Thank you, dear: Examining the association between gratitude and relationship well-being

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THANK YOU, DEAR: EXAMINING THE ASSOCIATION BETWEEN GRATITUDE AND RELATIONSHIP WELL-BEING

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A Dissertation

Presented to
the Faculty of Social Sciences
University of Denver

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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

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by
Erica P. Ragan

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ABSTRACT

The current study replicated and extended existing research on gratitude by examining the ways in which gratitude is related to both individual and relationship well-being. A total of 387 participants completed the pre assessment and were randomized into the study, with 251 participants completing the full study (i.e., pre, post, and follow-up assessments). Participants were randomly assigned to list relationship-focused gratitudes, amusing events, or general events that happened during their day for 14 days. The differential impact of the three interventions on both individual and relationship variables was investigated. The relationship-focused and general events conditions experienced decreased negative affect from the pre to post assessment compared to the amusement condition. There were no other group differences. Participants across conditions experienced increases in life satisfaction, gratitude, and relationship confidence, as well as decreases in negative interaction. There also appeared to be short-term decreases in positive affect and positive connection for participants in all conditions. Changes in gratitude were associated with increases in relationship well-being. Additionally, cross-sectional analyses indicated that gratitude was associated with both individual and relationship well-being. Possible explanations for the lack of group differences as well as implications for future research are discussed.
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Specific Aims and Hypotheses

The goal of the current study is to test the extent to which the practice of gratitude can positively impact not only individual well-being but also relationship quality in the short and longer term. To date, couples research has typically focused on understanding the factors that contribute to the distress and dissolution of relationships, with a notable concentration on the role of conflict. However, conflict does not explain all of the variance in marital outcomes, which suggests that there are other factors that should be explored as possible predictors (Bradbury, Rogge, & Lawrence, 2001; Fincham, Stanley, & Beach, 2007; Karney & Bradbury, 1995, Markman, Rhoades, Stanley, Ragan, & Whitton, 2010). As such, there is a growing interest in research on positive dynamics within romantic dyads because of the importance such research has in informing couple-level interventions. Given that romantic relationships are an important part of well-being (Baumeister & Leary, 1995), it is important to understand the extent to which interventions aimed at increasing positive behaviors can impact affect and relationship appraisals.

The practice of gratitude, a positive behavior studied as a part of the positive psychology movement, has received a lot of attention in the past decade because of gratitude’s seeming ability to give people boosts in positive affect and overall well-being. For the purposes of psychological research, gratitude has been defined as the emotion felt
when one has received something of value through the intentional action of another (McCullough, Kilpatrick, Emmons, & Larson, 2001; McCullough & Tsang, 2004). Interestingly, the experience of gratitude produces not only emotional changes within an individual, but also cognitive and physiological changes, which in turn affect prosocial behavior within dyadic relationships. This study tested the extent to which practicing relationship-focused gratitude caused one to experience not only the changes seen in other studies of gratitude (e.g., increases in general prosocial behavior, positive affect, and general well-being; Emmons & McCullough, 2003) but also changes in relationship well-being (e.g., increases in relationship satisfaction, dedication, and positive connection). In the current study, participants took part in a 2-week, online daily diary study in which they were randomly assigned to one of three groups in which they: (1) practiced relationship-focused gratitude (relationship-focused gratitude condition), (2) practiced noticing amusing events (amusement condition) or (3) listed general events in their lives (general events condition). Participants completed brief questionnaires about their mood, behavior, and attitudes daily.

**Aim 1:** To replicate existing findings demonstrating that practicing gratitude increases positive affect, general well-being, and prosocial behavior compared to control conditions who engage in similarly frequent activities that are not believed to cause such effects (e.g., listing daily events or simply completing questionnaires).

**Hypothesis 1a.** Participants in the relationship-focused gratitude condition will have higher levels of positive affect than participants in the amusement and general events conditions after the intervention.
**Hypothesis 1b.** Participants in the relationship-focused gratitude condition will have higher levels of general well-being than participants in the amusement and general events conditions after the intervention.

