RELATIONSHIP CENTRALITY AND EXPRESSIVE WRITING:
UNDERSTANDING POST-BREAKUP DISTRESS

Rachel B. Nowlin, B.A.

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APPROVED:

Dr. Sharon Rae Jenkins, Committee Chair
Dr. Randall J. Cox, Committee Member
Dr. Shelley A. Riggs, Committee Member
Dr. Vicki Campbell, Chair of the Department of Psychology
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When a romantic relationship ends in dissolution, the ex-partners may experience distress similar to post-traumatic stress or complex grief (i.e., dysphoric mood, feelings of loss, intrusive memories, negative rumination regarding the relationship, and a loss of self-esteem). Interventions designed to reduce post-breakup distress have historically attempted to foster integration of the breakup into the self-narrative through techniques such as expressive writing. Recent research indicates centrality, or heightened integration of an event or concept into an individual’s identity, predicts heightened levels of distress in the case of negative life events, including romantic relationship dissolution. Given the role romantic relationships themselves play in identity formation, exploration is warranted of the potential distress resulting from over-identification with a romantic relationship itself, or relationship centrality, after a breakup has occurred. Furthermore, if an individual has overly-integrated a relationship into their identity, the effectiveness of interventions focusing on further integration of the breakup is called into question. This study explored the centrality of participants’ previous romantic relationships, the distress resulting from the dissolution of those relationships, and the role of expressive writing as a distress reduction tool when centrality is taken into account.
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CHAPTER 1

INTRODUCTION

The ending of a romantic relationship can be a significant source of distress for an individual (Bloom, Asher, & White, 1978). A common approach when attempting to predict or account for distress following a relationship dissolution is to explore the contribution of characteristics of the relationship itself (e.g., length of relationship, initiator of breakup, satisfaction with relationship; Banks, Altendorf, Greene, & Cody, 1987; Frazier & Cook, 1993; Locker, Mcintosh, Hackney, Wilson, & Wiegand, 2010; Sprecher, Felmlee, Metts, Fehr, & Vanni, 1998; Vanderdrift, Agnew, & Wilson, 2009) as well as individual characteristics of the members of said relationship, such as their predilection toward rumination, their commitment to the relationship, or even past experiences with modeled relationships (e.g., attachment formation due to witnessing a parental divorce in childhood; Boelen & Reijntjes, 2009; Boelen, Paul A.Van Den Hout, 2010; Fagundes, 2012; Sprecher et al., 1998; Vanderdrift et al., 2009). However, the individual factors explored thus far describe an individual’s approach to relationships or interaction within a given relationship, with less or no attention paid to the internal organization of the relationship within the individual. Assessing the degree to which an individual defines themselves around a relationship (the centrality of the relationship to the individual's identity or self-concept) may further our ability to predict and treat post-breakup distress.

Based on previous research, current interventions targeting the reduction of post-breakup distress include tasks of meaning-making and integration of the past
relationship or breakup into their self-narrative through the use of techniques such as expressive writing (Kellas & Manusov, 2003; Lepore & Greenberg, 2002). Without adequate research into the integration of a relationship into one’s identity and how it predicts distress following a breakup, the utility of such interventions across the board is drawn into question. Individuals with a higher tendency to define themselves around their romantic relationship might respond to an intervention of this nature in a negative way, as opposed to the benefit those who did not define themselves strongly around a relationship receive.

This paper documents current research on the distress following a romantic dissolution, the concept of centrality, the role of romantic relationships as a central component of identity and self-concept, and the current methods (and possible weaknesses) of interventions used for post-dissolution distress reduction. The hypotheses tested in this study explored the ways centrality of a romantic relationship predicted distress and recovery following a breakup, and how relationship centrality affected the efficacy of an expressive writing intervention intended to reduce post-breakup distress.

1.1 Distress following a romantic dissolution

Distress after a relationship breakup tends to take the form of loneliness, loss of self-esteem, hopelessness, and rumination; though often lesser in severity, these symptoms mirror those experienced by individuals who have experienced a trauma (Boelen & Reijntjes, 2009; Chung et al., 2003; Collins II & Clark, 1989), and/or those
who are experiencing complicated grief (Field, Diego, Pelaez, Deeds, & Delgado, 2010; Horowitz, Siegel, Holen, & Bonanno, 1997; MacCallum & Bryant, 2011). In one sample, 40% of participants recently in a breakup experienced clinical depression (Mearns, 1991). Women are more likely than men to display symptoms of distress following relationship dissolution, presenting with greater levels of hopelessness and depression (Fisher, 2004; Mearns, 1991). Despite their apparent resilience after breakups, men are more likely to attempt suicide following romantic rejection (Usten & Sartorius, 1995). Overall, experiencing a relationship breakup was frequently described as one of the “worst events” in a phone survey regarding the experience of negative life events for college-age students (Field et al., 2010).

Previous studies attempting to ascertain predictors of distress following a relationship breakup have often examined quantifiable aspects of the relationship itself, variables explaining how the individuals within the relationship interacted with each other and the relationship itself, and individual psychological differences in attachment style, mental health, and coping styles. Sprecher et al. (1998) provided a thorough investigation of post-breakup predictors in a young adult, college sample following a breakup; the sample of 257 undergraduates was 20 years old on average, and 68% female. Participants reported retroactively on their feelings of distress when the relationship first ended (within a year of inclusion in the study), and their current feelings of distress. Sprecher et al. found the following characteristics associated with immediate breakup distress: Partner differences in perceived (and desired) alternative relationships, the role of having initiated the relationship, the level of commitment of
the partners in the relationship, the amount of satisfaction in the relationship, being the one "left" rather than the initiator of the breakup, and a fearful-avoidant attachment style. Altogether, these variables explained roughly 46% of the variance in immediate distress following a breakup. Predictors of distress at the time of assessment (i.e., the "current" distress) were: The participants' commitment in the relationship, the length of the relationship, the time that had passed since the breakup, and a dismissing attachment style. These variables explained 26% of the variance in distress up to one year following a breakup.

Similarly, Fagundes (2012) looked at the role of attachment in romantic relationship breakups within an undergraduate sample (mean age of 21 years, 66% female), measuring their distress across a one-month span of time. Fagundes reported attachment anxiety and a tendency toward reflection about the breakup were highly associated with distress immediately following the breakup (as measured at the first collection point), explaining 42% of the variance in emotional adjustment after a breakup. Greater amounts of reflection predicted less recovery over the month, though the effect was moderated by having a high level of attachment anxiety, explaining 45% of the variance in emotional adjustment at that time point. Boelen & Reijntjes (2009) assessed the emotional impact and grief involved in breakups in an undergraduate sample by examining cognitive attributions and related vulnerabilities. They found cognitive approaches which included global negative self-beliefs, self-blame, and overall negativity were associated with post-breakup distress above and beyond the influence of the initiator status of the breakup, characteristics of the relationship (e.g., length of
relationship), and personality influences such as neuroticism or attachment style. Specifically, these cognitive approaches explained a unique 27% of the variance in depressive symptoms following the breakup, and a unique 25% of variance in anxiety symptoms.

The aforementioned studies assessed predictors of the formation of post-breakup distress, but factors predicting recovery from that distress have also been investigated. Locker et al. (2010) examined a wide array of relationship characteristics after a breakup in a college sample (ages ranging from 18 to 40, with an average age of 20 years), to identify predictors of recovery after a breakup. They found the length of the previous relationship and time to enter into a new relationship was a predictor of recovery for all participants, explaining 42% of the variance in recovery. However, further analysis showed the length of the relationship was a predictor of recovery for women, but not men. Additionally, the amount of contact between partners in a relationship before the breakup predicted recovery positively for men, but negatively for women, indicating the trajectory of recovery differs between genders in combination with these relationship factors.

Overall, there appears to be a robust understanding of the predictors of distress and recovery following a breakup in the young adult age range. Relationship characteristics and patterns of involvement within relationships predict the distress following the end of the relationship, as do an individual’s predilection toward dysfunctional interpersonal attachment and a negative cognitive style. However, the newly-researched concept of centrality presents a new lens with which to deepen our
understanding of post-breakup distress and recovery on an individual basis. Applying the concept of centrality to romantic relationships creates a measure of an individual's internalized representation of that relationship, and the strength with which they identified themselves around that relationship. In turn, this offers a new perspective in understanding the differential experience of distress following dissolution, and more precise avenues toward treatment and recovery.

1.2 Centrality

The study of event centrality, or the extent to which an individual defines an event as being “central” to their life or identity, is a recent addition to literature regarding negative life events and traumas (Berntsen & Rubin, 2006a). Any occurrence which leads to a fixed memory or concept that serves as a “reference point” for future experiences and self-definition could be considered central (Boals, 2010), but the emphasis has been on evaluating the extent to which an individual sees a trauma or negative life event as a “turning point” in their life story, thus affecting the levels of post-traumatic distress they may experience following the event. And in cases where the negative life event is not traumatic, someone defining themselves around such an event may experience symptoms similar to having survived a trauma, the trauma of upset to their self-narrative. For example, in a longitudinal study of event centrality following a negative life event, centrality did not correlate with depressive symptoms, but did correlate with the experience of rumination and memory intrusiveness, both important symptoms of post-traumatic stress (Newby & Moulds, 2011). Overall, event
centrality research suggests the extent to which someone defines themselves around a negative life event predicts their outcomes with increased accuracy compared to merely assessing trauma incidence and exposure (Bernard, Whittles, Kertz, & Burke, 2015).

Relationship dissolution can be considered a negative life event for study under the lens of centrality. Undergraduates who had recently experienced a breakup showed similar levels of experiential avoidance when compared against the norms of a clinical outpatient sample seeking treatment after a traumatic life event, though their ratings of intrusive thoughts of the respective events were significantly lower than the clinical sample (Chung et al., 2003). When compared against a control sampling of medical students, however, the same post-breakup undergraduates were experiencing significantly higher incidents of both intrusive thoughts and experiential avoidance. These findings support hypotheses linking relationship dissolutions to other significant negative life events and the study thereof, as they demonstrate the significant psychological distress young adults undergo when facing the dissolution of an important relationship. While the distress shown may be less than that of someone who has recently experienced a traumatic event - such as death of a loved one - the difference is quantitative, not qualitative.

The notion of centrality is not only tied to events. “Centrality” has been applied to multiple areas of research in the social sciences, in which it is almost universally used to define the importance of a concept in an individual’s life – the extent to which they organize themselves around that belief, concept, or experience. Examples of this are “work centrality” (Sharabi & Harpaz, 2010), “identity centrality” (Quinn et al., 2014),
and it even appears in marketing and advertisement literature as “social network centrality” (Yan, Jing, Yang, & Wang, 2014). Overall, the flexible approach toward centrality opens the door for deeper examination of the concept, beginning with the ways it connects to research on self-concept and identity organization.

To summarize, the study of event centrality is associated with the post-traumatic disturbance of the self-narrative, or the salient worldview and identity-related beliefs an individual held before the trauma (Groleau, Calhoun, Cann, & Tedeschi, 2012). However, the extent to which someone defines themselves around a concept has been researched in other areas of psychology, and other disciplines entirely, under the broader term of “centrality.” Where relationship breakups have been shown to be negative life events, there is a lack of research regarding the extent to which an individual defines themselves around the relationship itself (i.e., “relationship centrality”), and the potential distress outcomes following the dissolution of that relationship. Given the similarities in their theoretical underpinnings, it is necessary to explore the role relationships play in the organization of the self-concept or identity prior to a breakup.

1.3 Self concept, identity, and intimacy

Self-concept is defined as the collection of beliefs one has about themselves (Leary & Tangney, 2003). The clarity of one’s self-concept is the extent to which a person’s self-concept is reliable, cohesive, and easily defined (Campbell, 1990). The greater self-concept clarity an individual maintains, the greater their relationship
satisfaction and overall commitment to a romantic relationship (Lewandowski, Nardone, & Raines, 2010), suggesting a stable (yet flexible) and clear self-concept may be workably synonymous with Erikson’s concept of identity achievement. According to Erikson, achieving a stable sense of self arms an individual with the consequent ability to create and maintain intimate relationships with others. Erikson argued the formation of an identity must come before the stage of achieving intimacy with others, as intimacy itself cannot occur until two formed identities intermingle and merge, while each remains intact. The formation of an identity impacts the extent to which an individual can involve themselves in healthy, intimate relationships, particularly of the romantic variety (Barry, Madsen, Nelson, Carroll, & Badger, 2009; Berman, Weems, Rodriguez, & Zamora, 2006; Collins, 2003; Erikson, 1968).

Where identity is about a stable framework of self, intimacy refers to the stability of self when combined with another. Thus the establishment of identity is a pre-requisite for true intimacy in Eriksonian thought. Researchers have expanded the potential definition of intimacy in subsequent literature, describing it as a series of processes relating to trust, emotional closeness, feeling understood when engaging in self-disclosure, and mutual expression of positive regard and/or love (Baumeister & Bratslavsky, 1999; Field et al., 2010). The achievement of intimacy and the level of those attributes felt within a relationship are themselves predictors of the health and satisfaction of partners in romantic relationships, as well as the distress experienced after a breakup (Sbarra, 2006; Simpson, 1987).
Though his theory remains relevant, the world has changed since Erikson was developing his theories. Where divisions between childhood, adolescence, and adulthood were once theoretically clearer, we now see a consistent pattern indicating people are entering "adulthood" at later stages than in previous generations, creating a period of extended adolescence and "emerging adulthood" (Arnett, 2010). Emerging adulthood itself may represent a new period of development for youth in a more connected and multicultural environment, leading to an increase in cultural ideas with which to sort through and potentially incorporate into their identity (Jensen & Arnett, 2012). Additionally, youth in America are beginning to date romantically at earlier ages – potentially an outgrowth of the more global, connected context in which they live – while emerging adulthood forestalls the period by which an adult would be expected to marry (Rauer, Pettit, Lansford, Bates, & Dodge, 2013). The result is an expanded window for romantic relationships, and the possibility for the drive toward intimacy to be present during the previously theorized window of identity development, and this period of development may become the new normal (Arnett, 2010). In this new context, what has not been addressed is the extent to which youth are achieving a sense of identity by their young adult years, or what changes may be occurring in the formation of said identity due to the shifts in roles and expectations at these ages. Given the apparent conflation of identity formation and developmental efforts during emerging adulthood, certain individuals may confuse or conflate the desire for intimacy with their drive to define themselves, resulting in a self-concept that is limited and places a large emphasis on being in a romantic relationship itself.
In this current vein of research, Slotter and Gardner (2009) demonstrated that individuals lose self-concept clarity following a breakup, resulting in identity confusion. In that study, greater amounts of identity confusion uniquely predicted distress after a relationship dissolution. By measuring psychophysiological responses as participants recalled a recent ex-partner, Mason et al. (2012) showed participants with an impaired ability to repair their self-concept showed poorer well-being after a breakup. This suggests post-breakup distress could, in some cases, be due to the inability to redefine the self in response to significant changes in their life narrative. Though these findings appear to affect all genders, there are gender differences in identity organization and the importance of romantic relationships. Women are more likely than men to establish their identity formation around interpersonal connectedness and intimacy (Johnson, Kent, & Yale, 2012), potentially explaining the increased symptoms of distress women experience when compared to men following relationship breakups (Zimmer-Gembeck, Hughes, Kelly, & Connolly, 2011). This may provide fertile ground for further study of these effects, but even across genders there is a clear effect of identity damage when relationships end during the college years.

The loss of identity when intimacy is lost adds weight to the potential presence of overlapping drives of identity and intimacy for modern young adults, causing confusion and potential identity formation around intimacy, rather than within it. Viewed through the lens of centrality, these studies suggest defining oneself strongly around a romantic relationship leads to a reduced ability to redefine oneself following the relationship’s dissolution, which may predict distress following the breakup. This has
received little attention in the literature to date. Thus far, research indicates individuals who define themselves around their relationship engage in greater relationship-protective behaviors in the face of a relationship threat (e.g., jealousy; Linardatos & Lydon, 2011). However, no study to date has conceptualized this self-definition as “centrality.” Furthermore, no study has explored the proposed concept of “relationship centrality” – defined in this study as an over-integration of a romantic relationship within an individual’s self-concept and/or self-narrative – as an individual predictor of distress following the dissolution of a romantic relationship.

With limited understanding of the role over-integration can play in the distress following a breakup, the use of common, insight-oriented, narrative exercises for treating the post-breakup distress is called into question.

