○	○	○	○	○
I find myself thinking about what it would be like to see or talk to this person. (acquaint_func_freq_2)	○	○	○	○	○
I miss seeing or talking to this person. (acquaint_func_freq_3)	○	○	○	○	○
Whether or not I actually act on it, I would like to know how this person is doing. (acquaint_func_freq_4)	○	○	○	○	○
I find myself wondering how this person is doing. (acquaint_func_freq_5)	○	○	○	○	○
I am eager to hear about how this person is doing. (acquaint_func_freq_6)	○	○	○	○	○
This person holds a special place in my heart. (acquaint_func_freq_7)	○	○	○	○	○
I find myself thinking about this person. (acquaint_func_freq_8)	○	○	○	○	○
I have deep feelings for this person. (acquaint_func_freq_9)	○	○	○	○	○
I have a sense of continued connection with this person. (acquaint_func_freq_10)	○	○	○	○	○

I have dreams about this person. (acquaint_func_freq_11)	○	○	○	○	○
I care about this person. (acquaint_func_freq_12)	○	○	○	○	○
Whether or not I actually interact with them, I would like to be able to go to this person when I am feeling upset or down. (acquaint_func_freq_13)	○	○	○	○	○
I find myself thinking about what it would be like to go to this person when I am feeling upset or down. (acquaint_func_freq_14)	○	○	○	○	○
Going to this person would make me feel better when I am feeling upset or down. (acquaint_func_freq_15)	○	○	○	○	○
The memories I have of this person and our relationship keep me going when I am feeling upset or down. (acquaint_func_freq_16)	○	○	○	○	○
I think about this person and our relationship when I am feeling upset or down. (acquaint_func_freq_17)	○	○	○	○	○
The memories I have of this person and our relationship bring me comfort when I am feeling upset or down. (acquaint_func_freq_18)	○	○	○	○	○

Whether or not I actually interact with them, I would like to be able to count on this person to be there for me.
(acquaint_func_freq_19)

○　　　　○　　　　○　　　　○　　　　○

I find myself thinking about what it would be like to count on this person to be there for me.
(acquaint_func_freq_20)

○　　　　○　　　　○　　　　○　　　　○

I feel at ease when thinking about counting on this person to be there for me.
(acquaint_func_freq_21)

○　　　　○　　　　○　　　　○　　　　○

The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted.
(acquaint_func_freq_22)

○　　　　○　　　　○　　　　○　　　　○

The memories I have of this person and our relationship gives me the sense that the world is a good place and that people can generally be trusted.
(acquaint_func_freq_23)

○　　　　○　　　　○　　　　○　　　　○

The memories I have of this person and our relationship make me feel confident that I will be fine no matter what new experiences come my way.
(acquaint_func_freq_24)

○　　　　○　　　　○　　　　○　　　　○

friend_func Please read each of the following statements and rate the extent to which you believe each statement best describes your thoughts **in the past 12 months** towards:

Someone you consider to be a close friend.

	Not at all (0)	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
Whether or not I actually interact with them, I would like to be able to see or talk to this person. (friend_func_freq_1)	○	○	○	○	○
I find myself thinking about what it would be like to see or talk to this person. (friend_func_freq_2)	○	○	○	○	○
I miss seeing or talking to this person. (friend_func_freq_3)	○	○	○	○	○
Whether or not I actually act on it, I would like to know how this person is doing. (friend_func_freq_4)	○	○	○	○	○
I find myself wondering how this person is doing. (friend_func_freq_5)	○	○	○	○	○
I am eager to hear about how this person is doing. (friend_func_freq_6)	○	○	○	○	○
This person holds a special place in my heart. (friend_func_freq_7)	○	○	○	○	○
I find myself thinking about this person. (friend_func_freq_8)	○	○	○	○	○
I have deep feelings for this person. (friend_func_freq_9)	○	○	○	○	○
I have a sense of continued connection with this person. (friend_func_freq_10)	○	○	○	○	○