**Hypothesis 1c.** Participants in the relationship-focused gratitude condition will have been more likely to have engaged in prosocial behavior at the post and follow-up assessments than participants in the amusement and general events conditions.

**Aim 2:** To examine how the practice of gratitude affects self-reported relationship quality and self-reported relationship behaviors.

**Hypothesis 2a.** Participants in the relationship-focused gratitude condition will report increases in relationship quality compared to participants in the amusement and general events conditions.

**Hypothesis 2b.** Additionally, participants in the relationship-focused gratitude condition will report lower levels of negative interaction than participants in the amusement and general events conditions.

**Hypothesis 2c.** Partners of participants in the relationship-focused gratitude condition will report higher levels of relationship quality than partners in the amusement and general events conditions.
Background and Significance

I will now describe in more detail how approaches to helping couples, both in the fields of therapy and relationship education, are related to themes within the positive psychology literature.

Couples Therapy and Relationship Education

Historically, treatments for distressed couples have focused primarily on reducing negative thoughts, feelings, and behaviors. Two of the best evidenced-based treatments for relationship distress are Behavioral Couples Therapy and Cognitive Behavioral Couples Therapy. Behavioral Couples Therapy (BCT) posits that relationship distress results when couples lack the skills to promote closeness within the relationship or have not maintained these skills (Baucom, Epstein, LaTaillade, & Kirby, 2008). As such, BCT has traditionally sought to identify problem behaviors and develop interventions that specifically target these problem behaviors (LaTaillade & Jacobson, 1995). BCT has put some emphasis on increasing the positives in relationships, such as implementing “caring days,” but the primary emphasis has been on problem behaviors. Cognitive Behavioral Couples Therapy (CBCT) expanded upon BCT by addressing partners’ cognitions. CBCT proposes that information-processing errors shape emotional and behavioral responses, producing dysfunctional reactions to events (Baucom, Epstein, LaTaillade, & Kirby, 2008). Additionally, CBCT addresses unreasonable expectations partners have about one another and the relationship. CBCT is an evidenced-based treatment for
relationship problems; however even some of its creators acknowledge that “a sizeable portion of the couples remain distressed at the end of treatment” (Baucom, Shoham, Mueser, Daiuto, & Stickle, 1998, p. 62) and that, unfortunately, relapse is too common among couples who do experience improvement (Snyder, Castellani, & Whisman, 2006). Thus, addressing the negatives in the relationship does not seem to be sufficient for helping couples achieve optimal levels of functioning.

Relationship education programs approach the issue of relationship distress from a different angle than couples therapy, in that relationship education programs tend to be more preventative, focusing on protecting the positives within a relationship and preventing the negatives from eroding relationship quality. Broadly, relationship education programs include enrichment, enhancement, communication skills, and prevention programs (Markman & Rhoades, 2010). There are several empirically supported marriage education programs, each with a slightly different emphasis. For example, the Premarital and Relationship Education Program (PREP; Markman, Stanley, & Blumberg, 2010; Markman, Stanley, Blumberg, Jenkins, & Whiteley, 2004; Stanley, Blumberg, & Markman, 1999) helps couples avoid negatives, such as destructive problem discussions, by teaching them communication skills, much in the same way one would do in BCT or CBCT. Additionally, unlike traditional couples therapy wherein couples sometimes need to re-learn positive ways of connecting, PREP teaches couples how to protect the positives in their relationship, including fun, friendship, and sensuality, so that these positives are not eroded over time. Moreover, PREP teaches couples the importance of having a sense of safety about their commitment and the future of the relationship (Markman, Stanley, Blumberg, Jenkins, & Whiteley, 2004; Stanley,
Markman, & Blumberg, 1999). Another example of a widely used relationship education program is Relationship Enhancement (RE; Guerney, 1977). RE focuses on creating a safe environment in which partners can communicate about sensitive issues. In addition to helping partners communicate better, RE seeks to increase partners’ empathy for one another. Markman et al. (2009) note that relationship education is one of the best ways to reach diverse couples, including high-risk couples, using evidence-based practices. Furthermore, couples are more likely to receive relationship education at some point in their relationship than to go to couples therapy (Markman & Rhoades, 2010). Thus, this intervention is targeted at helping people protect the positives within their relationship via a gratitude practice, and might also help couples struggling with positive connection be able to strengthen that connection.