1.4 Expressive writing as an intervention

Expressive writing, also termed experimental disclosure in some studies, is essentially a narrative task wherein individuals explore their thoughts and feelings about something by writing them down, freely and with as little self-editing as possible. Protocols differ slightly between studies and theorists, but Pennebaker’s expressive writing paradigm has served as the gold standard in accomplishing integration of a negative life event, including relationship dissolutions (Pennebaker, 1997). Pennebaker’s expressive writing paradigm has reduced distress in many samples following a negative life event by asking the writer to engage in their deepest thoughts and feelings about the event across multiple sessions, generally lasting 15 to 20 minutes in length.
(Pennebaker, 2010). This process is shown to reduce broad psychological and physical impairment following a negative life event or trauma (Frattaroli, 2006; Pennebaker, 1997).

There are multiple potential mechanisms by which expressive writing reduces distress. Pennebaker suggested a painful life experience leads to ongoing, stress-inducing inhibitory processes—intrusive thoughts and avoidance—which disclosure alleviates (Pennebaker, 1989). Additionally, the translation of a traumatic or negative life experience into language creates a pathway for meaning and narrative development. Participants who initially struggled to articulate their traumas were eventually able to produce a narrative, and this growth correlated with the reduction of their symptoms (Pennebaker, Mayne, & Francis, 1997). Pennebaker proposed that this transition—experiential into language—facilitates the cognitive process of integrating an event into an individual’s self-narrative (Pennebaker, 1997).

Expressive writing’s effects are well-supported overall: In a recent meta-analysis of expressive writing’s effects, the effect across studies was $r = .075$, a small but significant effect (Frattaroli, 2006). However, Pennebaker himself acknowledged roughly a third of his participants did not differ from controls (Pennebaker, 1993). In addition, a minority of participants reported the experience of expressive writing about a negative event to be unhelpful or objectionable (Frattaroli, 2006).

A concern presented in this project was the utility of expressive writing in cases where an individual has overly identified with a relationship. Despite the proven efficacy of expressive writing in relationship dissolution, there are ongoing questions as to when
the intervention is appropriate, and for whom it works. Range and Jenkins (2010) put forth an argument that little understanding of potential gender differences in expressive writing has been achieved, which is troubling given the previously-offered evidence that women ruminate more than men, and define themselves more around their relationships than men do. Similarly, certain personality traits affect how effectively expressive writing reduced distress in cancer patients, with individuals rated high on neuroticism experiencing increased distress immediately after the writing sessions, and at a 6-month follow-up, compared to participants low on neuroticism (Zakowski, Herzer, Barrett, Milligan, & Beckman, 2011). In order to ensure ethical and informed usage of such interventions, emphasis must be placed on discovering moderators which influence the efficacy of expressive writing. Of particular interest in this project is the influence of ruminative thinking on the effect of expressive writing, particularly in individuals who had defined themselves highly around their relationship and may be ruminating on its loss.

1.5 Rumination

Most commonly conceptualized as the unwanted, intrusive, and repetitive thinking about an event or concept, rumination is a predictor of distress following a trauma (Calhoun & Tedeschi, 1999). Rumination is one of the post-traumatic symptoms associated closely with centrality. In a study exploring the relationship between rumination, centrality, and post-traumatic distress and growth, individuals with high centrality of a negative life event were more likely to experience intrusive rumination
about that event. Yet even when controlling for the distress caused by intrusive ruminative thinking following a negative life event, centrality of an event uniquely predicted participant distress, though the change in $R^2$ was small ($\Delta R^2 = .02$; Groleau et al., 2012).

As expressive writing is an intervention requiring prolonged, in-depth examination of a potentially painful event or concept, ruminative thinking styles are of relevant concern in determining the efficacy and appropriateness of such an intervention. In one study, completing an expressive writing paradigm not only reduced the amount of brooding rumination participants experienced, but the change in brooding mediated the relationship between expressive writing and a significant reduction in depressive symptoms (Gortner, Rude, & Pennebaker, 2006). However, mixed results exist in the literature: After a marital separation, individuals who engaged in a meaning-making expressive writing exercise reported poorer outcomes afterward than individuals who did not complete the expressive writing paradigm, despite being matched in their desire to make meaning of the event (Sbarra, Boals, Mason, Larson, & Mehl, 2013). In contrast to the “brooding” style of rumination, when rumination is used deliberately and purposefully as it might be in a therapeutic setting, it relates positively to post-traumatic growth (Cann et al., 2011). This style of rumination may be called “reflective.” If the potential rumination used by expressive writing may be construed as “deliberate,” then it may contribute to growth and post-dissolution recovery. With some individuals, however, expressive writing may represent another opportunity to engage in negative ruminative thinking.
Like centrality and romantic relationships, rumination is related to the formation and maintenance of identity. Recent work examining cognitive models of identity and memory suggests autobiographical memories are highly-accessible and associated with the goals and concepts with which one identifies (Conway & Pleydell-Pearce, 2000). An "overgeneral" preference for autobiographical memory (i.e., recalling broad memories rather than specific moments) related to depression and ruminative thought in a sample of adolescents following negative, stressful life events (Hamlat et al., 2014). Similarly, Romero, Vazquez, and Sanchez (2014) found that "brooding" rumination – dwelling on negative, hurtful thoughts with no gain – was associated with depressive adults using non-specific autobiographical memories. Thus, the more someone identifies with a memory or a concept, the easier it is to continue to access, and when that memory is broad rather than specific (e.g., a romantic relationship rather than a specific date), the effects can lead to negative ruminative thought and depressive symptoms. Research is currently mixed, or silent, on the potentially combinative effect of ruminative thinking and the centrality of a concept to an individual’s identity, particularly regarding the distress-reducing utility of expressive writing paradigms.

1.6 Present Study

This study examined the role of centrality of a romantic relationship in predicting an individual’s distress following the dissolution of that relationship. Centrality has been examined primarily in trauma research, and has not been previously applied to research on romantic relationships. Furthermore, the efficacy of expressive writing interventions
on reducing post-breakup distress was explored in the context of relationship centrality and ruminative thinking styles.

After reviewing and integrating past research in centrality, romantic relationships and identity-formation, the utility of expressive writing, and the effects of rumination, it was hypothesized that:

1. Participant ratings of their relationship centrality correlate with relationship characteristics, such that the more participants define themselves by their previous relationship, the greater their reported investment in the relationship will be, and the lesser the amount of psychological distance (e.g., "moving on" by beginning a new relationship) they will report between themselves and their previous relationship.

2. Relationship centrality correlates positively with distress associated with a negative life event or trauma (i.e., rumination, intrusive thoughts, and avoidance).

3. An individual’s overall distress following dissolution of a romantic relationship at Time 1 is uniquely predicted by the self-reported centrality of the romantic relationship, above and beyond demographics of the relationship and an individual’s ruminative thinking style at Time 1.

4. Participants who complete the expressive writing paradigm will experience greater reductions in ruminative thinking and general distress from Time 1 to Time 2, compared to participants who complete a neutral, control writing task.
5. Relationship centrality predicts changes in distress from Time 1 to Time 2 (with lower levels of centrality predicting a greater decrease in distress over time), but the effect is partially mediated by change in rumination from Time 1 to Time 2 (with decreases in rumination contributing to decreases in distress).

6. The mediating effect of change in rumination from hypothesis 5 is moderated by the expressive writing condition – that is, individuals who completed the expressive writing condition will experience the mediation effect, while it will not hold true for individuals who did not complete the expressive writing paradigm. Participants who did not complete the expressive writing paradigm will not experience a change in rumination, thus they will not experience the mediational effect of change in rumination.
CHAPTER 2

METHOD

2.1 Participants

One-hundred and ninety-one participants were recruited through an online data collection database (SONA) at the University of North Texas, and were compensated with course credit in psychology classes. In order to qualify for the study, participants must have been in a relationship breakup within 6 months prior to the study, provided the previous relationship lasted at least 2 months. These exclusion criteria were placed in this study to prevent overly-retrospective responses and the potential dilution of distress alleviation due to possible improvement in the time following a breakup.

Of the final sample of 191 participants, 86 were assigned to the control group and 105 were assigned to the experimental group (due to the extra commitment requested of the experimental group, I intentionally oversampled to offset potential dropout disparity in the final results). However, 22 participants overall failed to meet the study criteria for having ended their relationship within 6 months of the study, and were excluded from analyses. Though age was not an initial criterion for inclusion, there were 8 additional participants who represented outliers (i.e., ages 27 – 46). In order to improve external validity in regards to the population of interest (i.e., young adults), the 8 participants over the age of 26 were excluded from all analyses. Thus, 9 participants from the control group and 21 participants from the experimental group were eliminated from analyses. Finally, due to computer error between phases of data
collection, 10 participants’ data at Time 2 (follow-up) were lost, and attempts to restore the data from computer servers were unsuccessful.

The total number of qualifying participants at Time 1 was 161, with 77 participants in the control group and 84 participants in the experimental group. Out of the 161 qualified participants at Time 1, 121 completed the follow-up session at Time 2, with 61 participants in the control group and 60 in the experimental group. Despite the extra time commitment required from participants in the experimental condition, there was no significant difference between participants who completed the study and those who did not based on group assignment ($X^2 (1, N = 121) = 1.31, p = .253$). The sample of 161 participants at Time 1 is referred to throughout this study as the "initial sample", and the sample of 121 participants who completed the study is referred to as the "final sample." Preliminary comparisons and hypotheses which address data gathered only at Time 1 use the initial sample of 161, and hypotheses testing the effects throughout the study use the final sample of 121.

2.2 Study Measures

2.2.1 Individual demographics

Individuals were asked during the first session to provide the following information: Their age, race/ethnicity, gender identity, sexuality, and undergraduate class year. Based on previous studies, only age, race, and gender identity were examined in this study as potential covariates.
2.2.2 Relationship demographics

Individuals responded to items describing the length of their relationship, amount of time since the breakup, the gender identity of their ex-partner, who initiated the breakup of the couple (i.e., participant, ex-partner, mutual, or unclear), the perceived cause of the breakup, whether alternative relationship partners were present for the participant, perceived commitment level of self and partner as rated on separate four-point scales (i.e., “Not committed,” “somewhat committed,” “strongly committed,” or “very strongly committed”), perceived pain of the breakup, and current relationship status (Boelen & Van Den Hout, 2010). These questions were administered during the first session. Follow-up questions in the final sessions were administered to ascertain their relationship status, whether they had reconnected with their ex-partner, and any significant positive or negative life events that occurred since the first session. Due to their number and their role as independent variables in this study, the means and analysis of relationship demographics are listed under the results section. These questions are presented in Appendix A for Time 1, and Appendix B for Time 2.

2.2.3 The Centrality of Relationship Scale (CRS)

The CRS was adapted from the Centrality of Events Scale (CES; Berntsen & Rubin, 2006b). The Centrality of Events Scale (CES) measures the centrality of negative events by asking individuals to rate how strongly they agree with 7 statements using a 5-point Likert scale (e.g., “I feel that this event has become a central part of my life story.”) with a score of 1 indicating total disagreement and a score of 5 representing
total agreement. Questions were reworded to assess the centrality of a previous romantic relationship rather than an event, creating the Centrality of Relationship Scale (CRS). The CRS is the same length as the CES (7 questions), but appraises past relationships (e.g., “I feel that this relationship had become part of my identity.”). Thus, scores could range from 7 to 35. All participants completed the CRS in the first session.

As the CRS represents a change from the CES, an analysis of its reliability and validity was performed prior to this study. The 7-item CRS was shown to be internally consistent (α = .91), as well as showing acceptable validity on both criterion and construct-relevant measures (Nowlin, 2013, April). This is consistent with the Cronbach’s alpha for this study’s sample at Time 1 (α = .91, N = 160) and the full sample of participants who completed the study (α = .91, N = 121).

2.2.4 The Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979).

The IES is a 15-item measure of reactions to a traumatic or negative life event, rated on a 4-point Likert scale. The IES is comprised of two factors. The Avoidance scale measures the extent to which an individual avoids thoughts and stimuli that remind them of the event, and scores on this scale range from 8 to 32. The Intrusion scale measures the frequency and potency of intrusive thoughts about the event in question, and is scored in a range from 7 to 28. Given the symptomatic similarities between the effects of a traumatic event and the dissolution of a significant relationship, both scales of the IES are included in this project as measures of a stress
response to a breakup. The IES has been similarly used in other studies examining the negative effects of relationship dissolution (Boals & Klein, 2005; Smith & Cohen, 1993).

The IES Avoidance scale with the full Time 1 sample showed acceptable reliability, though lower than the Intrusion scale ($\alpha = .76$, $N = 160$). The Time 1 Avoidance scale was similar for the final sample of participants who completed the study ($\alpha = .75$, $N = 121$). At Time 2, the IES Avoidance scale reliability increased ($\alpha = .84$, $N = 121$).

The IES Intrusion scale displayed high reliability with the full sample at Time 1 ($\alpha = .90$, $N = 160$), and when assessing the Time 1 scores for participants who completed the study ($\alpha = .90$, $N = 121$). The IES Intrusion scale at Time 2 also displayed excellent reliability ($\alpha = .91$, $N = 121$).

2.2.5 The Perseverative Thinking Questionnaire (PTQ; Ehring et al., 2011)

The PTQ is a 15-item measure of repetitive negative thinking (RNT). As with the CRS, directions on the PTQ were altered to ask participants to focus on “your breakup” rather than “negative experiences or problems.” This was intended to measure the state rumination surrounding the dissolution without the confounding components related to depressive mood found in many other repetitive thought inventories. Participants rate items on a 5-point scale for the frequency with which the items apply to them, with 1 meaning “never” and 5 meaning “almost always,” resulting in a score range from 15 to 75. Example items include: “The same thoughts keep going through my mind” and “I feel driven to continue dwelling on the same issue.”
The underlying structure of the PTQ was examined in a previous study, revealing one overall measure of RNT, and three lower-order factors: core characteristics of RNT (repetitiveness, intrusiveness, and difficulties to disengage), unproductiveness of RNT, and RNT captured mental capacity. Internal consistency for the overall scale was found to be excellent (0.95), with both convergent and predictive validity upheld (Ehring et al., 2011). In this project, the overall scale of RNT served as a measure of ruminative thought, though future analyses may explore the components of RNT as measured by the lower-order factors.

The PTQ scores collected at Time 1 with the full sample show excellent reliability ($\alpha = .96, N = 160$), as do the scores from Time 1 when only examining the sample of participants who completed the study ($\alpha = .97, N = 121$). Likewise, the PTQ displayed excellent reliability when collected during the follow-up session ($\alpha = .96, N = 121$).

2.2.6 The Hopkins Symptom Checklist - 58 Items (HSCL-58; Derogatis, 1974)

The HSCL is a commonly-cited measure of general distress for use in non-clinical, outpatient populations. The HSCL uses 58 items across five subscales (i.e., somatization, obsessive-compulsivity, interpersonal sensitivity, depression, and anxiety) to assess distress across many domains of psychological health. Participants read a symptom and mark how much that particular experience has distressed them in the time since their breakup. Each item is rated on a Likert scale from 1 to 4, with 1 representing "not at all," and a 4 marking "extremely."
Though each of the scales displayed acceptable reliability at each time point, it is worth noting the Cronbach's alpha for all items on the HSCL at Time 1, with the complete sample of 160, was higher than any of the individual scales' reliability at a Cronbach's alpha of .98. As this study is an examination of the role centrality plays in predicting distress following a breakup, and less concerned with the specific nature of that distress, this study will use a total sum score of the HSCL as a dependent variable (a possible score thus ranging from 58 to 232), as was demonstrated in the original article for the measure (Derogatis, 1974).

2.2.7 Expressive writing

Pennebaker's Expressive Writing task is an intervention used to assist with the exploration and integration of life events into one's self-narrative. The frequency and duration of writing sessions vary between studies, but participants or clients are instructed to write about a topic, exploring their deepest thoughts and feelings while doing so. In this study, participants in the experimental condition received the following instructions:

In the space below, please describe the relationship and the subsequent breakup of which you referred to in the previous questionnaires. I would like for you to really let go and write about your deepest thoughts and feelings about the relationship. You may write about things you did together, events that happened to you, how the relationship affected your life, and/or explore your emotions about the relationship and the breakup. No one other than the researchers involved in this project will have access to your writing. You will have 15-20 minutes to write, do not worry about spelling or grammar.
2.3 Procedure

Participants were recruited from the University of North Texas using the SONA system, and were assigned randomly to an experimental or a control group. Study measures were collected in-person, using a lab space with private computer cubicles for each participant, and each task was presented on the computer. Participants in both groups completed surveys of their personal demographics, relationship demographics, emotional intensity of their previous relationship, and an index of the health of their previous relationship before completing a writing exercise. The experimental group engaged in the expressive writing exercise explained in the measures section, while the control group was asked instead to describe their actions the day of the writing exercise, in a factual, concrete manner. Following the writing, participants in both groups completed questionnaires measuring the centrality of their relationship, their coping styles, their level of repetitive negative thinking, their intrusive and avoidant thoughts, and general psychological distress following their breakup. The collection of data at Time 1 lasted between 45 minutes to one hour.