I have dreams about this person. (friend_func_freq_11)	○	○	○	○	○
I care about this person. (friend_func_freq_12)	○	○	○	○	○
Whether or not I actually interact with them, I would like to be able to go to this person when I am feeling upset or down. (friend_func_freq_13)	○	○	○	○	○
I find myself thinking about what it would be like to go to this person when I am feeling upset or down. (friend_func_freq_14)	○	○	○	○	○
Going to this person would make me feel better when I am feeling upset or down. (friend_func_freq_15)	○	○	○	○	○
The memories I have of this person and our relationship keep me going when I am feeling upset or down. (friend_func_freq_16)	○	○	○	○	○
I think about this person and our relationship when I am feeling upset or down. (friend_func_freq_17)	○	○	○	○	○

The memories I have of this person and our relationship bring me comfort when I am feeling upset or down. (friend_func_freq_18)	○	○	○	○	○
Whether or not I actually interact with them, I would like to be able to count on this person to be there for me. (friend_func_freq_19)	○	○	○	○	○
I find myself thinking about what it would be like to count on this person to be there for me. (friend_func_freq_20)	○	○	○	○	○
I feel at ease when thinking about counting on this person to be there for me. (friend_func_freq_21)	○	○	○	○	○
The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted. (friend_func_freq_22)	○	○	○	○	○
The memories I have of this person and our relationship gives me the sense that the world is a good place and that people can generally be trusted. (friend_func_freq_23)	○	○	○	○	○

The memories I have of this person and our relationship make me feel confident that I will be fine no matter what new experiences come my way. (friend_func_freq_24)

○   ○   ○   ○   ○

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mother_func Please read each of the following statements and rate the extent to which you believe each statement best describes your thoughts **in the past 12 months** towards:

Your mother or a mother-like figure.

	Not at all (0)	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
Whether or not I actually interact with them, I would like to be able to see or talk to this person. (mother_func_freq_1)	○	○	○	○	○
I find myself thinking about what it would be like to see or talk to this person. (mother_func_freq_2)	○	○	○	○	○
I miss seeing or talking to this person. (mother_func_freq_3)	○	○	○	○	○
Whether or not I actually act on it, I would like to know how this person is doing. (mother_func_freq_4)	○	○	○	○	○
I find myself wondering how this person is doing. (mother_func_freq_5)	○	○	○	○	○
I am eager to hear about how this person is doing. (mother_func_freq_6)	○	○	○	○	○
This person holds a special place in my heart. (mother_func_freq_7)	○	○	○	○	○
I find myself thinking about this person. (mother_func_freq_8)	○	○	○	○	○
I have deep feelings for this person. (mother_func_freq_9)	○	○	○	○	○
I have a sense of continued connection with this person. (mother_func_freq_10)	○	○	○	○	○

I have dreams about this person. (mother_func_freq_11)	○	○	○	○	○
I care about this person. (mother_func_freq_12)	○	○	○	○	○
Whether or not I actually interact with them, I would like to be able to go to this person when I am feeling upset or down. (mother_func_freq_13)	○	○	○	○	○
I find myself thinking about what it would be like to go to this person when I am feeling upset or down. (mother_func_freq_14)	○	○	○	○	○
Going to this person would make me feel better when I am feeling upset or down. (mother_func_freq_15)	○	○	○	○	○
The memories I have of this person and our relationship keep me going when I am feeling upset or down. (mother_func_freq_16)	○	○	○	○	○
I think about this person and our relationship when I am feeling upset or down. (mother_func_freq_17)	○	○	○	○	○
The memories I have of this person and our relationship bring me comfort when I am feeling upset or down. (mother_func_freq_18)	○	○	○	○	○

Whether or not I actually interact with them, I would like to be able to count on this person to be there for me. (mother_func_freq_19)	○	○	○	○	○
I find myself thinking about what it would be like to count on this person to be there for me. (mother_func_freq_20)	○	○	○	○	○
I feel at ease when thinking about counting on this person to be there for me. (mother_func_freq_21)	○	○	○	○	○
The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted. (mother_func_freq_22)	○	○	○	○	○
The memories I have of this person and our relationship gives me the sense that the world is a good place and that people can generally be trusted. (mother_func_freq_23)	○	○	○	○	○
The memories I have of this person and our relationship make me feel confident that I will be fine no matter what new experiences come my way. (mother_func_freq_24)	○	○	○	○	○

father_func Please read each of the following statements and rate the extent to which you believe each statement best describes your thoughts **in the past 12 months** towards:

Your father or a father-like figure.