In summary, the absence of relationship dysfunction does not necessarily mean that couples are functioning optimally. This becomes more evident when one considers that a majority of divorces are characterized by relatively low levels of conflict and seem to reflect that partners have “grown apart” (Amato, 2001). Such a research finding indicates that it is important to help many distressed couples find more positive ways to connect and to bring that “loving feeling” back into the relationship. It is equally important to help happy couples maintain that positivity in their relationship. I will now describe findings from the positive psychology field that offer insight into how to accomplish this goal.

**Gratitude: Definition and Functions**

Emotions are believed to have evolved over time because they serve a specific function and they have provided an evolutionary advantage to our ancestors. For
example, negative emotions such as fear, anger, and disgust produce specific action
tendencies, such as the respective urges to flee, attack, or expel (Frijda, 1986; Lazarus,
1991). These specific action tendencies provided an evolutionary advantage to our
ancestors in that it gave them a narrowed set of behavioral responses in life-or-death
situations (Tooby & Cosmides, 1990). In contrast to the narrow repertoire of thoughts
and actions associated with negative emotions, positive emotions have been shown to
broaden people’s thought-action repertoires and it is through this broadening that people
are able to accrue enduring resources (Fredrickson, 1998; 2001; Fredrickson & Branigan,
2005). More specifically, positive emotions are also thought to have given our ancestors
important evolutionary advantages because they promote broadening of behavior (e.g.,
exploration, creativity) and through this broadening, our ancestors were able to build
resources that could be helpful in the future (e.g., finding a new water source through
exploration; using creativity to invent something). Gratitude is one such positive emotion
and has been described as a “moderately pleasant and activating emotion” (Emmons &
McCullough, 2003, p. 378). Gratitude is related to other positive emotions such as
contentment, happiness, pride, and hope (Overwalle, Mervielde, & De Schuyter, 1995;
Walker & Pitts, 1998). As stated earlier, gratitude has been defined as the emotion felt
when one has received something, usually of value, through the intentional action of
another (McCullough, Kilpatrick, Emmons, & Larson, 2001; McCullough & Tsang,
2004). Researchers have theorized that gratitude evolved to promote social exchange
between people (McCullough, Kimeldorf, & Cohen, 2008). As a positive emotion,
gratitude has the capability to broaden thought-action repertoires intrapersonally and
build lasting resources, in this case primarily interpersonally.
Because much more research has been done on positive emotions than gratitude specifically, I will now cover what is known about the function of positive emotions and how these effects might be similar to the effects of gratitude. For example, positive emotions, such as happiness, aid coping with stress (Aspinwall, 1998; 2001; Fredrickson, Manusco, Branigan & Tugade, 2000; Lazarus, Kanner, & Folkman, 1980; Tugade & Fredrickson, 2002). Positive emotions also have an “undoing effect” on the aftereffects of negative emotions (Fredrickson & Levenson, 1998; Fredrickson, Manusco, Branigan, & Tugade, 2000) and seem to generate an upward spiral towards optimal functioning (Fredrickson & Joiner, 2002). Fredrickson and Joiner (2002) demonstrated that changes in positive emotions predicted changes in broad-minded coping five weeks later and that these changes in broad-minded coping predicted changes in future positive emotions, lending support to Fredrickson’s broaden-and-build theory of positive emotion (Fredrickson 1998; 2001). In a study conducted by Emmons and McCullough (2003), people in the gratitude condition exercised more frequently, made more progress towards their goals, were more optimistic, and had higher levels of general well-being than participants in the other conditions, suggesting that they were experiencing an upward spiral in functioning. Similarly, McCraty, Atkinson, Tiller, Rein, and Watkins (2005) found that appreciation, a construct closely related to gratitude, increased parasympathetic activation; this change is believed to be important in controlling hypertension and stress.