Participants in the experimental group were asked to return one week after Time 1, for a second session of the expressive writing exercise. No additional data was gathered at this point. The second data collection point, Time 2, occurred three weeks after Time 1. All participants were asked to return for Time 2 for follow-up data collection, where they again completed questions regarding their demographics, including any changes in their life (e.g., reconnecting with ex, dating someone new, any significant or stressful life changes [positive or negative]). Finally, all participants
completed again the measures of psychological and physical distress following their breakup, thus re-assessing their coping styles, their level of RNT, their intrusive and avoidant thoughts, and overall distress following the study’s experimental intervention (or lack thereof). Time 2’s data collection lasted an average of 20 minutes.

This procedure was developed as part of a separate study to examine emotional coping styles, and thus the writing component was placed prior to all outcome measures in order to prevent accidental priming of writing responses in all participants, including those who would be told to write only concretely and objectively, without feelings.

2.4 Method Alterations

As stated in the participant information section, there were unanticipated complications throughout data collection and analysis that require comment. First, during the later phases of data collection, it was revealed there was a significant imbalance in male and female participants across both groups. Thus, recruitment became targeted toward males only in the last phase of collection in order to achieve balanced groups. Any potential gender effects were analyzed and are presented in the Results section.

There were additionally times when computer malfunctioning interrupted the collection of data, or the later recall of that data for analyses. When errors occurred during collection, participants were offered credit for the time they participated if they did not wish to restart the session, and were also offered a replacement session.
opportunity. Though we lack demographic data on participants who chose not to continue, assuming computer error was random, the lack of significant disparity between participants who completed the first session and those who completed the entire protocol ensures it is reasonable to assume equanimity between participants who completed the first session following an error, and those who did not. As mentioned previously, further computer error led to the loss of 10 consecutive participants’ data for the follow-up session at the end of a collection period. Attempts to reclaim data from the servers were unsuccessful, but as the participants had been assigned randomly at Time 1, this error also represents randomized loss.

2.5 Data Analysis Plan

The first phase of data analysis included testing the assumptions of the analyses to be used (e.g., regression and MANOVA), including the normality of the sample, the linearity of results, collinearity between variables, and homoscedasticity. Descriptive statistics of the sample were further explored, to ensure results could be interpreted in line with previous research in this area. Before testing specific hypotheses, correlation matrices between demographic variables, centrality, and outcome variables were created to assess potential confounds and mediators within the data. Potential moderators such as race, gender identity, or sexual orientation were included in these analyses.

Hypothesis 1 stated relationship centrality would be related to commonly-researched relationship demographics (e.g., length of relationship, commitment of
partners in relationship, etc.). Scores on the Centrality of Relationship Scale (CRS) were correlated against three scales derived from the relationship demographic variables using a factor analysis (presented in the Results section). Greater amounts of centrality were predicted to correlate positively with participant investment, and correlate negatively with psychological distance from the relationship.

Hypothesis 2 predicted relationship centrality would also correlate with outcomes associated with a negative life event or trauma (i.e., rumination, intrusive thoughts, and avoidance). This was tested with a partial correlation, controlling for age, gender identity, race, and relationship characteristics. Scores on the CRS were predicted to correlate positively with rumination (as measured by scores on the Perseverative Thinking Questionnaire [PTQ]), and avoidance and intrusive thoughts (as measured by scores on the Impact of Events Scale [IES]).

Hypothesis 3 predicted an individual’s overall distress following dissolution of a romantic relationship at Time 1 would be uniquely predicted by the self-reported centrality of the romantic relationship, above and beyond demographics of the relationship and a ruminative thinking style. This was tested with a hierarchical regression, using the Hopkins Symptom Checklist (HSCL) as the dependent variable. After entering variables to control for, the second block entered into the model were relationship demographics, followed by scores on the PTQ in the third block as a measure of ruminative thought, and finally the fourth block consisted of scores on the CRS.
Hypothesis 4 stated participants who completed the expressive writing paradigm would experience greater reduction in ruminative thinking and general distress from Time 1 to Time 2 than participants who did not complete the expressive writing paradigm. This was tested using a repeated measures MANCOVA, with HSCL and PTQ at times 1 and 2 as the dependent variables, and expressive writing condition as the grouping variable.

Hypothesis 5 stated relationship centrality would predict a change in distress from Time 1 to Time 2, but this relationship would be mediated by the participants’ change in rumination from Time 1 to Time 2. This was tested using the Baron and Kenny (1986) method for assessing mediation. In order to establish the change over time for the PTQ, an initial regression model was run, entering PTQ at Time 1 as a predictor and PTQ at Time 2 as the dependent variable, then saving the standardized residuals of that process. To test the first step of the mediation model, Time 1 HSCL scores were regressed on Time 2 HSCL scores, then the CRS was entered as the predictor variable to account for remaining variance in HSCL score changes. Following this step, predictive relationships were to be established between PTQ change and HSCL change, and between CRS scores and PTQ change. Finally, the initial model would be re-analyzed, entering PTQ change at the last step. If the initial model was no longer significant, or the significance was reduced significantly, PTQ change would have been identified as a partial mediator of the relationship between CRS scores and change in HSCL scores.
Hypothesis 6 predicted the mediation effect between relationship centrality and distress would be moderated by expressive writing condition. The proposed effect was to be tested using the guidelines laid out by Preacher, Rucker, and Hayes (2007) for moderated mediation modeling. This hypothesis predicted entering the expressive writing condition into the model would affect the strength of that predictive relationship, demonstrating centrality’s hypothesized inhibitory effect on the utility of introspective interventions such as expressive writing.
CHAPTER 3

RESULTS

3.1 Univariate Descriptives, Group Comparisons, and Attrition Analyses

Descriptive information regarding participant and relationship demographics in this study are listed below, beginning with individual demographics, summarized in Tables 3.1 and 3.2. Preliminary comparisons for demographics collected at Time 1 were performed on the initial sample at Time 1 (N = 161) and the complete sample at Time 2 (N = 121), in order to ascertain differences between control and experimental groups in both samples, and to assess for any patterns in attrition. Overall, attrition in this sample fell within the same proportion as other brief longitudinal studies assessing breakups (Fagundes, 2012).

Table 3.1

<table>
<thead>
<tr>
<th></th>
<th>M_{age} (SD)</th>
<th>% Men</th>
<th>%Women</th>
<th>% White</th>
<th>% Non-White</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample</td>
<td>19.60 (1.56)</td>
<td>47.2%</td>
<td>52.8%</td>
<td>45.3%</td>
<td>54.7%</td>
</tr>
<tr>
<td>Control</td>
<td>19.60 (1.40)</td>
<td>48.1%</td>
<td>51.9%</td>
<td>49.4%</td>
<td>50.6%</td>
</tr>
<tr>
<td>Experimental</td>
<td>19.60 (1.70)</td>
<td>46.4%</td>
<td>53.6%</td>
<td>41.7%</td>
<td>58.3%</td>
</tr>
</tbody>
</table>

Note. n for control group = 77, n for experimental group = 84.
Table 3.2

*Individual Descriptive Statistics by Group - Final Sample (N = 121)*

<table>
<thead>
<tr>
<th></th>
<th>$M_{\text{age}}$ (SD)</th>
<th>% Men</th>
<th>% Women</th>
<th>% White</th>
<th>% Non-White</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample</td>
<td>19.58 (1.56)</td>
<td>46.3%</td>
<td>53.7%</td>
<td>47.1%</td>
<td>52.9%</td>
</tr>
<tr>
<td>Control</td>
<td>19.57 (1.40)</td>
<td>45.9%</td>
<td>54.1%</td>
<td>52.5%</td>
<td>47.5%</td>
</tr>
<tr>
<td>Experimental</td>
<td>19.58 (1.72)</td>
<td>46.7%</td>
<td>53.3%</td>
<td>41.7%</td>
<td>58.3%</td>
</tr>
</tbody>
</table>

*Note.* $n$ for control group = 61, $n$ for experimental group = 60.

3.1.1 Individual demographics

3.1.1.1 Age

The initial sample of participants at Time 1 was 19.60 years old on average ($SD = 1.56$), in a distribution that ranged from 18 years to 25 years with no significant skew (1.08) or kurtosis (1.02). The final sample of participants at Time 1 was 19.58 years old on average ($SD = 1.56$), in a distribution that ranged from 18 years to 25 years with no significant skew (1.24) and kurtosis (1.69). There was no significant difference in age between control ($M = 19.60$, $SD = 1.40$) and experimental ($M = 19.60$, $SD = 1.70$) groups ($t(159) = .01, p = .993$) groups or between participants who completed the final study session measures ($M = 19.58$, $SD = 1.56$) and those who did not ($M = 19.65$, $SD = 1.58$; $t(159) = .25, p = .802$). Examining the final sample of 121 participants, there remained no significant difference between the control ($M = 19.57$, $SD = 1.40$) and experimental ($M = 19.58$, $SD = 1.72$) groups on participant age ($t(119) = -.03, p = .973$).
3.1.1.2 Gender Identity

At Time 1, 52.8% of the initial sample identified as women (n = 85), and 47.2% of the sample identified as men (n = 76). The control group was comprised of 40 women and 37 men, and the experimental group of 45 women and 39 men; neither group showed a significant disparity in gender identity at Time 1 (χ² (1, N = 161) = .04, p = .837). No significant discrepancy in gender identity existed between the control or experimental groups of the final sample (χ² (1, N = 121) = .01, p = .933).

Of participants who completed the study, 65 were women and 56 were men, while the non-completing group contained 20 women and 20 men. No disparity in gender identity was present between participants who completed the study and participants who did not (χ² (1, N = 161) = .17, p = .683). In the final sample of participants who completed the study, the control group contained 33 women and 28 men, while the experimental group was 32 women and 28 men. Again, no significant discrepancy in gender identity existed between the groups (χ² (1, N = 121) = .01, p = .933).

3.1.1.3 Race

The initial sample was 45.3% White (n = 73), 23.0% Hispanic/Latino (n = 37), 18.6% African American/Black (n = 30), and 8.7% Asian (n = 14). There were no significant differences between the racial makeup of the control or experimental groups at Time 1 (χ² (6, N = 161) = 7.68, p = .263), nor were there significant differences in
the race of participants who completed the study and those who did not ($X^2 (6, N = 161) = 8.33, p = .215$).

The final sample of participants who completed the study was 47.1% White ($n = 57$), 19.8% Hispanic/Latino ($n = 24$), 18.2% African American/Black ($n = 22$), and 9.9% Asian ($n = 12$). There remained no significant difference in racial distribution between participants in the control and experimental groups of the final sample ($X^2 (6, N = 121) = 7.53, p = .184$).

3.1.2 Relationship demographics

Descriptive statistics of the variables related to relationship dyads between participants and their ex-partners are listed below for the initial sample and the final sample. A comparison of means is presented to test for any potential differences between individuals who completed the study and those who did not, as well as any differences between the experimental and control groups at Time 1. Relationship demographics collected at Time 1 are presented in Appendix A, and demographics collected at follow up (Time 2) are located in Appendix B.

3.1.2.1 Length of relationship.

The average length of relationship for the initial sample at Time 1 was 17.66 months ($SD = 14.32$), with a minimum length of 2 months (the lowest required for participation in the study), and a maximum length of 73 months (6 years). The distribution was slightly positively skewed, with the majority of relationships falling
between 6 to 18 months in length (skew = 1.41). The average length of relationship for
the final sample at Time 1 was 16.20 months (SD = 12.91). The control group of the
initial sample had a mean relationship length of 15.35 months (SD = 12.75), while the
experimental group had a mean length of 19.79 months (SD = 15.40). Further analysis
revealed the experimental group average was significantly longer than the control
group average, despite random assignment (t(159) = -1.98, p = .049).

Likewise, non-completers' relationship length (M = 22.10 months, SD = 17.39)
was longer on average than that reported by the participants who completed the study
(M = 16.20 months, SD = 12.91), which represents an effect size of d = .39. Levene's
test for inequality of variance was violated, thus the t test for unequal variances was
used to compare their means, which indicated the difference only approached statistical
significance (t(53.92) = 1.98, p = .053). Still, the differences indicated a need to control
for this variable in analyses of groups, and hinted that individuals with longer
relationships were less likely to return to a study asking painful questions about their
breakup. The sample that completed the full study showed no difference in the length
of relationship between the control group (M = 14.59 months, SD = 12.01) and the
experimental groups (M = 17.83 months, SD = 15.40; t(119) = -1.39, p = .168).

3.1.2.2 Time since breakup

The average number of weeks since the breakup occurred for the initial sample
at Time 1 was 13.02 weeks (SD = 7.15), with a minimum of 1 week prior to the study
and a maximum of 24 weeks, as that was the longest time allowed for participation in
the study. The average time since breakup of the final sample of participants who completed the study was 13.02 weeks ($SD = 7.24$). There was no significant difference between the control and experimental groups on the time since the breakup occurred at Time 1 ($t(159) = -.94, p = .350$). There was also no significant difference between the participants who completed the study and those who did not on the length of time since their breakup ($t(159) = .01, p = .995$). Likewise, no difference was detected between the control ($M = 12.02, SD = 7.30$) and experimental ($M = 14.03, SD = 7.08$) participants who completed the study ($t(119) = -1.54, p = .126$).

3.1.2.3 Presence of infidelity

In both the initial and final samples, 41% percent of participants believed infidelity played a role in their relationship dissolution ($n_{\text{initial}} = 66, n_{\text{final}} = 50$), while 59% believed it did not ($n_{\text{initial}} = 95, n_{\text{final}} = 71$). There was no significant difference in infidelity's presence between the control and experimental groups at Time 1 ($X^2 (1, N = 161) = .25, p = .616$), nor was there a difference between participants who completed the study and those who did not ($X^2 (1, N = 161) = .02, p = .883$). Likewise, there was no difference in group assignment on this variable within participants who completed the study ($X^2 (1, N = 121) = .20, p = .656$).

3.1.2.4 Breakup initiator

In 44.1% of the initial sample participants' relationships, they cited themselves as the breakup initiator ($n = 71$), whereas their partner was deemed responsible in
30.4% of the cases ($n = 49$), and responsibility was shared between the partners in 25.5% of cases ($n = 41$). In 47.9% of the final sample participants' relationships, they were the breakup initiator ($n = 58$), their partner was the initiator in 26.4% of the cases ($n = 32$), and responsibility was shared between partners in 25.6% of the cases ($n = 31$). There was no difference in initiator identity between the control and experimental groups at Time 1 ($X^2 (2, N = 161) = 3.78, p = .151$), or between participants who completed the study and those who did not ($X^2 (2, N = 161) = 4.17, p = .124$). There was no group difference on initiator status in the final sample of participants who completed the study, ($X^2 (2, N = 121) = 4.20, p = .122$).

### 3.1.2.5 Breakup resistance

When asked to rate whether either of the partners resisted the decision to end the relationship, 32.3% of the initial sample at Time 1 said their ex-partner alone resisted it ($n = 52$), 25.5% said they resisted alone ($n = 41$), 24.8% said both partners resisted the breakup ($n = 40$), and 17.4% reported that neither partner resisted ($n = 28$). There was no difference in breakup resistance between the initial sample control and experimental groups ($X^2 (3, N = 161) = 3.07, p = .381$), or between participants who completed the study and those who did not ($X^2 (3, N = 161) = 4.67, p = .198$). Though it is approaching significance, in the final sample of participants who completed the study, there was no significant difference in resistance to the breakup between the control and experimental groups ($X^2 (3, N = 121) = 6.42, p = .093$).
3.1.2.6 Individual commitment to relationship

Participants rated their personal commitment to the relationship (before it ended) on a 4-point Likert scale from "Not Very Committed" to "Very Strongly Committed," with a 4 being greater commitment. On average, participants at Time 1 rated their commitment at 3.20 (SD = .75) suggesting strong commitment to their relationships overall. There was no difference between control and experimental groups at Time 1 on their self-rating of commitment to their previous relationship (t(159) = 1.10, p = .274). There was also no difference between the control (M = 3.23, SD = .72) and experimental (M = 3.05, SD = .79) participants who completed the study on their self-rated commitment to the previous relationship (t(119) = 1.31, p = .193).