	Not at all (0)	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
Whether or not I actually interact with them, I would like to be able to see or talk to this person. (father_func_freq_1)	○	○	○	○	○
I find myself thinking about what it would be like to see or talk to this person. (father_func_freq_2)	○	○	○	○	○
I miss seeing or talking to this person. (father_func_freq_3)	○	○	○	○	○
Whether or not I actually act on it, I would like to know how this person is doing. (father_func_freq_4)	○	○	○	○	○
I find myself wondering how this person is doing. (father_func_freq_5)	○	○	○	○	○
I am eager to hear about how this person is doing. (father_func_freq_6)	○	○	○	○	○
This person holds a special place in my heart. (father_func_freq_7)	○	○	○	○	○
I find myself thinking about this person. (father_func_freq_8)	○	○	○	○	○
I have deep feelings for this person. (father_func_freq_9)	○	○	○	○	○
I have a sense of continued connection with this person. (father_func_freq_10)	○	○	○	○	○

I have dreams about this person. (father_func_freq_11)	○	○	○	○	○
I care about this person. (father_func_freq_12)	○	○	○	○	○
Whether or not I actually interact with them, I would like to be able to go to this person when I am feeling upset or down. (father_func_freq_13)	○	○	○	○	○
I find myself thinking about what it would be like to go to this person when I am feeling upset or down. (father_func_freq_14)	○	○	○	○	○
Going to this person would make me feel better when I am feeling upset or down. (father_func_freq_15)	○	○	○	○	○
The memories I have of this person and our relationship keep me going when I am feeling upset or down. (father_func_freq_16)	○	○	○	○	○
I think about this person and our relationship when I am feeling upset or down. (father_func_freq_17)	○	○	○	○	○

The memories I have of this person and our relationship bring me comfort when I am feeling upset or down. (father_func_freq_18)

○　　　○　　　○　　　○　　　○

Whether or not I actually interact with them, I would like to be able to count on this person to be there for me. (father_func_freq_19)

○　　　○　　　○　　　○　　　○

I find myself thinking about what it would be like to count on this person to be there for me. (father_func_freq_20)

○　　　○　　　○　　　○　　　○

I feel at ease when thinking about counting on this person to be there for me. (father_func_freq_21)

○　　　○　　　○　　　○　　　○

The memories I have of this person and our relationship leads me to believe that I can approach new experiences knowing that the world is a good place and that people can be generally trusted. (father_func_freq_22)

○　　　○　　　○　　　○　　　○

The memories I have of this person and our relationship gives me the sense that the world is a good place and that people can generally be trusted. (father_func_freq_23)

○　　　○　　　○　　　○　　　○

The memories I have of this person and our relationship make me feel confident that I will be fine no matter what new experiences come my way. (father_func_freq_24)

○   ○   ○   ○   ○

formerpartner_etc Please read each of the following statements and rate the extent to which you believe each statement best describes your thoughts **in the past 12 months** towards:

Your former partner, whose initials are ${formerpartner_name/ChoiceTextEntryValue}.

This should be the same former partner that you had previously selected to answer questions from earlier in the survey.

	Not at all (0)	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
I still reminisce and think back to when my former partner and I were together. (formerpartner_etc_1)	○	○	○	○	○
I have held on to reminders or mementos of the relationship (e.g., photos, letters). (formerpartner_etc_2)	○	○	○	○	○
I have intrusive thoughts about my former partner. (formerpartner_etc_3)	○	○	○	○	○
I find myself wondering what could have been. (formerpartner_etc_4)	○	○	○	○	○
It hurts to think about my former partner. (formerpartner_etc_5)	○	○	○	○	○
I still mourn over what my former partner and I had in our relationship. (formerpartner_etc_6)	○	○	○	○	○
I have made peace with how things ended with my former partner. (formerpartner_etc_7)	○	○	○	○	○
It would not matter to me if my memories of the relationship were to be magically erased. (formerpartner_etc_8)	○	○	○	○	○