With regards to gratitude’s ability to build resources, gratitude seems to elicit a thought-action repertoire to behave prosocially. Put another way, gratitude prompts one to repay kindness with kindness, and these acts of kindness could be directed towards
one’s benefactor, others, or both. Consequently, gratitude has been called a “moral motivator” because it prompts moral action (McCullough, Kilpatrick, Emmons, & Larson, 2001). Additionally, gratitude has been shown to inhibit harmful interpersonal behavior (Baron, 1984). Fredrickson (2004) believes that the thought-action tendency associated with gratitude is broad rather than narrow because it prompts people to think of creative, prosocial ways of expressing their gratitude instead of repaying their benefactor in a tit-for-tat fashion, as one might expect if feeling indebted. In support of Fredrickson’s (2004) assertion, Tsang (2006a) found that gratitude prompted more helping behavior than simply the experience of positive emotion. In her experiment, participants were randomly assigned to one of two conditions: in the first condition, participants believed that they had received a favor, in this case money, from another participant; in the second condition, participants believed that they had received the same outcome but by chance. Participants who perceived that the other participant had bestowed a favor upon them gave more money to that participant than did people who believed they had received the money due to good luck. This finding indicates that gratitude, and not simply the experience of positive affect, motivates people to behave in prosocial ways (Tsang, 2006a) and supports previous research indicating that people who experience gratitude are more likely to act prosocially towards their benefactor and/or others in subsequent interactions (Bartlett & DeSteno, 2006; Graham, 1988; Peterson & Stewart, 1996).

Gratitude induces prosocial behavior that is more than just the fulfillment of a social reciprocity norm. Social reciprocity is defined as “the cognitive awareness that one should repay another person who has provided assistance” (Bartlett & DeSteno,
10

2006; p. 320). In a series of carefully designed experiments, Bartlett and DeSteno (2006) were able to demonstrate that grateful people, defined as those feeling appreciative, grateful, and positive towards the person who helped them, were more likely to help both a benefactor (i.e., someone who had recently bestowed a gift upon them) or stranger than people who were not induced to feel grateful. Bartlett and DeSteno (2006) tried to control for the unintended effects of acting while in a grateful mood by making participants aware of the correct cause of their gratitude, which should preclude participants from unintentionally allowing their grateful feelings to affect their behavior. Once made aware of their grateful feelings, participants in the gratitude condition still helped a stranger significantly more than participants in the neutral condition. This finding further demonstrates that gratitude is not simply the fulfillment of a social reciprocity norm, in which people repay one another in a tit-for-tat manner, but seems to compel people to “pay it forward.” In summary, gratitude could change how people act towards others.

Furthermore, in addition to possibly changing one’s own behavior, gratitude could change the feelings of others. More specifically, if someone receives a benefit and feels grateful, the feeling of gratitude could change how people around them respond to their behavior. By definition, grateful people are expressing a positive emotion. The simple expression of positive affect can change other people’s emotions. Hatfield, Cacioppo, and Rapson (1993) conducted an experimental study and found that people’s expression of positive emotions elicited positive emotions in observers with whom they interacted. Gratitude, a positively-valenced emotion, has the capacity to induce positive affect in others through this spillover effect. Although these effects diminish over time, as would be expected given the nature of hedonic adaptation described later (Lykken & Tellegen,
1996), the findings indicate that it is possible to become happier and to spread this happiness to others.

In addition to changing other people’s feelings, gratitude also changes other people’s behavior by reinforcing their prosocial, helping behavior. Expressions of gratitude as simple as “thanks” can increase the likelihood that a benefactor will behave prosocially in the future. For example, researchers found that servers who wrote “thank you” on restaurant bills received tips as much as 11% higher than bills without an expression of gratitude (Rind & Bordia, 1995). McCullough, Kilpatrick, Emmons, and Larson (2001) have found that benefactors who were thanked for their effort were more likely to work harder on the behalf of others and to give more in the future than benefactors who had not been thanked.

In summary, people build psychological and interpersonal resources by expressing gratitude; grateful individual’s prosocial behavior helps to build and strengthen relationships, including their relationship with a romantic partner (Emmons & Shelton, 2002). McCullough, Kilpatrick, Emmons, and Larson (2001) suggest that people who feel grateful recognize that someone has helped them and they subsequently feel more cared for and loved by others. To better understand the nature of gratitude, I will now describe the relative stability and change in gratitude over time.