The ratings of commitment between participants who completed the study (M = 3.14, SD = .76) and those who did not (M = 3.40, SD = .71) approached significance (t(159) = 1.91, p = .058; d = .35, indicating there may have been an effect of commitment in determining who was likely to return to complete the study, with participants who rated themselves higher in commitment to their previous relationship being less likely to complete the study.

3.1.2.7 Partner’s commitment to relationship

Similarly, participants were asked to rate their perception of their partner's commitment to the relationship before it ended, using the same 4-point Likert scale as
the personal commitment item. On average in the initial sample, participants at Time 1 rated their partner’s commitment as 2.77 ($SD = .96$), slightly lower than the overall average of their own commitment to the previous relationship. The average for the final sample was 2.79 ($SD = .94$). There was no difference between participants who completed the study ($M = 2.79$, $SD = .94$) and those who did not ($M = 2.73$, $SD = 1.01$; $t(159) = -.34$, $p = .732$). Altogether, there was no difference on the mean partner’s commitment to the previous relationship between control ($M = 2.74$, $SD = .81$) and experimental ($M = 2.83$, $SD = 1.06$) participants ($t(119) = -.56$, $p = .579$).

3.1.2.8 Pain of breakup

Using a single item to screen for overall perception of painfulness of the breakup, participants rated their experience on a 4-point Likert scale, with 1 being “Not at all painful” and 4 being “Extremely painful.” The initial and final sample's average pain rating was equal, at 2.93 ($SD = .79$), indicating moderate pain. There was no difference between the initial sample control ($M = 2.97$, $SD = .86$) and experimental ($M = 2.89$, $SD = .73$) groups on the painfulness of the breakup ($t(159) = .65$, $p = .517$), nor was there a difference between participants who completed the study ($M = 2.93$, $SD = .79$) and those who did not ($M = 2.95$, $SD = .82$; $t(159) = .17$, $p = .867$). Finally, the ratings of pain were not different between the control ($M = 2.98$, $SD = .82$) and experimental ($M = 2.87$, $SD = .77$) groups of participants who completed the entire study ($t(119) = .82$, $p = .416$).
3.1.2.9 Recovery after breakup

The average rating of post-breakup recovery for the initial sample was 2.71 (SD = .85), and the average rating of post-breakup recovery for the final sample was 2.69 (SD = .83), both indicating mild to moderate recovery. The mean ratings of recovery for control and experimental participants for the initial sample were identical (M = 2.71, SDcontrol = .87, SDexperimental = .83), and there was no significant difference between participants who completed the study (M = 2.69, SD = .83) and those who did not (M = 2.78, SD = .92) on their perceived recovery at Time 1 (t(159) = .52, p = .603). There was no difference between the final sample’s control (M = 2.62, SD = .82) and experimental (M = 2.77, SD = .83) groups of participants on perceived recovery (t(119) = -.96, p = .340).

3.1.2.10 Relationship alternatives

Participants were also asked to rate their agreement on the following statement: “I had little trouble finding another romantic partner who could replace my ex.” This question was intended to gather information on whether participants felt they had viable relationship alternatives or not, and was rated on a 5-point Likert scale, with 1 indicating “Strongly disagree” and 5 indicating “Strongly agree.”

Participants in the initial sample rated their perceived relationship alternatives as a 2.98 on average (SD = 1.27), and participants in the final sample’s average was 3.07 (SD = 1.25), which indicated relative neutrality on the issue, though the variance in scores was high for the scale in question. There was no difference between the initial
sample's control ($M = 3.00$, $SD = 1.26$) and experimental ($M = 2.95$, $SD = 1.28$) participants at Time 1 on their perception of relationship alternatives ($t(159) = .24$, $p = .812$), nor was there a difference between participants who completed the study ($M = 3.07$, $SD = 1.25$) and those who did not ($M = 2.68$, $SD = 1.27$) on their perception of alternatives ($t(159) = -1.74$, $p = .083$). Lastly, within participants who completed the study, there was no difference between control ($M = 3.08$, $SD = 1.27$) and experimental ($M = 3.07$, $SD = 1.25$) groups on perceived alternatives ($t(119) = .07$, $p = .947$).

3.1.2.11 New relationship status

For the initial sample, 44 participants (27.3%) stated they were currently in a new relationship, 106 participants (65.8%) stated they were not, and 11 participants (6.8%) were unsure. In the final sample, 34 participants (28.1%) stated they were currently in a new relationship, 78 participants (64.5%) stated they were not in a new relationship, and 9 participants (7.4%) said maybe. There was not a significant difference in control or experimental group assignment between those who were in a new relationship and those who were not at Time 1 ($X^2 (2, N = 161) = 1.37$, $p = .503$), nor was there a significant difference between those who completed the study and those who did not on whether they were in a new relationship at Time 1 ($X^2 (2, N = 161) = .51$, $p = .776$). There was no difference in group assignment between participants who had or had not entered a new relationship at Time 2 ($X^2 (2, N = 121) = 1.57$, $p = .456$).
3.1.3 Follow-up questions

Participants who returned for the Time 2 (N = 121) were asked to complete questions about any changes in their relationship status in the three weeks since the first session. Results are presented below.

3.1.3.1 Reunited with ex

When asked whether they had reunited with their ex in the break since the first study appointment (a span of roughly 2-3 weeks), 13.2% of participants (n = 16; 10 control, 6 experimental) said yes, while 86.8% (n = 105; 51 control, 54 experimental) responded no. There was no discrepancy in group assignment between individuals who had reunited with their ex and those who had not ($\chi^2 (1, N = 121) = 1.08, p = .299$). Of those who answered in the affirmative, 12 were still together with their ex at Time 2 (6 in both groups), while 4 had broken up again (all control participants).

3.1.3.2 New relationship

Similarly, participants were asked whether they had started a new romantic relationship since the first study appointment. Twelve participants said they had (5 control participants, 7 experimental participants), while 93 participants had not. The distribution of new relationships between groups was as predicted ($\chi^2 (2, N = 107) = 2.12, p = .347$). Due to the low sample size of new relationships, further between-group analyses were not carried out (e.g., differences in length of new relationship between control and experimental groups).
3.1.4 Factor analysis

In order to simplify relationship demographic information reported at Time 1 \(N = 161\), and to increase degrees of freedom available for final analyses, an exploratory factor analysis was conducted on relationship demographic variables that correlated significantly with each other (each variable correlated significantly with multiple selected variables, and had at least one correlation above .25 therein). The 11 variables initially tested were: length of relationship, time since the breakup, presence of infidelity in the relationship, initiator status of breakup, resistance of breakup, participant's amount of commitment to the relationship, ex's perceived commitment to the relationship, amount of pain associated with the breakup, amount of perceived recovery since the breakup, presence of alternative relationships, and whether the participant had begun a new relationship. The initial analysis suggested these items were adequately factorable, with a Kaiser-Meyer-Olkin measure of sampling adequacy above .60 (.62 in the initial test), and a significant Bartlett's test of sphericity \(X^2 (55) = 246.32, p < .001\), and communalities were all above .5 among the variables selected. Four factors were initially suggested in this exploratory analysis, explaining 58.55% of the variance. However, many items were significantly cross-loaded and the rotated factors were difficult to interpret, thus a principle component analysis was run using a three-factor solution with the same variables.

The three-factor solution explained 49.17% of the variance in the Time 1 sample. However, communality decreased past usability for the variable measuring presence of alternative relationships resulting in low loading values and cross-loading.
Similarly, length of the relationship showed significant cross-loading across two of the three factors. Thus, both variables were dropped, and the three-factor analysis was run again, using the 9 remaining variables. The factor loadings in the final analysis are presented below, in Table 3.3.

Table 3.3

*Factor Loadings and Communalities for Relationship Demographics (N = 161)*

<table>
<thead>
<tr>
<th></th>
<th>F1 - P Investment</th>
<th>F2 - Ex Investment</th>
<th>F3 - Distance</th>
<th>Communality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time Since Breakup</td>
<td>.03</td>
<td>.22</td>
<td>.62*</td>
<td>.44</td>
</tr>
<tr>
<td>2. Presence of Infidelity</td>
<td>-.05</td>
<td>.21</td>
<td>-.68*</td>
<td>.51</td>
</tr>
<tr>
<td>3. Initiator Status</td>
<td>.35</td>
<td>-.66*</td>
<td>-.19</td>
<td>.60</td>
</tr>
<tr>
<td>4. Breakup Resistance</td>
<td>-.09</td>
<td>.80*</td>
<td>.15</td>
<td>.67</td>
</tr>
<tr>
<td>5. Participant Commitment</td>
<td>.79*</td>
<td>.11</td>
<td>.06</td>
<td>.63</td>
</tr>
<tr>
<td>6. Ex-Partner Commitment</td>
<td>.17</td>
<td>.70*</td>
<td>-.22</td>
<td>.57</td>
</tr>
<tr>
<td>7. Pain of Breakup</td>
<td>.84*</td>
<td>-.19</td>
<td>-.03</td>
<td>.74</td>
</tr>
<tr>
<td>8. Recovery Since Breakup</td>
<td>-.52*</td>
<td>.09</td>
<td>.38</td>
<td>.42</td>
</tr>
<tr>
<td>9. New Relationship</td>
<td>-.23</td>
<td>.06</td>
<td>.67*</td>
<td>.51</td>
</tr>
</tbody>
</table>

Note: *included in factor

Time since breakup measured in weeks. Infidelity coded as 1 = Yes, 2 = No. Initiator coded as 1 = I did, 2 = I somewhat did, 3 = We both did, 4 = My partner somewhat did, 5 = My partner did. Resistance coded as 1 = self, 2 = both/neither, 3 = ex-partner. Participant and ex-partner commitment coded 1 = not very committed, 2 = somewhat committed, 3 = strongly committed, 4 = very strongly committed. Pain of breakup coded as 1 = not at all painful, 2 = somewhat painful, 3 = very painful, 4 = extremely painful. Recovery coded as 1 = not at all recovered, 2 = somewhat recovered, 3 = very recovered, 4 = completely recovered. New relationship coded as 1 = No, 2 = Yes.

The final three-factor solution explained 56.52% of the variance in the items selected, with the first factor explaining 20.15%, the second explaining 19.16%, and the third explaining 17.21%. The first factor's items were: the commitment of the participant to their relationship, the pain experienced by the participant due to the
breakup, and the extent to which the participant felt recovered (reverse coded). Factor 2 included the variables: who the participant saw as more responsible for initiating the breakup, who they saw as more greatly resisting the breakup, and the perceived commitment of the ex-partner to the relationship. Factor 3's variables were: time since breakup (in weeks), the presence of infidelity, and whether the participant had entered into a new relationship after the breakup.

In order to construct scales from these factors for further analysis and interpretation, items with a negative loading score were reverse coded, then z scores were calculated for each of the items corresponding to each factor. Each factor's item's z scores were then averaged together, resulting in the scale score. Factor 1 appeared to be measuring the participant's investment into the relationship. Factor 2 appeared to measure the perceived investment of the participant's ex in the relationship. Finally, Factor 3 appeared to measure the participant's psychological distance from the breakup. In future analyses, these factors are referred to with both their number and a simple title. Factor 1 will be "participant investment", factor 2 will be "ex investment", and factor 3 will be "psychological distance." Presented in the text and in Tables 3.4 and 3.5 are the descriptive statistics for these factors at Time 1 (N = 161), as well as group comparisons between control and experimental groups and study completers and non-completers at the same time point.
Table 3.4

*Relationship Factors Descriptive Statistics by Group - Initial Sample (N = 161)*

<table>
<thead>
<tr>
<th></th>
<th>1 - Investment M (SD)</th>
<th>2 - Ex Invest. M (SD)</th>
<th>3 - Distance M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Sample</strong></td>
<td>0.00 (.75)</td>
<td>0.01 (.75)</td>
<td>-0.13 (.57)</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>0.05 (.78)</td>
<td>-0.08 (.71)</td>
<td>-0.18 (.51)</td>
</tr>
<tr>
<td><strong>Experimental</strong></td>
<td>-0.05 (.71)</td>
<td>0.08 (.78)</td>
<td>-0.08 (.62)</td>
</tr>
</tbody>
</table>

*Note: n for control group = 77, n for experimental group = 84.*

Table 3.5

*Relationship Factors Descriptive Statistics by Group - Final Sample (N = 121)*

<table>
<thead>
<tr>
<th></th>
<th>1 - Investment M (SD)</th>
<th>2 - Ex Invest. M (SD)</th>
<th>3 - Distance M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Sample</strong></td>
<td>-0.03 (.75)</td>
<td>0.04 (.78)</td>
<td>-0.12 (.55)</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>0.07 (.78)</td>
<td>-0.08 (.76)</td>
<td>-0.18 (.50)</td>
</tr>
<tr>
<td><strong>Experimental</strong></td>
<td>-0.12 (.71)</td>
<td>0.17 (.79)</td>
<td>-0.06 (.59)</td>
</tr>
</tbody>
</table>

*Note: n for control group = 61, n for experimental group = 60.*

3.1.4.1 Factor 1 - Participant investment in relationship

At Time 1, the average score of the initial sample was 0.00 (SD = .75) with a range from -2.29 to 1.47. The distribution showed acceptable skew (-.24) and acceptable kurtosis (-.25). There was no difference on this factor in the initial sample between the control (M = .05, SD = .78) and experimental (M = -.05, SD = .71) groups (t(159) = .78, p = .436), nor was there a significant difference on this scale between individuals who completed the study (M = -.03, SD = .75) and participants who did not complete the study (M = .07, SD = .75; t(159) = .70, p = .488). There was also no
significant difference on this factor between control \((M = .07, \ SD = .78)\) and experimental \((M = -.12, \ SD = .71)\) groups \((t(119) = 1.37, \ p = .173)\).

3.1.4.2  Factor 2 - Ex-partner's investment in relationship

The mean score on this factor for the initial sample was .01 \((SD = .75)\), with a range from -1.62 to 1.22. The distribution did not show significant skew (-.12) or kurtosis (-.86). No significant difference existed between the initial control \((M = -.08, \ SD = .71)\) group or the experimental \((M = .08, \ SD = .78)\) group \((t(159) = -1.31, \ p = .193)\). There was no significant difference in scores on this factor for participants who completed the study \((M = .04, \ SD = .78)\) and participants who did not return \((M = -.11, \ SD = .64)\), using the t value for unequal variance due to Levene's being significant \((F = 5.52, \ p = .020; \ t(81.29) = -1.26, \ p = .211)\). Though it approached significance, there was no difference on this factor for the final sample's control \((M = -.08, \ SD = .76)\) and experimental \((M = .17, \ SD = .79)\) groups \((t(119) = -1.83, \ p = .070)\).

3.1.4.3  Factor 3 - Psychological distance and recovery

The initial sample of participants displayed an average on this factor of -.13 \((SD = .57)\), in a range of scores from -.88 to 1.00. The skew in the distribution was acceptable (.50), as was the kurtosis (-.91). The initial control group \((M = -.18, \ SD = .51)\) and experimental group \((M = -.08, \ SD = .61)\) did not differ \((t(159) = -1.08, \ p = .282)\). There was no significant difference on this factor between individuals who completed the study \((M = -.12, \ SD = .55)\) and individuals who did not \((M = -.16, \ SD = .
.62; \( t(159) = -0.39, p = .697 \). Likewise, there was no significant difference on this factor between the final control \((M = -0.18, SD = .50)\) and experimental \((M = -0.06, SD = .59)\) samples \((t(119) = -1.14, p = .257)\).

3.1.5 Predictor variable (Centrality of Relationship Scale; Table 3.6)

For the initial sample of participants at Time 1 \((N = 160)\), the mean score for the Centrality of Relationship Scale (CRS) was 24.49 \((SD = 7.31)\), with acceptable skew \((-0.46)\) and kurtosis \((-0.68)\). The mean score for participants in the control condition was 25.06 \((SD = 7.35)\) and the mean for the experimental participants was 23.96 \((SD = 7.28)\), with no significant difference apparent between the groups at Time 1 \((t(158) = 0.95, p = .343)\). There was also no significant difference on CRS scores between participants who completed the test protocol \((M = 24.80, SD = 7.21)\) and those who did not \((M = 23.54, SD = 7.62)\), \(t(158) = -0.94, p = .350\).