If I found out my former partner had been in a serious accident, it would concern me as much as if a stranger had been in an accident. (formerpartner_etc_9)	○	○	○	○	○
I would feel nothing if I heard updates about my former partner. (formerpartner_etc_10)	○	○	○	○	○
I would feel some degree of satisfaction in knowing that my former partner wasn't doing well. (formerpartner_etc_11)	○	○	○	○	○
The separation inspired me to improve myself and show my former partner what they were missing. (formerpartner_etc_12)	○	○	○	○	○
I feel resentful towards my former partner. (formerpartner_etc_13)	○	○	○	○	○
I feel a sense of loss when thinking about my former partner. (formerpartner_etc_14)	○	○	○	○	○
My relationship with my former partner plays a part in who I am today. (formerpartner_etc_15)	○	○	○	○	○
I feel I am missing a part of myself since the separation. (formerpartner_etc_16)	○	○	○	○	○
Much of my outlook on life can be attributed to my former partner. (formerpartner_etc_17)	○	○	○	○	○

I still maintain interest in my former partner's well-being. (formerpartner_etc_18)	○	○	○	○	○
I would respond if my former partner asked for help in an emergency. (formerpartner_etc_19)	○	○	○	○	○
In an emergency, I can still count on my former partner to be there for me if I reached out to them. (formerpartner_etc_20)	○	○	○	○	○

Q27 The following questions ask about the context of the romantic separation with **your former partner, whose initials end in ${formerpartner_name/ChoiceTextEntryValue}.**

Please read each question carefully and select a response that best describes the breakup and the relationship you had with your former partner.

Page Break

time_since_breakup How long ago did you and your former partner, ${formerpartner_name/ChoiceTextEntryValue}, break up?

For example, if it has been one year since the breakup, enter a 1 for Year(s) and a 0 for Month(s).

○ Year(s) (1) _____

○ Month(s) (2) _____

---

breakup_significance Overall, how significant is this breakup to you?

○ 1 - Not very significant at all; it isn't an important part of my life (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 - Highly significant; I consider the breakup to be an important life event (7)

X→

previous_breakups Had you experienced a significant romantic breakup prior to this relationship with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

○ No, that was my first time experiencing a breakup (0)

○ Yes, I had experienced breakups with other partners in the past. (Enter the approximate number of breakups in the text box). (1)

_____

---

former_rel_status What was the status of the relationship before the breakup with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

○ Exclusive, committed dating (1)

○ Engaged (2)

○ Married (3)

○ Other (4) _____

Page Break ⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺

former_rel_length Before breaking up, how long had you been in a romantic relationship with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

For example, if you had been in a relationship with your former partner for one year, enter a 1 for Year(s) and a 0 for Month(s).

○ Year(s) (1) _____

○ Month(s) (2) _____

---

desire_continue_rel Prior to the breakup, to what extent had you wanted the relationship to continue?

○ 1 - I had little interest in continuing the relationship (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 - I was very interested in continuing the relationship (7)

---

initiate_breakup Who initiated the breakup?

○ I initiated the breakup (1)

○ My partner initiated the breakup (2)

○ We both mutually initiated the breakup (3)

○ Other (4) _____

---

breakup_reason What reason(s) led to the breakup?

_____

_____

_____

_____

_____

- -

Page Break ——————————————————————————

X→

reconciliation Did you and your former partner, ${formerpartner_name/ChoiceTextEntryValue}, ever get back together romantically after the breakup?

○ No, we never reconciled after the breakup (0)

○ Yes, we were involved in a casual, non-committed relationship before permanently breaking up (1)

○ Yes, we re-established a committed relationship one or more time before permanently breaking up (2)

○ Other (3) _____

X→

cohabitation At the time of the breakup, were you cohabiting with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

○ No, we were generally living in separate residences (0)

○ Yes, we were generally living in the same residence--but I also had my own separate residence (1)

○ Yes, we were generally living in the same residence and I did not have my own separate residence (2)

X→

children At the time of the breakup, did you have any children under 18 years of age whom you were responsible for as a caregiver?

○ No (0)

○ Yes (Specify the number of children in the text box) (1)

_____

X→

joint_custody After the breakup, did you share parental responsibilities with your former partner, ${formerpartner_name/ChoiceTextEntryValue} (joint custody, visitation, etc.)?