**Gratitude: Stability and Change**

Gratitude can exist as an affective trait, mood, or an emotion depending on the level of analysis. An affective trait is the most stable of these three affective experiences and it predisposes one towards a particular type of emotional responding (Rosenberg, 1998). Moods, on the other hand, tend to last longer than emotions but not as long as
affective traits, and tend to be free-floating and objectless (Oatley & Jenkins, 1996; Rosenberg, 1998). Emotions are defined as “acute, intense, and typically brief psycho-physiological changes that result from a response to a meaningful situation in one’s environment” (Rosenberg, 1998; p. 250). It is important to understand the distinctions between gratitude as an affective trait, mood, and emotion because the level of analysis affects the ways in which a gratitude intervention would be most efficacious.

As an affective trait, gratitude is considered to be a disposition, which has been defined as a “generalized tendency to recognize and respond with grateful emotion to the roles of other people’s benevolence in the positive experiences and outcomes that one obtains” (McCullough, Emmons, & Tsang, 2002, p. 112). Dispositionally grateful people tend to experience gratitude more frequently, more intensely, for a greater number of life events, and towards a greater number of people than other people. Not surprisingly, dispositionally grateful people tend to have higher levels of subjective well-being than less grateful people (McCullough, Emmons, & Tsang, 2002). Subjective well-being has been defined as having high levels of positive affect, low levels of negative affect, and high life satisfaction (Diener, 1984; 1994). Dispositionally grateful people are also more likely to be empathic, helpful, forgiving, and supportive than others (McCullough, Emmons, & Tsang, 2002). Given the strong tendency of dispositionally grateful people to feel gratitude (McCullough, Emmons, & Tsang, 2002), I will now examine how this affective trait or predisposition affects the day-to-day experience of gratitude, and how such daily experiences of gratitude could affect an intervention centered on such experiences.
To understand the relationship between gratitude and daily experiences, it is important to investigate how daily emotions and dispositional gratitude produce more or less grateful moods, which “wax and wane, fluctuating throughout the day” (Rosenberg, 1998; p. 250). Dispositional gratitude and daily gratitude-inducing events might interact to produce a grateful mood. Research by McCullough, Tsang, and Emmons (2004) found that grateful mood was related to fluctuations in gratitude-relevant events in people’s daily lives. Interestingly, daily fluctuations in gratitude-relevant events and the emotions associated with those events had less of an impact on grateful mood for people with a disposition towards gratefulness. Dispositionally grateful people’s sense of gratitude seems to be so strongly driven by personality factors that they are influenced less by changes in gratitude antecedents, such as someone holding the door for them (McCullough, Tsang, & Emmons, 2004). For people who are less predisposed towards gratitude, the daily ebb and flow of gratitude-inducing events and their reaction to those events seems to have a bigger effect on the extent to which they experience a grateful mood. This finding is important to examine, especially given what is known about hedonic adaptation (Brickman & Campbell, 1971; Frederick & Loewenstein, 1999).

Hedonic adaptation was first identified by Brickman, Coates, and Janoff-Bulman (1978), who examined people’s happiness after having experienced either positive or negative events. For example, Brickman et al. (1978) found that Illinois state lottery winners were no more happy than non-winners a year after winning. Somewhat similarly, paraplegics were not significantly less happy than people who could walk (Brickman et al., 1978). Longitudinal studies of hedonic adaptation have found similar results. For example, in a daily diary study comparing healthy participants and participants with end-
stage kidney disease, researchers found no significant difference in subjective well-being between the two groups (Riis, Loewenstein, Baron, Jepson, Fagerlin, & Ubel, 2005). Hedonic adaptation is important because it allows people to adapt to negative events and maintain a sort of “happiness homeostasis.” Research on the heritability of subjective well-being also provides evidence for hedonic adaptation. Lykken and Tellegen (1996) studied monozygotic and dizygotic twins and found that 50-80% of subjective well-being is determined by one’s genetics. Thus, some experts suggest that people have more or less a genetically determined “happiness set-point” around which their happiness tends to hover. It is important to note that most people report that they are happy most of the time (Diener & Diener, 1996). People with a grateful disposition have high levels of subjective well-being, as evidenced by their higher self-reported levels of positive affect, lower levels of negative affect, and higher life satisfaction compared to people without grateful dispositions (McCullough, Emmons, & Tsang, 2002). Thus, grateful disposed people would likely have happiness set-points that are higher than those of their peers. However, people who are less disposed to feel grateful and are consequently more responsive to the daily flux of gratitude inducing events could potentially increase their subjective well-being by adopting a gratitude practice. A gratitude practice, as will be used in my intervention study, could help people become attuned to things in their environment to which they have habituated, and perhaps taken for granted, like the benefits of their romantic relationships.