Table 3.6

**CRS Descriptive Statistics by Group at Time 1 - Sample Comparisons**

<table>
<thead>
<tr>
<th></th>
<th>CRS M(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial, overall</td>
<td>24.49 (7.31)</td>
</tr>
<tr>
<td>Initial, control</td>
<td>25.06 (7.35)</td>
</tr>
<tr>
<td>Initial, experimental</td>
<td>23.96 (7.28)</td>
</tr>
<tr>
<td>Final, overall</td>
<td>24.80 (7.21)</td>
</tr>
<tr>
<td>Final, control</td>
<td>25.46 (7.21)</td>
</tr>
<tr>
<td>Final, experimental</td>
<td>24.13 (7.22)</td>
</tr>
</tbody>
</table>

*Note* Initial total \(N = 160\); \(n\) for initial control group = 77, \(n\) for initial experimental group = 83. Final total \(N = 121\); \(n\) for final control group = 61, \(n\) for final experimental group = 60.
3.1.6 Outcome measures

Mean scores for both Time 1 and Time 2 for the variables that measure distress following a breakup are presented below. Additionally, group comparisons at Time 1 between control and experimental participants and between participants who completed the study and participants who did not return are presented, in order to assess potential, pre-intervention discrepancies (Tables 3.7 through 3.10).

Table 3.7

*Measures Descriptive Statistics by Group at Time 1 - Initial Sample (N = 160)*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Control</th>
<th>Experimental</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>M (SD)</em></td>
<td><em>M (SD)</em></td>
<td><em>M (SD)</em></td>
</tr>
<tr>
<td>IES - Avoid.</td>
<td>21.65 (5.06)</td>
<td>21.97 (5.12)</td>
<td>21.35 (5.02)</td>
</tr>
<tr>
<td>IES - Intrusion</td>
<td>19.47 (5.54)</td>
<td>20.12 (5.74)</td>
<td>18.87 (5.32)</td>
</tr>
<tr>
<td>PTQ</td>
<td>44.62 (14.80)</td>
<td>46.43 (14.48)</td>
<td>42.94 (14.98)</td>
</tr>
<tr>
<td>HSCL</td>
<td>106.55 (35.22)</td>
<td>110.92 (32.18)</td>
<td>102.49 (37.56)</td>
</tr>
</tbody>
</table>

*Note.* n for control group = 77, n for experimental group = 83.

Table 3.8

*Measures Descriptive Statistics by Completion Status (N = 160)*

<table>
<thead>
<tr>
<th></th>
<th>Complete</th>
<th>Incomplete</th>
<th><em>t</em>-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>M (SD)</em></td>
<td><em>M (SD)</em></td>
<td></td>
</tr>
<tr>
<td>IES - Avoid.</td>
<td>21.77 (5.03)</td>
<td>21.28 (5.22)</td>
<td>ns</td>
</tr>
<tr>
<td>IES - Intrusion</td>
<td>19.85 (5.44)</td>
<td>18.28 (5.75)</td>
<td>ns</td>
</tr>
<tr>
<td>PTQ</td>
<td>45.31 (14.87)</td>
<td>42.46 (14.56)</td>
<td>ns</td>
</tr>
<tr>
<td>HSCL</td>
<td>110.65 (36.58)</td>
<td>93.82 (27.31)</td>
<td>-3.06**</td>
</tr>
</tbody>
</table>

*Note.* ** p < .01, two-tailed. n for study completers = 121, n for study incomplete = 39.
Table 3.9

*Measures Descriptive Statistics by Group at Time 1 - Final Sample (N = 121)*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample M (SD)</th>
<th>Control M (SD)</th>
<th>Experimental M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IES - Avoid.</td>
<td>21.77 (5.03)</td>
<td>22.52 (4.95)</td>
<td>21.00 (5.03)</td>
</tr>
<tr>
<td>IES - Intrusion</td>
<td>19.85 (5.44)</td>
<td>20.84 (5.37)</td>
<td>18.85 (5.37)</td>
</tr>
<tr>
<td>PTQ</td>
<td>45.31 (14.87)</td>
<td>47.72 (14.25)</td>
<td>42.87 (15.20)</td>
</tr>
<tr>
<td>HSCL</td>
<td>110.65 (36.58)</td>
<td>117.43 (31.50)</td>
<td>103.77 (40.20)</td>
</tr>
</tbody>
</table>

*Note.* n for control group = 61, n for experimental group = 60.

Table 3.10

*Measures Descriptive Statistics by Group at Follow-up (N = 121).*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample M (SD)</th>
<th>Control M (SD)</th>
<th>Experimental M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IES - Avoidance</td>
<td>18.88 (5.78)</td>
<td>19.49 (5.57)</td>
<td>18.27 (5.96)</td>
</tr>
<tr>
<td>IES - Intrusion</td>
<td>15.24 (5.72)</td>
<td>15.54 (5.66)</td>
<td>14.93 (5.80)</td>
</tr>
<tr>
<td>PTQ</td>
<td>37.02 (13.43)</td>
<td>36.57 (13.37)</td>
<td>37.48 (13.58)</td>
</tr>
<tr>
<td>HSCL</td>
<td>93.69 (32.41)</td>
<td>92.92 (29.44)</td>
<td>94.48 (35.44)</td>
</tr>
</tbody>
</table>

*Note.* n for control group = 61, n for experimental group = 60.

3.1.6.1 Impact of Event Scale - Avoidance

On the Avoidance subscale of the IES, the mean score for the initial sample (N = 160) was 21.65 (SD = 5.06) out of a possible 32, with acceptable skew (-.39) and kurtosis (-.11). There was no significant difference between the control group (M = 21.97, SD = 5.12) and experimental group (M = 21.35, SD = 5.02) participants at Time 1 (t(158) = .78, p = .437). Similarly, there was no difference between Time 1 scores on the IES Avoidance scale between participants who completed the study (M = 21.77, SD = 5.03) and those who did not (M = 21.28, SD = 5.22), t(158) = -.52, p = .603.
In the final follow-up sample ($N = 121$), the mean score on the Avoidance subscale was $18.88$ ($SD = 5.78$), with no skew (.08) and acceptable kurtosis (-.45). There was no significant difference between control ($M = 19.49$, $SD = 5.57$) and experimental ($M = 18.27$, $SD = 5.96$) groups on the Avoidance subscale at follow-up ($t(119) = 1.17$, $p = .245$).

3.1.6.2 Impact of Event Scale - Intrusion

At Time 1, the initial sample's ($N = 160$) mean score on the Intrusion subscale of the IES was $19.47$ ($SD = 5.54$) out of a possible 28, with acceptable skew (-.19) and kurtosis (-.75). Participants in the control group ($M = 20.12$, $SD = 5.74$) did not differ significantly from participants in the experimental group ($M = 18.87$, $SD = 5.32$) on Intrusion scores at Time 1, $t(158) = 1.43$, $p = .155$). There was also no significant difference between scores of participants who completed the study ($M = 19.85$, $SD = 5.44$) and those who did not ($M = 18.28$, $SD = 5.75$) on Intrusion scores at Time 1 ($t(158) = -1.55$, $p = .124$).

At Time 2, the final sample ($N = 121$) scored a mean of $15.24$ ($SD = 5.72$) on the Intrusion subscale, with acceptable skew (.55) and kurtosis (-.55). No significant difference existed between the control ($M = 15.54$, $SD = 5.66$) and experimental ($M = 14.93$, $SD = 5.80$) groups on the Intrusion subscale ($t(119) = .58$, $p = .561$).
3.1.6.3 Perseverative Thinking Questionnaire

Participants at Time 1 \((N = 160)\) scored an average of 44.62 \((SD = 14.80)\) out of a possible 75 on the PTQ, showing no skew (.02) and acceptable kurtosis (-.76). There was no difference between participants in the control group \((M = 46.43, SD = 14.48)\) and participants in the experimental group \((M = 42.94, SD = 14.98)\) on their Time 1 scores on the PTQ \((t(158) = 1.50, p = .137)\). There was also no significant difference between Time 1 PTQ scores between participants who completed the study \((M = 45.31, SD = 14.87)\) and those who did not \((M = 42.46, SD = 14.56; t(158) = -1.05, p = .297)\).

At follow-up, the final sample \((N = 121)\) scored an average of 37.02 \((SD = 13.43)\) on the PTQ, with acceptable skew (.35) and kurtosis (-.54). There was no difference between the control \((M = 36.57, SD = 13.37)\) and experimental \((M = 37.48, SD = 13.58)\) groups on the PTQ at follow-up \((t(119) = -.37, p = .711)\).

3.1.6.4 Hopkins Symptom Checklist

At Time 1, the initial sample \((N = 160)\) scored an average of 106.55 \((SD = 35.22)\) out of a possible 232 on the HSCL. Participants in the control group \((M = 110.92, SD = 32.18)\) did not score significantly differently from participants in the experimental group \((M = 102.49, SD = 37.56)\) on the HSCL at Time 1 \((t(158) = 1.52, p = .131)\). However, there was a significant difference in scores between participants who completed the study \((M = 110.65, SD = 36.58)\) and participants who did not return \((M = 93.82, SD = 27.31)\) on Time 1 scores on the HSCL, an effect size of \(d = .52\). Levene's test for homogeneity of variance was violated \((4.57, p = .034)\), thus the Welch statistic
was interpreted ($t(85.59) = -3.06, \ p = .003$), and still showed a significant difference. This suggests participants who did not return for the follow-up session were exhibiting significantly less physical and emotional distress overall than returning participants.

In the follow-up collection point, the total sample's ($N = 121$) mean score on the HSCL was 93.69 ($SD = 32.41$), with slightly positive skew (1.33) and slightly elevated kurtosis (1.23). There was no significant difference between control ($M = 92.92, \ SD = 29.44$) and experimental ($M = 94.48, \ SD = 35.42$) participants on the HSCL at follow-up ($t(119) = -.27, \ p = .792$).

3.2 Bivariate Analyses and Unhypothesized Associations Among Measures

Prior to testing hypotheses, associations between non-hypothesized variables were examined to ascertain any potential confounds or variables requiring controlling for in the final analyses. As these results pertain to hypotheses and some measures taken at Time 2, the final sample of 121 participants was used in these analyses. Correlations are presented fully in tables, but only significant results (at the $p < .05$ level) are described in the text.

3.2.1 Individual demographics (Tables 3.11 – 3.13)

Women rated their overall relationship investment higher than men did ($r_{pb} = -.21$). Women reported longer relationships than men ($r_{pb} = -.19$), and reported experiencing more pain than men during the breakup ($r_{pb} = -.29$). Men reported higher
feelings of recovery after the breakup ($r_{pb} = .18$). Non-white participants reported longer relationships than white participants ($r_{pb} = -.19$).

Table 3.11

**Pearson Correlations Between Demographic and Relationship Variables (N = 121)**

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Relationship Length</td>
<td>.08</td>
<td>-.19*</td>
<td>-.19*</td>
</tr>
<tr>
<td>2. Time Since Breakup</td>
<td>.03</td>
<td>-.03</td>
<td>.03</td>
</tr>
<tr>
<td>3. Presence of Infidelity</td>
<td>-.01</td>
<td>.07</td>
<td>-.15</td>
</tr>
<tr>
<td>4. Initiator of Breakup</td>
<td>-.01</td>
<td>-.02</td>
<td>-.04</td>
</tr>
<tr>
<td>5. Breakup Resistance</td>
<td>.02</td>
<td>-.01</td>
<td>.09</td>
</tr>
<tr>
<td>6. Participant Commitment</td>
<td>-.01</td>
<td>.00</td>
<td>-.09</td>
</tr>
<tr>
<td>7. Ex-Partner Commitment</td>
<td>-.11</td>
<td>.07</td>
<td>.11</td>
</tr>
<tr>
<td>8. Pain of Breakup</td>
<td>-.05</td>
<td>-.29**</td>
<td>-.08</td>
</tr>
<tr>
<td>9. Recovery Post-Breakup</td>
<td>.02</td>
<td>.18*</td>
<td>.11</td>
</tr>
<tr>
<td>10. New Relationship</td>
<td>-.03</td>
<td>-.12</td>
<td>.11</td>
</tr>
</tbody>
</table>

Note. *p < .05, two-tailed. **p < .01, two-tailed.

Gender identity coded as 1 = woman, 2 = man. Race coded as 0 = nonwhite, 1 = white. Infidelity coded as 1 = Yes, 2 = No. Initiator coded as 1 = participant, 2 = both partners, 3 = ex. Resistance coded as 1 = self, 2 = both/neither, 3 = ex-partner. Participant and ex-partner commitment coded 1 = not very committed, 2 = somewhat committed, 3 = strongly committed, 4 = very strongly committed. Pain of breakup coded as 1 = not at all painful, 2 = somewhat painful, 3 = very painful, 4 = extremely painful. Recovery coded as 1 = not at all recovered, 2 = somewhat recovered, 3 = very recovered, 4 = completely recovered. New relationship coded as 1 = no, 2 = maybe, 3 = yes.

Age correlated negatively with Time 1 scores on the IES Avoidance scale ($r = -.21$), the PTQ ($r = -.23$), and the HSCL ($r = -.27$). Women were also more likely to report higher scores on the IES Intrusion scale ($r_{pb} = -.23$). At Time 2, older participants reported lower scores on both the Avoidance ($r = -.26$) and Intrusion ($r = -.24$) scales of the IES, as well as lower scores on the HSCL ($r = -.20$) than younger participants. Non-white participants reported higher scores at Time 2 on the Avoidance scale.
(r_{pb} = -.19) and Intrusion (r_{pb} = -.19) scales of the IES, and on the PTQ (r_{pb} = -.20)
than white participants.

Table 3.12

**Pearson Correlations Between Demographics and Measures at Time 1 (N = 121)**

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRS</td>
<td>-.07</td>
<td>-.14</td>
<td>-.07</td>
</tr>
<tr>
<td>IES Avoidance</td>
<td>-.21*</td>
<td>-.13</td>
<td>-.03</td>
</tr>
<tr>
<td>IES Intrusion</td>
<td>-.13</td>
<td>-.23*</td>
<td>.03</td>
</tr>
<tr>
<td>PTQ</td>
<td>-.23**</td>
<td>-.13</td>
<td>-.05</td>
</tr>
<tr>
<td>HSCL</td>
<td>-.27**</td>
<td>-.15</td>
<td>-.07</td>
</tr>
</tbody>
</table>

*Note: *p < .05, two-tailed. **p < .01, two-tailed.
Gender identity coded as 1 = woman, 2 = man. Race coded as 0 = nonwhite, 1 = white. CRS = Centrality of Relationship Scale. IES = Impact of Events Scale; Avoidance and Intrusion are subscales. PTQ = Perseverative Thinking Questionnaire. HSCL = Hopkins Symptom Checklist.