○ No, my former partner was not involved in my child(ren)'s life (0)

○ Yes, my former partner shared parental responsibilities with me (1)

○ Other (2) _____

X→

friendship Currently, would you say that you are friends with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

○ No, we are not friends (0)

○ Yes, we are casual friends (1)

○ Yes, we are close friends (2)

Page Break ————————————————————————————

X→

formerpartner_newrel After the breakup, has your former partner,
${formerpartner_name/ChoiceTextEntryValue}, been involved in a new relationship with
someone else?

○ No, I know my former partner has not been in a new relationship since we broke up (0)

○ Yes, my former partner has been in a relationship with someone else since we broke up
(1)

○ I don't know if my former partner has been involved in a new relationship (2)

---

rel_interest Approximately how much time passed before you were interested in being in another
relationship?

○ 0 to 6 months (1)

○ 6 months to 1 year (2)

○ 1 to 2 years (3)

○ >2 years (4)

○ Other (5) _____

X→

new_rel Have you been involved in a committed romantic relationship with someone else since
the breakup?

○ No (0)

○ Yes, but that relationship has since ended (1)

○ Yes, and I am still with that same partner (2)

---

time_before_new_rel You indicated in your previous response that you had entered a committed relationship with a new partner after the breakup. Approximately how much time had passed since the breakup before your relationship with a new partner began?

○ Year(s) (1) _____

○ Month(s) (2) _____

○ Day(s) (3) _____

- -

Page Break ————————————————————————————————————

distance Currently, approximately how far away does your former partner, ${formerpartner_name/ChoiceTextEntryValue}, live from you?

○ Less than 10 miles away or less than 15 minutes by car (1)

○ 11-25 miles away or about 30 minutes by car (2)

○ 26-75 miles away or about 1 hour by car (3)

○ 76-150 miles away or about 2 hours by car (4)

○ More than 150 miles away (5)

○ I don't know (6)

---

face_contact Currently, how much offline, face-to-face contact do you have with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

○ 1 - No in-person contact (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 - Daily in-person contact (7)

---

tech_contact Currently, how much contact do you with have your former partner, ${formerpartner_name/ChoiceTextEntryValue}, via technology (e.g., social media, video chat, texting, phone calls, emails)?

○ 1 - No contact via technology (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 - Daily contact via technology (7)

- -

socialmedia_check Currently, how often do you search for information about your former partner, ${formerpartner_name/ChoiceTextEntryValue}, on the internet (e.g., Google) or check your former partner's social media pages (e.g., Facebook, Instagram, Snapchat)?

○ 1 - Never (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 - Everyday (7)

- -

lastcontact Approximately how long has it been since you were last in contact with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

○ Year(s) (1) _____

○ Month(s) (2) _____

○ Day(s) (3) _____

- -

Page Break ————————————————————————————

postbreakup_relsatis Overall, how content or satisfied are you with the state of your post-breakup relationship with your former partner, ${formerpartner_name/ChoiceTextEntryValue}?

○ 1 - Not content at all; there are a lot of things I wish were different about the current relationship between my former partner and I (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 - Very content; I would not change anything about the kind of relationship I now have with my former partner (7)

End of Block: Rel_info_formerpartner

Start of Block: Quality_check

quality_check For the purpose of the research study, it is crucial to have accurate data. We would like to ask that you respond to the following questions to ensure that the data is correct.

Your compensation will be provided to you regardless of how you answer the questions.

- -

X→

qualitycheck_1 In the past, I had a romantic relationship with my former partner, whose initials are ${formerpartner_name/ChoiceTextEntryValue}, that ended after 2 or more years.

○ Yes, this statement is accurate (1)

○ No, this statement is NOT accurate (0)

- -

X→

qualitycheck_2 I have responded honestly and attentively to the questions in this survey.

○ Yes, this statement is accurate (1)

○ No, this statement is NOT accurate (0)

Random ID Here is your ID: ${e://Field/id}

Copy this value to paste into MTurk.

When you have copied this ID to MTurk, please review the debriefing form on the next page, then click the next button at the bottom of the page to submit your survey.

debriefing
DEBRIEFING FORM
Thank you for your participation in this study! We appreciate your time and effort. You will be receiving $2 as compensation for your participation. Below is further information about the study.