**Gratitude as an Intervention**

The fact that there is some variability over time in gratitude begs the question regarding potential changes that could be effected in the levels of grateful mood, even for
dispositionally grateful people. The practice of gratitude is one way to increase emotional well-being, demonstrating that gratitude activities may serve as potential interventions. In a ground-breaking paper, Emmons and McCullough (2003) examined whether the practice of gratitude, relative to focusing on neutral life events or complaints, boosted psychological and physical well-being in a series of three studies. In Study 1, undergraduate participants completed weekly reports of their mood, physical symptoms, time spent exercising, reactions to received social support, and how they felt about their lives as a whole (e.g., terrible to delighted, pessimistic to optimistic) for ten weeks. One third of the participants were assigned to a gratitude-inducing condition in which they listed up to 5 things for which they were thankful, another third were assigned to a condition where they listed hassles, and the third group was assigned to a condition where they wrote down events that affected them over the past week. At the end of the ten week period, participants in the gratitude condition were more optimistic about their week, felt better about their lives as a whole, had fewer physical complaints, and spent more time exercising than participants in the events and hassles conditions. However, there were no differences in global positive or negative affect among the three groups. Emmons and McCullough posited that a more intensive intervention might be needed to induce changes in affect.

To address this issue, Emmons and McCullough (2003) conducted two studies in which data were collected from participants on a daily basis. In Study 2, Emmons and McCullough collected 16 daily reports of mood, health, and prosocial behaviors. Participants were randomly assigned to the gratitude condition, hassles condition, or a downward social comparison condition in which participants were instructed to think
about “the ways in which [they] are better off than others” (p. 381). Participants in the
gratitude condition had increases in positive affect across the study period. Additionally,
participants in the gratitude condition were more likely to engage in prosocial behaviors,
such as offering emotional support to another or helping someone with a personal
problem, compared to participants in the hassles and downward comparison conditions.
Finally, the effect sizes for the experimental manipulation were stronger in Study 2 than
in Study 1, suggesting that practicing gratitude daily is more powerful than practicing
gratitude once a week.

In Study 3, Emmons and McCullough (2003) extended the length of the
intervention from two weeks to three weeks and tested the intervention in a sample of 65
people with neuromuscular disease. Participants rated their affect, subjective well-being,
activities of daily living, and health behaviors daily for three weeks. Additionally,
participants’ spouses or significant others rated the participant’s affect and satisfaction
with life after the 21-day period, with 26 spouses or significant others returning the
forms. Participants were assigned either to the gratitude condition described above or to
a control condition, in which they only completed the daily report forms. At the end of
the 21-day intervention, participants in the gratitude condition had increases in positive
affect and decreases in negative affect compared to participants in the control condition.
Not surprisingly, participants in the gratitude condition had higher mean scores for level
of gratitude than participants in the control condition. Participants in the gratitude
condition were more satisfied with their lives, had more optimism about the upcoming
week, and felt more connected to others than did participants in the control conditions.
Interestingly, participants in the gratitude condition were rated as higher in both positive
affect and life satisfaction by their spouses than participants in the control condition indicating that perhaps grateful participants’ changes in affect were noticeable to others as well as themselves. Participants did not differ in level of negative affect as rated by their spouses. This finding has important implications for relationship research and clinical work; namely, practicing gratitude might be one way couples in unhappy, low-conflict marriages can increase their own feelings of positivity as well as prosocial behaviors.