Table 3.13

**Pearson Correlations Between Demographics and Measures at Time 2 (N = 121)**

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>IES Avoidance</td>
<td>-.26**</td>
<td>-.16</td>
<td>-.19*</td>
</tr>
<tr>
<td>IES Intrusion</td>
<td>-.24**</td>
<td>-.10</td>
<td>-.19*</td>
</tr>
<tr>
<td>PTQ</td>
<td>-.14</td>
<td>.00</td>
<td>-.20*</td>
</tr>
<tr>
<td>HSCL</td>
<td>-.20*</td>
<td>-.12</td>
<td>-.13</td>
</tr>
</tbody>
</table>

*Note: *p < .05, two-tailed. **p < .01, two-tailed.
Gender identity coded as 1 = woman, 2 = man. Race coded as 0 = nonwhite, 1 = white. IES = Impact of Events Scale; Avoidance and Intrusion are subscales. PTQ = Perseverative Thinking Questionnaire. HSCL = Hopkins Symptom Checklist.
3.2.2 Relationship demographics

Participants with longer relationships were also likely to have more time since the breakup \((r = .29)\), and were likely to rate their commitment to the relationship higher \((r = .19)\). In addition, the longer a relationship lasted, the higher rating of pain a participant tended to report \((r = .28)\). Participants with longer relationships were also less likely to be in a new relationship \((r_{pb} = -.23)\). Participants with more time since the breakup were less likely to report personal resistance to the breakup \((r = .20)\). Longer time since the breakup was also related to higher ratings of recovery from the breakup \((r = .24)\), and a higher likelihood of being in a new relationship \((r = .22)\). In relationships where the resistance to the breakup was more mutual or partner-driven, participants were likely to rate their ex's commitment to the relationship highly \((r = .36)\), and the participant's own pain was rated lower when they felt they did not resist the breakup \((r = -.23)\). Participants who were more committed to the relationship expressed greater pain from the breakup \((r = .49)\), and a decreased likelihood of being in a new relationship \((r = -.21)\). Higher levels of perceived pain from the relationship related negatively to perceptions of having recovered \((r = -.40)\) and of being in a new relationship \((r = -.22)\). However, increased feelings of recovery related positively to the likelihood of entering a new relationship \((r = .28)\). These relationships are presented in Table 3.14.
Table 3.14

**Pearson Correlations Among Relationship Variables (N = 121)**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>1</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2.</td>
<td>.29**</td>
<td>1</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3.</td>
<td>.00</td>
<td>.20*</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4.</td>
<td>.19*</td>
<td>-.03</td>
<td>-.05</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>5.</td>
<td>.06</td>
<td>.09</td>
<td>.36**</td>
<td>.07</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>6.</td>
<td>.28**</td>
<td>-.11</td>
<td>-.23**</td>
<td>.49**</td>
<td>-.12</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>7.</td>
<td>.03</td>
<td>.24**</td>
<td>.05</td>
<td>-.17</td>
<td>.10</td>
<td>-.40**</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>8.</td>
<td>.16</td>
<td>.22*</td>
<td>.15</td>
<td>-.21*</td>
<td>.04</td>
<td>-.22*</td>
<td>.28*</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note. *p < .05, two-tailed. **p < .01, two-tailed.*
Length = Relationship length (in months). Time = Time since the breakup (in weeks). Resist = Resistance of breakup (coded as 1 = self, 2 = both/neither, 3 = ex-partner). Commit = partner commitment; Ex commit = ex-partner commitment (both coded 1 = not very committed, 2 = somewhat committed, 3 = strongly committed, 4 = very strongly committed). Pain of breakup coded as 1 = not at all painful, 2 = somewhat painful, 3 = very painful, 4 = extremely painful. Recovery coded as 1 = not at all recovered, 2 = somewhat recovered, 3 = very recovered, 4 = completely recovered. New Rel. = new relationship (coded as 1 = no, 2 = maybe, 3 = yes).

3.2.3 Time 1 measures (Tables 3.15 & 3.16)

Participants who viewed themselves as less resistant to the breakup reported lower scores on the Avoidance scale ($r = -.22$) and Intrusion scale ($r = -.28$) of the IES, on the PTQ ($r = -.28$), and on the HSCL ($r = -.37$). Higher levels of commitment related to higher scores on IES Intrusion ($r = .33$), the PTQ ($r = .23$), and the HSCL ($r = .18$). Higher ratings of the ex's commitment correlated with lower scores on the IES Intrusion scale ($r = -.21$), the PTQ ($r = -.20$), and the HSCL ($r = -.23$). Higher ratings of pain correlated positively with IES Avoidance ($r = .23$), IES Intrusion ($r = .60$), PTQ ($r = .40$), and the HSCL ($r = .36$). Participants who felt less recovered scored higher on IES.
Intrusion \( (r = -.34) \), the PTQ \( (r = -.47) \), and the HSCL \( (r = -.25) \). Participants who reported being in a new relationship scored lower on the PTQ \( (r = -.20) \).

Table 3.15

Pearson Correlations Between Relationship Variables and Measures at Time 1 \( (N = 121) \)

<table>
<thead>
<tr>
<th></th>
<th>IES-A</th>
<th>IES-I</th>
<th>PTQ</th>
<th>HSCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Relationship Length</td>
<td>.06</td>
<td>-.01</td>
<td>-.13</td>
<td>-.02</td>
</tr>
<tr>
<td>2. Time Since Breakup</td>
<td>.12</td>
<td>-.03</td>
<td>-.16</td>
<td>.00</td>
</tr>
<tr>
<td>3. Presence of Infidelity</td>
<td>-.12</td>
<td>-.03</td>
<td>-.03</td>
<td>-.16</td>
</tr>
<tr>
<td>4. Initiator of Breakup</td>
<td>.00</td>
<td>-.09</td>
<td>-.01</td>
<td>-.04</td>
</tr>
<tr>
<td>5. Breakup Resistance</td>
<td>-.22*</td>
<td>-.28**</td>
<td>-.28**</td>
<td>-.67**</td>
</tr>
<tr>
<td>6. Participant Commitment</td>
<td>.13</td>
<td>.33**</td>
<td>.23**</td>
<td>.18*</td>
</tr>
<tr>
<td>7. Ex-Partner Commitment</td>
<td>-.08</td>
<td>-.21*</td>
<td>-.20*</td>
<td>-.23**</td>
</tr>
<tr>
<td>8. Pain of Breakup</td>
<td>.28**</td>
<td>.60**</td>
<td>.40**</td>
<td>.36**</td>
</tr>
<tr>
<td>9. Recovery Post-Breakup</td>
<td>-.21*</td>
<td>-.34**</td>
<td>-.47**</td>
<td>-.25**</td>
</tr>
<tr>
<td>10. New Relationship</td>
<td>-.08</td>
<td>-.12</td>
<td>-.20*</td>
<td>-.03</td>
</tr>
</tbody>
</table>

Note. *p < .05, two-tailed. **p < .01, two-tailed.

Infidelity coded as 1 = Yes, 2 = No. Initiator coded as 0 = one partner, 1 = mutual. Resistance coded as 1 = self, 2 = both/neither, 3 = ex-partner. Participant and ex-partner commitment coded 1 = not very committed, 2 = somewhat committed, 3 = strongly committed, 4 = very strongly committed. Pain of breakup coded as 1 = not at all painful, 2 = somewhat painful, 3 = very painful, 4 = extremely painful. Recovery coded as 1 = not at all recovered, 2 = somewhat recovered, 3 = very recovered, 4 = completely recovered. New relationship coded as 1 = no, 2 = maybe, 3 = yes. IES-A denotes the Impact of Events Scale - Avoidance subscale. IES-I denotes Impact of Events Scale - Intrusion subscale. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.

Findings from the CRS were excluded here, as the CRS and relationship demographics correlations are examined in Hypothesis 1. However, two individual relationship demographic questions were not included in the factors used in the hypothesis tests: Relationship length correlates positively with the CRS \( (r = .22, p = \)
.016), but the presence of alternative relationships does not correlate with the CRS ($r = .09$, $p = .340$).

On the relationship factors (Table 3.16), participants with higher investment in the relationship scored higher on IES Avoidance ($r = .27$), IES Intrusion ($r = .56$), the PTQ ($r = .49$) and the HSCL ($r = .35$). Higher levels of perceived investment on behalf of the ex-partner related negatively to scores on IES Avoidance ($r = -.24$), IES Intrusion ($r = -.35$), the PTQ ($r = -.37$), and the HSCL ($r = -.37$).

Table 3.16

*Pearson Correlations Between Relationship Factors and Measures at Time 1 (N = 121)*

<table>
<thead>
<tr>
<th></th>
<th>IES-A</th>
<th>IES-I</th>
<th>PTQ</th>
<th>HSCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participant Investment</td>
<td>.27**</td>
<td>.56**</td>
<td>.49**</td>
<td>.35**</td>
</tr>
<tr>
<td>2. Ex-Partner Investment</td>
<td>-.24**</td>
<td>-.35**</td>
<td>-.37**</td>
<td>-.37**</td>
</tr>
<tr>
<td>3. Psychological Distance</td>
<td>.05</td>
<td>-.06</td>
<td>-.14</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.
IES-A denotes the Impact of Events Scale - Avoidance subscale. IES-I denotes Impact of Events Scale - Intrusion subscale. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.*

3.2.4 Time 2 Measures (Tables 3.17 & 3.18)

Participants who believed infidelity had not played a role in their relationship breakup tended to score higher on the PTQ at Time 2 ($r = .20$). Those at Time 1 who felt they had resisted the breakup more than their partner scored higher IES Avoidance ($r = -.25$), IES Intrusion ($r = -.27$), and the PTQ ($r = -.24$). Participant ratings of commitment were positively associated with higher scores on IES Intrusion ($r = .23$), and the PTQ ($r = .26$). Participant ratings of the painfulness of the breakup at Time 1 were positively related to scores on IES Avoidance ($r = .39$), IES Intrusion ($r = .42$),
and the PTQ ($r = .30$). Higher levels of perceived recovery at Time 1 were negatively correlated to scores on IES Avoidance ($r = -.32$), IES Intrusion ($r = -.38$), the PTQ ($r = -.34$), and the HSCL ($r = -.19$).

Table 3.17

*Pearson Correlations Between Relationship Variables and Measures at Time 2 (N = 121)*

<table>
<thead>
<tr>
<th></th>
<th>IES-A</th>
<th>IES-I</th>
<th>PTQ</th>
<th>HSCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Relationship Length</td>
<td>.09</td>
<td>.01</td>
<td>-.08</td>
<td>-.03</td>
</tr>
<tr>
<td>2. Time Since Breakup</td>
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<td>-.08</td>
<td>-.01</td>
<td>.05</td>
</tr>
<tr>
<td>3. Presence of Infidelity</td>
<td>-.05</td>
<td>.12</td>
<td>.20*</td>
<td>.01</td>
</tr>
<tr>
<td>4. Initiator of Breakup</td>
<td>-.01</td>
<td>-.02</td>
<td>.01</td>
<td>.04</td>
</tr>
<tr>
<td>5. Breakup Resistance</td>
<td>-.25**</td>
<td>-.27**</td>
<td>-.24**</td>
<td>-.10</td>
</tr>
<tr>
<td>6. Participant Commitment</td>
<td>.17</td>
<td>.23*</td>
<td>.26**</td>
<td>.11</td>
</tr>
<tr>
<td>7. Ex-Partner Commitment</td>
<td>-.14</td>
<td>-.12</td>
<td>-.05</td>
<td>-.10</td>
</tr>
<tr>
<td>8. Pain of Breakup</td>
<td>.39**</td>
<td>.42**</td>
<td>.30**</td>
<td>.12</td>
</tr>
<tr>
<td>9. Recovery Post-Breakup</td>
<td>-.32**</td>
<td>-.38**</td>
<td>-.34**</td>
<td>-.19*</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, two-tailed. **p < .01, two-tailed.*

Infidelity coded as 1 = Yes, 2 = No. Initiator coded as 0 = one partner, 1 = mutual. Resistance coded as 1 = self, 2 = both/neither, 3 = ex-partner. Participant and ex-partner commitment coded 1 = not very committed, 2 = somewhat committed, 3 = strongly committed, 4 = very strongly committed. Pain of breakup coded as 1 = not at all painful, 2 = somewhat painful, 3 = very painful, 4 = extremely painful. Recovery coded as 1 = not at all recovered, 2 = somewhat recovered, 3 = very recovered, 4 = completely recovered. IES-A denotes the Impact of Events Scale.

The overall relationship factors related strongly to the outcome scores at Time 2 as well. Individual commitment level (Factor 1) related positively to IES Avoidance ($r = .39$), IES Intrusion ($r = .45$), the PTQ ($r = .40$), and the HSCL ($r = .18$). Participant perception of their ex's investment in the relationship (Factor 2) related negatively to scores on IES Avoidance ($r = -.26$), IES Intrusion ($r = -.27$), and the PTQ ($r = -.24$).
Psychological distance (Factor 3) correlated negatively with the PTQ at Time 2 \( (r = -0.23) \).

Table 3.18

**Pearson Correlations Between Relationship Factors and Measures at Time 2 \( (N = 121) \)**

<table>
<thead>
<tr>
<th></th>
<th>IES-A</th>
<th>IES-I</th>
<th>PTQ</th>
<th>HSCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participant Investment</td>
<td>.39**</td>
<td>.45**</td>
<td>.40**</td>
<td>.18*</td>
</tr>
<tr>
<td>2. Ex-Partner Investment</td>
<td>-.26**</td>
<td>-.27**</td>
<td>-.24**</td>
<td>-.13</td>
</tr>
<tr>
<td>3. Psychological Distance</td>
<td>-.01</td>
<td>-.18</td>
<td>-.23*</td>
<td>-.02</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, two-tailed. **p < .01, two-tailed.*

IES-A denotes the Impact of Events Scale - Avoidance subscale. IES-I denotes Impact of Events Scale - Intrusion subscale. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.

3.2.5 Measure interrelations

IES Avoidance, IES Intrusion, PTQ, and HSCL measures all correlated significantly and positively with each other at Time 1 (the CRS was excluded from these analyses as those relationships fall under hypothesized findings). Likewise, the measures at Time 1 related significantly to scores at Time 2 on all measures. Measures at Time 2 all related significantly to each other. Detailed information is presented in the tables below (Tables 3.19 – 3.21), while significant findings are discussed in the text.
Table 3.19

**Pearson Correlations Among Outcome Variables at Time 1**

<table>
<thead>
<tr>
<th></th>
<th>IES-A</th>
<th>IES-I</th>
<th>PTQ</th>
<th>HSCL</th>
</tr>
</thead>
<tbody>
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<td>IES-A</td>
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<td>--</td>
<td>--</td>
</tr>
<tr>
<td>IES-I</td>
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<td>--</td>
<td>--</td>
</tr>
<tr>
<td>PTQ</td>
<td>.49**</td>
<td>.62**</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>HSCL</td>
<td>.50**</td>
<td>.61**</td>
<td>.62**</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, two-tailed. **p < .001, two-tailed.*
IES-A denotes the Impact of Events Scale - Avoidance subscale. IES-I denotes Impact of Events Scale - Intrusion subscale. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.

Table 3.20

**Pearson Correlations Among Outcome Variables - Time Comparisons**

<table>
<thead>
<tr>
<th></th>
<th>IES-A T2</th>
<th>IES-I T2</th>
<th>PTQ T2</th>
<th>HSCL T2</th>
</tr>
</thead>
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<tr>
<td>IES-A Time 1</td>
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<td>.21*</td>
<td>.20*</td>
</tr>
<tr>
<td>IES-I Time 1</td>
<td>.54**</td>
<td>.62**</td>
<td>.40**</td>
<td>.29**</td>
</tr>
<tr>
<td>PTQ Time 1</td>
<td>.57**</td>
<td>.66**</td>
<td>.65**</td>
<td>.50**</td>
</tr>
<tr>
<td>HSCL Time 1</td>
<td>.55**</td>
<td>.49**</td>
<td>.47**</td>
<td>.69**</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, two-tailed. **p < .001, two-tailed.*
IES-A denotes the Impact of Events Scale - Avoidance subscale. IES-I denotes Impact of Events Scale - Intrusion subscale. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.

Table 3.21

**Pearson Correlations Among Outcome Variables at Follow-up (Time 2)**

<table>
<thead>
<tr>
<th></th>
<th>IES-A</th>
<th>IES-I</th>
<th>PTQ</th>
<th>HSCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>IES-A</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>IES-I</td>
<td>.77**</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>PTQ</td>
<td>.56**</td>
<td>.73**</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>HSCL</td>
<td>.43**</td>
<td>.50**</td>
<td>.65**</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, two-tailed. **p < .001, two-tailed.*
IES-A denotes the Impact of Events Scale - Avoidance subscale. IES-I denotes Impact of Events Scale - Intrusion subscale. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.
3.3 Hypothesis Tests

3.3.1 Hypothesis 1 (Table 3.22)

Findings support the first hypothesis, which predicted participants with higher relationship centrality would be more likely to report greater investment in their past relationship, and to report less distance between themselves and their lost relationship. Partial correlations were run using scores on the Centrality of Relationship Scale (CRS) and the three scales derived from the factor analysis of relationship demographic variables, while controlling for gender identity, race, study completion ($N = 160$). CRS scores correlated positively with participant investment ($r = .56$, $p < .001$), and negatively with psychological distance ($r = -.18$, $p = .027$).