 The goal of the present research is to examine the long-term stability of former romantic attachment bonds after the relationship has ended. Using a customary definition of an attachment bond (i.e., proximity-seeking, safe haven, secure base), the current research evaluates common perspectives in the grief and loss literature. The first approach implies that an attachment bond, once established, has the permanent capacity to trigger attachment-related processes. The second approach suggests that the potential for former partners to elicit attachment-related processes approaches zero over time. By evaluating the way in which attachment functions change following romantic breakups, the current study will elucidate the dynamics of attachment-related processes in the aftermath of relationship separation, as well as provide greater insight with respect to the attachment-related functions that affective bonds to former romantic figures may--or may not--serve in the long run.

Further reading and resources

Bonanno, G., & Kaltman, S. (1999). Toward an integrative perspective on bereavement. Psychological Bulletin, 125, 760-776. https://doi.org/10.1037//0033-2909.125.6.760

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

Fagundes, C. P. (2012). Getting over you: Contributions of attachment theory for postbreakup emotional adjustment. Personal Relationships, 19, 37–50. https://doi.org/10.1111/j.1475-6811.2010.01336.x

Heffernan, M., Fraley, R. C., Vicary, A., & Brumbaugh, C. (2012). Attachment features and functions in adult romantic relationships. Journal of Social and Personal Relationships, 29, 671-693. https://doi.org/10.1177/0265407512443435

Weiss, R. S. (1975). Marital separation. New York: Basic Books.

Your responses and recorded data will be kept in confidence and will only be available to the research team. The responses that you have given will be averaged with many other participant's responses and will only be handled by researchers in a de-identified and composite manner. Your de-identified information could be used for future research without additional informed consent. Although you have already completed the study, your involvement is still voluntary, and you may choose to withdraw the data you provided prior to debriefing, without penalty beyond not receiving the course credit or payment. Withdrawing your submission will not adversely affect your relationship with the University of Illinois, the researchers, or any of our affiliates.

If you are experiencing negative feelings from this study and you would like to talk to a counselor, please contact a counseling center. Below are some options for local counseling centers:

Rosecrance
2302 Moreland Blvd. Champaign, IL, 61822
(866) 330-8729

Campion, Barrow and Associated
2110 Clearlake Blvd., Ste. 202 Champaign, IL 61822
(800) 292-3399

Elliott Counseling Group
309 W. Clark St. Champaign, IL 61820
(217) 398-9066

If you have any questions regarding this study, please feel free to contact Jia Chong at jchong10@illinois.edu. If you feel you have not been treated according to the descriptions in this

form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at (217) 333-2670 or e-mail OPRS at irb@illinois.edu.

 Thank you again for your participation!

Please click the next button to submit your survey.

End of Block: Debriefing

APPENDIX B: IRB APPROVAL LETTER

ILLINOIS

OFFICE OF THE VICE CHANCELLOR FOR RESEARCH

Office for the Protection of Research Subjects
805 W. Pennsylvania Ave., MC-095
Urbana, IL 61801-4822

Notice of Exempt Determination

November 2, 2021

Principal Investigator	R Chris Fraley
CC	Jia Chong
Protocol Title	*Attachment Bonds After Relationship Separation*
Protocol Number	22394
Funding Source	Unfunded
Review Category	Exempt 2 (i)
Determination Date	November 2, 2021
Closure Date	November 1, 2026

This letter authorizes the use of human subjects in the above protocol. The University of Illinois at Urbana-Champaign Office for the Protection of Research Subjects (OPRS) has reviewed your application and determined the criteria for exemption have been met.

The Principal Investigator of this study is responsible for:
- Conducting research in a manner consistent with the requirements of the University and federal regulations found at 45 CFR 46.
- Requesting approval from the IRB prior to implementing major modifications.
- Notifying OPRS of any problems involving human subjects, including unanticipated events, participant complaints, or protocol deviations.
- Notifying OPRS of the completion of the study.

Changes to an **exempt** protocol are only required if substantive modifications are requested and/or the changes requested may affect the exempt status.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
IORG0000014 • FWA #00008584
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