Table 3.22

*Partial Correlations Among CRS scores and Relationship Factors, with Gender Identity, Race, and Study Completion Controlled ($N = 160$)*

<table>
<thead>
<tr>
<th>CRS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participant Investment</td>
<td>.56**</td>
</tr>
<tr>
<td>2. Ex-Partner Investment</td>
<td>-.11</td>
</tr>
<tr>
<td>3. Psychological Distance</td>
<td>-.18*</td>
</tr>
</tbody>
</table>

*Note: *p < .05, two-tailed. **p < .001, two-tailed.*

3.3.2 Hypothesis 2 (Table 3.23)

Hypothesis 2 predicted relationship centrality would correlate positively with distress associated with a negative life event or trauma (i.e., rumination, intrusive thoughts, and avoidance) at Time 1. A partial correlation was run between scores on the CRS and scores on the avoidance and intrusive thoughts subscales of the Impact of
Events Scale (IES), the Perseverative Thinking Questionnaire (PTQ), and the Hopkins Symptom Checklist (HSCL) total score at Time 1 and Time 2, controlling for age, gender identity, race, and the relationship factors found to be associated with the CRS and Time 1 scores on the IES and PTQ (N = 160). At Time 1, the CRS correlated positively with the intrusion subscale of the IES (r = .19, p = .019), the PTQ (r = .28, p = .001), and the HSCL (r = .18, p = .028), but did not correlate with the avoidance subscale of the IES (r = .08, p = .23). CRS scores did not correlate with any of the measures collected at Time 2. As this may have been related to the experimental group design, the partial correlations were run a second time on the Control and Experimental groups separately. The association between centrality and the outcome measures did not become significant at Time 2 using this method. Overall, the hypothesized associations between relationship centrality and distress were supported for Time 1.

Table 3.23

Partial Correlations Among Outcome Variables and CRS at Time 1 (N = 160) and Time 2 (N = 121), with Age, Gender Identity, and Race Controlled

<table>
<thead>
<tr>
<th>CRS (Time 1)</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>IES-A</td>
<td>.10</td>
<td>.08</td>
</tr>
<tr>
<td>IES-I</td>
<td>.19*</td>
<td>.16</td>
</tr>
<tr>
<td>PTQ</td>
<td>.28*</td>
<td>.12</td>
</tr>
<tr>
<td>HSCL</td>
<td>.18*</td>
<td>.06</td>
</tr>
</tbody>
</table>

Note: *p < .05, two-tailed.
IES-A denotes the Impact of Events Scale - Avoidance subscale. IES-I denotes Impact of Events Scale - Intrusion subscale. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.
3.3.3 Hypothesis 3 (Table 3.24)

Hypothesis 3 predicted an individual’s distress following dissolution of a romantic relationship at Time 1 would be uniquely predicted by the self-reported centrality of the romantic relationship, above and beyond demographics of the relationship and an individual’s ruminative thinking style at Time 1. To assess the contribution of relationship centrality on distress following a relationship breakup, a hierarchical linear regression was run, using the sample of participants who completed the study for increased specificity (N = 120). Age and gender identity were controlled for in the first block, while the relationship scales were entered in the second block. Scores on the PTQ at Time 1 were entered third, followed by the final block of CRS scores.

At step one, age and gender identity contributed significantly to the model, $F(2, 118) = 6.24, p = .003$, and explained 10% of the variance in Time 1 HSCL scores. The derived relationship factors were added at step two, and added significantly to the model ($F_{\text{Change}}(3, 115) = 12.55, p < .001$), explaining an additional 22% of variance in HSCL scores at Time 1. PTQ scores were entered in block three, which added significantly to the model ($F_{\text{Change}}(1, 114) = 33.57, p < .001$) and accounted for an additional 16% of the variance in HSCL scores at Time 1. Finally, CRS scores were entered in block four, which did not significantly add to the model ($F_{\text{Change}}(1, 113) = 1.27, p = .262$), and added only 1% of explained variance to the overall model. The overall model was significant, $F(7, 113) = 14.88, p < .001$, and accounted for 48% of the variance of HSCL scores at Time 1. Thus, hypothesis 3 was not supported.
### Table 3.24

**Hierarchical Multiple Regression for CRS Scores and Distress (HSCL; N = 120)**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Variable</th>
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<th>$t$</th>
<th>$\Delta R^2$</th>
<th>$F_A$</th>
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<tbody>
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<td></td>
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<td>-6.40</td>
<td>2.06</td>
<td>-.27</td>
<td>-3.11*</td>
<td>.10</td>
<td>6.24*</td>
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<tr>
<td></td>
<td>Gender</td>
<td>-10.99</td>
<td>6.40</td>
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<td>-1.72</td>
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**Step 2**

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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>12.55**</td>
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<tr>
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<td>Age</td>
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<td>-.27</td>
<td>-3.21*</td>
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<td>-.06</td>
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<td>2 - Ex Invest.</td>
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<td>-4.09**</td>
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<td></td>
<td>3 - Distance</td>
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<td>5.32</td>
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<td>2.18*</td>
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**Step 3**

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<td></td>
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<td></td>
<td>33.57**</td>
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<tr>
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<td></td>
<td>Gender</td>
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<td>1 - Invest.</td>
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<td>3 - Distance</td>
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<td></td>
<td>PTQ</td>
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<td>.21</td>
<td>.49</td>
<td>5.79**</td>
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**Step 4**

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<tr>
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<td>1.66</td>
<td>-.16</td>
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<td></td>
<td>Gender</td>
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<tr>
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<tr>
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<td>2 - Ex Invest.</td>
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<td>3.45</td>
<td>-.20</td>
<td>-2.65*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 - Distance</td>
<td>12.42</td>
<td>4.70</td>
<td>.19</td>
<td>2.64*</td>
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</tr>
<tr>
<td></td>
<td>PTQ</td>
<td>1.16</td>
<td>.21</td>
<td>.47</td>
<td>5.48**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CRS</td>
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<td>.44</td>
<td>.10</td>
<td>1.13</td>
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</tr>
</tbody>
</table>

*Note. N = 120. *p < .05, **p < .001, two-tailed. 1 - Invest. = Relationship scale 1, Partner Investment; 2 - Ex Invest. = Relationship scale 2, Ex-Partner Investment; 3 - Distance = Relationship scale 3, Psychological Distance.
3.3.4 Hypothesis 4

Hypothesis 4 stated participants who completed the expressive writing paradigm would experience reductions in ruminative thinking and general distress from Time 1 to Time 2, while participants who did not complete the expressive writing paradigm would show little to no change in rumination and general distress. A repeated measures MANCOVA was run to test the effect of completing the expressive writing paradigm on distress reduction over time, with HSCL and PTQ at times 1 and 2 as dependent variables, and the expressive writing condition as the grouping variable, while controlling for age, race, and all three relationship scales (i.e., partner investment, ex-partner investment, and psychological distance from breakup).

There was a significant effect of time for the sample, indicating a difference existed between Time 1 and Time 2 for both groups across both measures examined ($F(2, 112) = 3.77, p = .026, \eta^2 = .06$), with Time 1 scores being higher than Time 2. There was also a significant difference between Time 1 and Time 2 scores across outcome measures between the control and experimental groups ($F(2, 112) = 4.48, p = .013, \eta^2 = .07$), with the control group showing the greater difference in scores between Time 1 and Time 2 (Table 3.25).
Table 3.25

*Multivariate Effects of Time and Group across PTQ and HSCL scores (N = 121)*

<table>
<thead>
<tr>
<th>Variable(s)</th>
<th>F</th>
<th>df</th>
<th>Error df</th>
<th>p</th>
<th>η²</th>
<th>Group</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
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<td>112</td>
<td>.026</td>
<td>.06</td>
<td>-</td>
<td>77.95</td>
<td>65.36</td>
</tr>
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<td>Time * Group</td>
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<td>2</td>
<td>112</td>
<td>.013</td>
<td>.07</td>
<td>Con</td>
<td>82.57</td>
<td>64.75</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exp</td>
<td>73.32</td>
<td>65.98</td>
</tr>
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</table>

*Note.* PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist. Con = Control group; Exp = Experimental group.

There was a significant difference between the PTQ scores at Time 1 and Time 2, holding group assignment constant (\(F(1, 113) = 5.99, p = .016, \eta^2 = .05\)), with Time 1 scores being significantly higher than Time 2 scores. There was also a significant difference between HSCL scores at Time 1 and Time 2, holding group assignment equal (\(F(1, 113) = 4.20, p = .043, \eta^2 = .04\)), reflecting higher scores at Time 1 than at Time 2. There was a significant difference between the control and experimental groups at Time 1 and Time 2 for the PTQ (\(F(1, 113) = 4.91, p = .029, \eta^2 = .04\)) and the HSCL (\(F(1, 113) = 7.20, p = .008, \eta^2 = .06\)). Contrary to the expected pattern of results, an examination of the means showed the experimental group’s scores on the PTQ improved less than the control group’s scores on the PTQ, and a similar trend was present for the HSCL (Tables 3.26 & 3.27; Figures 3.1 & 3.2).
Table 3.26

**Univariate Effect of Time on PTQ and HSCL scores (N = 121)**

<table>
<thead>
<tr>
<th>Measure</th>
<th>$F$</th>
<th>$df$</th>
<th>Error $df$</th>
<th>$p$</th>
<th>$\eta^2$</th>
<th>Means</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td>PTQ</td>
<td>5.99</td>
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<td>113</td>
<td>.016</td>
<td>.05</td>
<td>45.29</td>
<td>37.03</td>
</tr>
<tr>
<td>HSCL</td>
<td>4.20</td>
<td>1</td>
<td>113</td>
<td>.043</td>
<td>.04</td>
<td>110.60</td>
<td>93.70</td>
</tr>
</tbody>
</table>

*Note. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist.*

Table 3.27

**Multivariate Effect of Group*Time on PTQ and HSCL scores (N = 121)**

<table>
<thead>
<tr>
<th>Measure</th>
<th>$F$</th>
<th>$df$</th>
<th>Error $df$</th>
<th>$p$</th>
<th>$\eta^2$</th>
<th>Group</th>
<th>Means</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td>PTQ</td>
<td>4.91</td>
<td>1</td>
<td>113</td>
<td>.029</td>
<td>.04</td>
<td>Con</td>
<td>47.72</td>
<td>36.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exp</td>
<td>42.87</td>
<td>37.48</td>
</tr>
<tr>
<td>HSCL</td>
<td>7.20</td>
<td>1</td>
<td>113</td>
<td>.008</td>
<td>.06</td>
<td>Con</td>
<td>117.43</td>
<td>92.92</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Exp</td>
<td>103.77</td>
<td>94.48</td>
</tr>
</tbody>
</table>

*Note. PTQ = Perseverative Thoughts Questionnaire. HSCL = Hopkins Symptom Checklist. Con = Control group; Exp = Experimental group.*

**Figure 3.1.** Line graph depicting changes in PTQ scores over time between the control and experimental groups.
Figure 3.2. Line graph depicting changes in HSCL scores over time between the control and experimental groups.

3.3.5 Hypotheses 5 and 6

The final two hypotheses stated relationship centrality would predict a change in distress from Time 1 to Time 2, but this association would be mediated by the participants’ change in rumination from Time 1 to Time 2. This was tested using the Baron and Kenny (1986) regression method for assessing mediation. Time 1 HSCL scores were regressed on Time 2 HSCL scores in the first block, and CRS scores were entered as the predictor variable in the second block.

The overall model was significant ($F(3, 117) = 37.14, p < .001$) and explained 48% of the variance, but CRS scores did not account for any unique variance in the change in HSCL scores from Time 1 to Time 2 ($F_{\text{Change}}(1, 117) = 1.37, p = .245; \Delta R^2 = .01$). Centrality was not significantly related to change in distress scores, thus the mediation model was not completed, and hypothesis 5 was not supported.
Due to the correlation between CRS and rumination as measured by the PTQ scores, it was later hypothesized centrality may be more closely related to rumination than it is to broad distress. Thus, as an exploratory analysis, CRS scores were tested against change in PTQ scores using the same regression model. Again, the overall model was significant (F(3, 117) = 28.87, p < .001; Adj. $R^2 = .41$), but CRS scores did not contribute significantly to the variance explained ($F_{\text{Change}}(1, 117) = .55$, p = .459; $\Delta R^2 = .003$).

Hypothesis 6 predicted the mediation effect between relationship centrality and distress would be moderated by expressive writing condition. Hypothesis 5 failed to find a significant association between centrality and HSCL scores or PTQ scores across groups. To account for the differential change in scores on the HSCL and PTQ between groups, the first step of the mediation model was tested separately against the control and experimental groups. Again, the CRS did not significantly explain any unique variance in change scores on the HSCL or the PTQ, even when split by group.
CHAPTER 4

DISCUSSION

This study explored the concept of relationship centrality as it relates to the experience of a breakup, and the subsequent distress an individual may experience. Overall, the hypothesized impact of relationship centrality on post-breakup distress and the use of expressive writing paradigms was not supported by the results. However, relationship centrality was significantly related to commonly-explored characteristics of romantic relationships, and to negative outcomes following a breakup. The role of relationship centrality had not previously been investigated in conjunction with relationship or identity processes. The results of this study support the need for continued exploration of these processes and how individual identification with a romantic relationship may impact the functioning within and without those relationships.

4.1 Hypothesized Findings

4.1.1 Hypothesis 1

Relationship centrality correlated positively with an individual's investment in the relationship in question, but correlated negatively with the individual's distance from the relationship in the face of a breakup. This finding indicates that an individual's commitment and involvement in the relationship predicts the significance the individual places on the relationship in their own identity or self-concept, as expected. This could be a bidirectional effect, so that the more a person defines themselves by a
relationship, the more likely they are to feel committed to the relationship, which then further strengthens their sense of identity in the relationship.

Additionally, individuals with a highly centralized concept of their relationship appear to experience difficulty disengaging from the relationship after a breakup, as they maintain that relationship as part of their identity even after it has ended. This finding agrees with previous literature on identity confusion following a breakup (Slotter & Gardner, 2009), and suggests there is a need for continued research on how to encourage individuals with high relationship centrality to rebuild their identities apart from their lost relationship (or a future relationship).

Lastly, centrality was not found to be related to participants' ratings of their ex-partner's investment in the relationship. This raises questions regarding the function and process of relationship centrality: What determines whether an individual will define themselves by a relationship? If it is related to individual investment, but not the perceived investment of a partner, is the tendency to identify around a relationship a personality factor, an outgrowth of early attachment processes, or otherwise individually determined? Alternatively, individuals recovering from a breakup may differ in their accuracy when interpreting their ex's actions and feelings after the fact, and this may not be related to their degree of relationship centrality.

Overall, this pattern of results presents a need to examine relationship centrality as a predictor of engagement within a relationship, not merely a predictor of distress following a breakup. Examining relationship centrality longitudinally over the span of a
relationship and its end may illuminate the underlying processes of identity organization and relationship involvement that were touched upon here.

4.1.2 Hypothesis 2

Relationship centrality correlated with negative outcomes following a recent breakup, including the presence of intrusive thoughts, ruminative thinking, and broad physical and psychological distress. It appears that people who identified strongly with being in the previous relationship were likely to have increased negative outcomes following the end of that relationship. This result is consistent with the negative outcomes witnessed in young adult populations following a breakup, and agrees with event centrality research as it relates to symptoms of distress following a negative life event (Newby & Moulds, 2011). It is of interest to note that the Avoidance scale of the IES was not related significantly to relationship centrality scores, suggesting that relationship centrality may directly relate to a person brooding on the terminated relationship, but has no effect on attempts to avoid reminders of the loss. Overall, this finding supports relationship centrality as a relevant factor in identity organization processes, and encourages the further examination of how these processes affect relationships and subsequent distress after they end, a conceptual continuation of work done in event centrality (Bernard et al., 2015).

Relationship centrality was no longer related to negative outcomes measured at the three-week period for follow-up. This change was not explained by group assignment or completion of the expressive writing paradigm as was initially
hypothesized, but it is reasonable to suspect simply participating in a study about a breakup may have facilitated change that would not have occurred otherwise, thus reducing Time 2 outcome correlations to Time 1 centrality scores. As I did not collect measures of relationship centrality at follow-up, it is possible the participants' judgment of the previous relationship's centrality may have shifted along with their other outcomes. Relationship centrality as a process of identity organization has not been tested previously, and it remains to be seen if it is more fluid, contextual, or stable as a construct.

4.1.3 Hypothesis 3

When tested alongside the effect of ruminative thinking, relationship centrality did not uniquely predict the initial amount of distress participants experienced following a breakup. This finding is not consistent with previous research on event centrality and rumination (Groleau et al., 2012), though centrality's contribution was also very small in the cited study.

Furthermore, centrality and rumination were correlated in this study, indicating the variance in distress each variable explains may be shared. In order to assess potential criterion contamination, a quick review of the items of the CRS and PTQ was performed, focusing on overlap in questions regarding thoughts. Though the focus of each questionnaire appeared distinct, items on the CRS (e.g., "I feel that this relationship had become part of my identity" and "I often think about the effects this relationship will have on my future") seem akin to the ruminative thoughts individuals
might experience about a breakup, as measured by the PTQ (e.g., "I keep asking myself questions without finding an answer" and "I keep thinking about the same issue all the time"). Relationship centrality itself may be playing a significant role in the tendency for someone to ruminate, as a function of identity organization that heightens the accessibility of overgeneral autobiographical memories about the relationship (Romero et al., 2014). Thus, relationship centrality may not directly predict distress, but may indicate a vulnerability to ruminative thought, and may serve as a potential source of the "ammunition" ruminative thinking requires. This association requires further investigation, but falls outside the scope of this study.

4.1.4 Hypothesis 4

Both the experimental and control groups experienced a significant reduction in ruminative thinking and overall distress, but participants who did not complete the expressive writing paradigm experienced greater improvement when compared to participants who did complete the expressive writing paradigm. This finding is troubling, as it conflicts with the majority of expressive writing research on distress reduction (Frattaroli, 2006). As expressive writing draws on meaning-making and integration of an event or feeling into an individual's self-narrative (Kellas & Manusov, 2003; Lepore & Greenberg, 2002), it was originally hypothesized that the expressive writing paradigm may not reduce distress for participants who already identified strongly with their relationship. There was no expectation that the intervention would hinder recovery across the board.
One potential confound explaining this effect is the pre-existing difference between groups on the PTQ and HSCL at Time 1, with the control group participants rating themselves higher on both measures than participants in the experimental group, despite random assignment being employed. In short, the experimental group began with lower scores on the HSCL and PTQ at Time 1 than the control group, but the scores at Time 2 were not significantly different between groups for either measure. Thus, the slope of change was greater for the control group, but both groups ended at similar points of distress reduction. Potential explanations for this issue are explored further within the study limitations section.

The pre-existing difference between group scores makes it difficult to conclude the true effect of expressive writing in this sample, but it is apparent that completing an expressive writing intervention did not produce lower distress scores than a control task. Future research of this nature would be helped by implementing safeguards to ensure random assignment is effective in creating balance between groups throughout data collection.

4.1.5 Hypothesis 5 and 6

Centrality did not predict a change over time in ruminative thinking or overall distress, even when the analyses were run using control and experimental groups separately to account for intervention effects on the change in scores. Thus, attempts to ascertain the effect of centrality in the trajectory of recovery after a breakup, specifically when using an expressive writing paradigm, were unsuccessful in this study.
It is clear that relationship centrality is related to the initial distress following a relationship breakup, but it is correlated heavily with ruminative thinking, and it did not appear to play a role in recovery timelines for this sample.

Both hypotheses 5 and 6 were partially exploratory due to the lack of literature in this area. It is possible similar, unpublished studies were unsuccessful in attempting to find a link between these concepts. However, given the relative youth of centrality in research, it is more likely that the correct pattern of associations between relationship centrality and emotional health following a relationship breakup requires further research to identify.

4.2 Additional Findings

Though not related to hypothesized findings, there were some patterns present in the data that bear brief comment. Each of these areas fall outside the scope of this study, but these patterns reflect the complexity of romantic relationships and their consequences in an individual’s life, as one part of a broader system with reaching, intersectional effects.

First, women were more likely than men to report greater commitment to their relationships, more pain following the breakup, and longer relationships overall. This effect was in agreement with gender identity differences in previous relationship literature (Mearns, 1991; Shulman & Scharf, 2000), and suggest women are investing more of themselves in their relationships than men, in accordance with more traditional gender roles regarding a woman’s role in relationships. In this study, relationship
centrality did not differ by gender identity, indicating an equal likelihood for men and women to define themselves by their relationship, which does not agree with previous research on self-concept in relationships (Johnson et al., 2012). However, the scale measuring participant investment in their previous relationship correlated with relationship centrality, and the scale was comprised of the very items that women rated higher than men. The true association between these variables is currently unclear from the results in this study, and research that explores gender role beliefs and relationship breakups is limited (Weisskirch & Delevi, 2012). Given the importance of relationships in the lifespan, a need is present for greater understanding of how identity variables like gender and relationship centrality interact.

Older participants reported lower amounts of avoidant thinking, ruminative thinking, and overall distress at Time 1, and less avoidant thinking, intrusive thoughts, and overall distress at Time 2. Research regarding relationship dissolutions supports the notion that maturity plays a role in relationship stability and emotional coping skills. Individuals who marry at a young age are more likely to be dissatisfied with their relationship and experience divorce (Røsand, Slinning, Røysamb, & Tambs, 2014). Developmental research using adolescents also raises concerns that becoming "over-involved" with relationships at a younger age could lead to confusion during periods of identity formation, resulting in difficulty in relationships moving forward (Zimmer-Gembeck, Siebenbruner, & Collins, 2001). However, the sample in this study fell between age 18 and 25, thus marking a transition out of adolescence and into adulthood. Thus, it is likely that older individuals are using more mature coping skills or
defenses against post-breakup distress than younger participants (Whitty, 2003). Sampling by narrow age ranges may increase the specificity of future studies' findings regarding distress after a breakup and predictors thereof.

Time 2 outcome measures were related to participants' race; non-white participants showed greater amounts of avoidant thinking, intrusive thoughts, and rumination when compared to white participants. A more in-depth analysis revealed only scores on the PTQ were significantly different by race, due to inequality of variance in the groups. Black participants were significantly more likely to report ruminative thought at Time 2 than either Latino participants, white participants, or Asian participants in this sample. Latino participants were also more likely to report higher rates of ruminative thought than white participants and Asian participants at Time 2. This pattern of results introduces a question regarding latent coping skills or the effect of external stressors (such as discrimination) on emotional recovery trajectories for some individuals. Indeed, research suggests that individuals with passive coping skills who engage in reflective, rather than brooding, rumination are more likely to report distress than individuals who do not reflect (Marroquín, Fontes, Scilletta, & Miranda, 2010). Racial and ethnic minorities are populations at risk for discrimination and a multitude of other stressors that are not easily resolved (Brondolo, Gallo, & Myers, 2009), thus potentially reducing their available resources for processing and recovering from negative life events, including breakups.
4.3 Study Strengths and Limitations

Features of this study strengthen its relevance and applicability in the literature. For one, it is the first study to link centrality to romantic relationships as a facet of identity development when predicting post-breakup distress. This marks a step toward an improved integration of related concepts within psychological research, by linking cognitive science and trauma research with developmental and interpersonal research. Self concept and self complexity have been explored in the context of relationships, and they have been defined closely to how relationship centrality was operationalized in this study (Kim, 2006; Slotter, Gardner, & Finkel, 2010). However, relationship centrality extends the reach of previous research by taking into account the degree to which someone has internalized a relationship as part of their identity, not merely its presence as a facet of self organization.

Secondly, participants in this study were primarily young adults, the target population for the majority of research into the emotional impact of dating relationships (Shulman & Scharf, 2000). Breakups can precede negative mental health outcomes and the first incidence of depressive disorders in this age group (Slotter et al., 2010), and studies such as this expand the available knowledge used to understand, prevent, and treat these outcomes before they can cause lasting difficulty in a young person's development. The sample used in this study was also culturally diverse, increasing the generalizability of these findings within this age group, though the effects of race and ethnicity on these variables should be further assessed.
Lastly, the use of an experimental intervention (i.e., expressive writing and control conditions) marked an attempt to apply conceptual, cognitive research in a real-world context. Though the expressive writing exercise did not appear to interact with relationship centrality in a meaningful way, the findings of this study raise questions about expressive writing interventions in this population, and invite further exploration of relationship centrality, rumination, and interventions that access mechanisms of identity organization in an effort to reduce distress.

However, this study also had a number of limitations which call for caution in interpreting the results. The sample, as is common in undergraduate samples, was more female than male. However, gender identity differences were not present within our samples on most tasks, and gender identity was controlled for in relevant analyses. Similarly, though young adults may be the target demographic for this research, the use of a college sample reduces external validity, as it limits the scope of the findings to a more privileged class of individual. Participants who dropped out of the study had longer relationships than participants who completed the study, and participants who dropped out tended to report higher self-ratings of their commitment to the relationship than participants who completed the study. This pattern hints at a selection bias in the sample, but such a bias is likely present in many studies addressing painful life experiences. Participants with longer relationships and more commitment may have provided a greater sample of high relationship centrality, and their loss potentially decreased the power of analyses testing this construct. On the other hand, participants who dropped out tended to report less distress on the HSCL at Time 1 than participants
who completed the study, indicating some of the attrition may have been due to participants not wanting to invest time addressing something that was not, at present, distressing them.

Finally, the procedure of the study provided multiple opportunities for priming and order effects. Participants completed self-report measures of the emotional intensity and typical interactions within their previous relationship before engaging in the writing exercise they were assigned, and they answered the study-relevant questionnaires measuring relationship centrality, ruminative thinking style, intrusive and avoidant thoughts, and overall distress after completing the writing exercise. Thus, reflecting on the traits of their past relationship may have primed or altered the writing task at Time 1, and the writing task may have altered the pattern of responses on the subsequent questionnaires. It may be that engaging in a 20 minute writing session about one's thoughts and feelings after a breakup provided an outlet for distress, and a mechanism to resolve the distress, prior to completing the measures of their distress. These effects may explain the Time 1 group differences witnessed on the HSCL and the PTQ, with control group scores being higher than experimental group scores.

Meta-analyses conflict regarding whether multiple sessions are required for an effect to take place, and regarding the time required for an effect to manifest. Frattaroli (2006) found larger effect sizes in distress reduction for experiments using more than three sessions compared to those using one to three sessions, while Smyth (1998) found no relation between number of sessions used and effect size. Likewise, Frattaroli's meta-analyses showed an increase in effect size for studies with less than
one-month time between writing and follow-up, while Smyth's meta-analyses did not include studies with less than one month between writing and followup. However, the overall pattern of experimental participants receiving relief would conflict with Smyth's findings, which suggest expressive writing may create an immediate, short-term (i.e., lasting an hour or two) increase in distress for participants (Smyth, 1998). An alternative explanation may also lie in an inhibition effect in the control participants. Participants in the study were informed upon sign-up that the study involved exploring a potentially painful topic (i.e., their relationship breakup), but control participants were not provided the same opportunity to disclose the emotions brought up by the process as participants who completed the expressive writing task. This inhibition effect has been theorized to increase their distress when compared to an experimental group in expressive writing studies (Frattaroli, 2006). A final possibility for these differences draws on the theory of survey satisficing, which suggests participants may put in less effort on simple tasks, particularly after being fatigued (Malhotra, 2009). Thus, experimental participants may have been less willing than control participants to examine and report their distress after completing the more engaging task of expressive writing.

In short, the expressive writing task may have fatigued participants in ways the control task did not, resulting in differences in response patterns. In sum, future studies of a similar nature should take care to account for potential order effects when designing their procedures.
4.4 Future Directions

Moving forward, it appears there is a necessity for more groundwork research into how centrality, self-concept, and self-complexity interrelate in the creation and maintenance of an individual's identity before we are able to explore centrality in terms of interpersonal and romantic relationships. Surveying the number, stability, and centrality of the facets of an individual’s self-concept, and where a romantic relationship falls within that framework, is undoubtedly key to better understanding the potential distress or lack thereof should a relationship terminate. For example, centrality was not linked to any positive outcomes after a relationship in this study, or in the literature reviewed. This study did not examine the potential post-traumatic growth or healing to the self-concept following a breakup (Tashiro & Frazier, 2003). A more thorough exploration of relationship centrality as one of many identity processes activated in young adulthood would assist in identifying appropriate intervention methods based on individual vulnerabilities and resources in these areas.

Lastly, this research could provide the basis for preemptive techniques to help adolescents and young adults construct resilient, comprehensive, and flexible self-concepts that will provide the fertile ground for healthy interpersonal relationships. The concept of relationship centrality may be of great use in developmental research, helping to bridge a conceptual gap between models such as Erikson's identity and intimacy stages and more recent cognitive research outside the developmental purview. Thus, relationship centrality's role and contributions to negative outcomes following a breakup bears further monitoring, with an emphasis on longitudinal testing of the
formation of relationship centrality within the context of the beginning, middle, and end of romantic relationships.
References


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APPENDIX A

RELATIONSHIP DEMOGRAPHICS – TIME 1

What was the gender of your ex?
Please choose only one of the following:
- Female
- Male

How long was the relationship for which you had your most recent serious breakup?
Please use your most serious, most recent breakup. If you do not know the exact time, please estimate in years and months. If you were together less than a year, place a "0" in the years box.
Please write your answer(s) here:
- Years __________
- Months __________

How long ago did this breakup occur? If you do not know the exact amount of time that has passed since the breakup, please estimate. The time period should not be greater than 6 months. If a full month has not passed, place "0" in the month box and the appropriate number of weeks.
Please write your answer(s) here:
- Months __________
- Weeks __________

Do you believe infidelity played a part in your breakup?
Please choose only one of the following:
- Yes
- No

Who do you believe initiated this breakup?
Please choose only one of the following:
- I did
- I somewhat did
- We both did
- My partner somewhat did
- My partner did

Briefly, why do you believe you broke up?
Please write your answer here:
Did either you or your ex resist the breakup?
Please choose only one of the following:
- Me
- My Ex
- Both
- Neither

Please say a few words about how you would define this relationship. Please be brief, no more than five words.

How committed were you to your former relationship?
Please choose only one of the following:
- Not Very Committed
- Somewhat Committed
- Strongly Committed
- Very Strongly Committed

How committed do you believe your ex was to your former relationship?
Please choose only one of the following:
- Not Committed
- Somewhat Committed
- Strongly Committed
- Very Strongly Committed

All things considered, how painful was this breakup for you?
Please choose only one of the following:
- Not at all painful
- Somewhat painful
- Very painful
- Extremely painful

All things considered, how much do you feel you’ve recovered after the breakup?
Please choose only one of the following:
- Not at all recovered
- Somewhat recovered
- Very recovered
- Completely recovered

20 Are you currently in a new relationship?
Please choose only one of the following:
- Yes
- No
- Maybe- Please explain

Make a comment on your choice here:
How much would you agree or disagree with the following statement, “I had little trouble finding another romantic partner who could replace my ex”.
Please choose only one of the following:
• Strongly disagree
• Disagree
• Neutral
• Agree
• Strongly agree

Have you experienced a major stressor in the past three months other than your breakup? If so, please briefly describe it. (Examples: death of loved one, life transition, financial stress for college or someone else, military duty, physical safety/violence)
Please choose only one of the following:
• Yes
• No
Make a comment on your choice here:

Have you experienced a minor stressor in the past week? If so, please briefly describe it. (Example: long commute, poor test grade, job stress, fight with friend)
Please choose only one of the following:
• Yes
• No
Make a comment on your choice here:
APPENDIX B

RELATIONSHIP DEMOGRAPHICS – FOLLOWUP (TIME 2)

Have you romantically reunited with your former partner in the past three weeks? Please choose only one of the following:
  - Yes
  - No
(If not reunited, skip to question 6)

Are you still together at this time? Please choose only one of the following:
  - Yes
  - No

How long have you been reunited? Please write your answer(s) here:
  - Weeks __________
  - Days __________

If you are no longer reunited, please state for how long you were reunited before separating again. If you do not know the exact amount of time that has passed since you reunited, please estimate. The time period should not be greater than 3 weeks. If a full week has not passed, place "0" in the week box and then appropriate number of days.

Please choose the appropriate response for each item:

How committed are you to your partner at this time?
  - Not Very Committed
  - Somewhat Committed
  - Strongly Committed
  - Very Strongly Committed

How committed is your partner to you?
  - Not Very Committed
  - Somewhat Committed
  - Strongly Committed
  - Very Strongly Committed
Have you begun a new relationship in the past three weeks?
Please choose only one of the following:
- Yes
- No

How long have you been together?
Please write your answer(s) here:
- Weeks_________
- Days__________

If you do not know the exact amount of time that has passed since you began a new relationship, please estimate. The time period should not be greater than 3 weeks. If a full week has not passed, place "0" in the week box and then the appropriate number of days.

How committed are you to your new partner?
- Not Very Committed
- Somewhat Committed
- Strongly Committed
- Very Strongly Committed

How committed is your new partner to you?
- Not Very Committed
- Somewhat Committed
- Strongly Committed
- Very Strongly Committed

Please choose the appropriate response for each item:

Have any important life events happened to you in the last three weeks?
Please choose only one of the following:
- Yes
- No

What was that event?
Please write your answer here:

All things considered, how stressful was that event for you?
Please choose only one of the following:
- Not at all stressful
- Somewhat stressful
- Very stressful
- Extremely stressful