Emmons and McCullough’s (2003) findings are particularly striking given the extant literature on subjective well-being. As noted above, studies comparing monozygotic and dizygotic twins have revealed that subjective well-being is 50-80% determined by genetics (Lykken & Tellegen, 1996). Similarly, dispositional gratitude shows stability over time and is relatively unaffected by daily gratitude-inducing experiences. Emmons and McCullough (2003) considered their intervention to be “rather minimal” (p. 386) and thus it is noteworthy that they were able to find effects for a gratitude intervention, given the strong effect of more enduring traits. Emmons and McCullough posit that practicing gratitude is a form of cognitive reappraisal that could positively impact long-term functioning. Counting one’s blessings at the end of each day compels one to stop and think back over the course of the day to pull out positive events. Indeed, according to Fredrickson’s (1998, 2001) broaden-and-build theory of positive emotions, gratitude could broaden people’s thought-action repertoires and build lasting resources, both intrapersonally and interpersonally.
Gratitude and Romantic Relationships

The field of positive psychology has flourished over the past decade. Positive psychology is defined as “the scientific study of positive experiences and positive individual traits, and the institutions that facilitate their development” (Duckworth, Steen, & Seligman, 2005, p. 630). Fincham and Beach (2010) note that, while positive psychology has helped researchers better understand individual strengths and virtues, little research has been conducted examining the relationship between positives and “institutions,” such as marriage or other long-term committed relationships, which facilitate the development of positives. Indeed, there has been a call for more research on gratitude and its role in ongoing relationships (Algoe, Haidt, & Gable, 2008; Fincham & Beach, 2010; Fredrickson, 2004). While Emmons and McCullough (2003) incorporated partners into Study 3, they did not measure relationship-specific outcomes, such as relationship satisfaction or dedication, for participants or their partners. My study addresses this gap in addition to testing a more specific gratitude intervention, one that is focused on romantic relationships specifically, to see if such an intervention can give people even bigger boosts in affect, general well-being, and relationship quality. Even though there are a few studies that focus on gratitude and romantic relationships, there are numerous questions that I address in the current study.

Practicing gratitude is one way couples could maintain a positive connection to one another or reconnect, if needed, in a more positive way. Moreover, practicing gratitude by simply writing down a few things for which one is grateful in the relationship takes relatively little time and could impact one’s affective experience and appraisal of relationships. As demonstrated by the research findings cited above
gratitude could have important implications for the individual because it may produce favorable physiological, cognitive, and emotional changes, which could in turn affect couple dynamics. Research by Emmons and McCullough (2003) found that when participants wrote up to five things each day for which they were grateful or thankful for, that their partner reported that the participant had higher levels of positive affect and general well-being, indicating that one’s good mood is not merely internal but that it is apparent to the partner. This is not surprising, given that dyadic relationships constitute systems (see Nichols, 2008 for an overview), in which a change in one component may provoke changes in other parts of the system, and thus a change in one partner could result in a change in the relationship itself. For example, a practice of gratitude and counting one’s blessings makes the practitioner feel good, encourages the practitioner to express feelings of gratitude, and thereby reinforces the benefactor. In turn, the benefactor feels good, and this exchange prompts both the practitioner and receiver of gratitude to engage in helping behavior in the future (Emmons & McCullough, 2003).

Given that some people have a grateful predisposition and that such a disposition is difficult to change, the intervention I am designing and testing in my dissertation is less concerned with nudging gratitude as a disposition and more concerned with increasing grateful emotions, thereby increasing grateful mood, particularly for people without this propensity towards feeling and acting gratefully. Research on happiness indicates that intentional activity, such as the practice of gratitude, is one way to both increase one’s happiness and fight hedonic adaption (Emmons & McCullough, 2003; Diener, Lucas, &
Scollon, 2006). While both dispositionally grateful and non-dispositionally grateful people will be included in this study, the intervention should evidence the largest magnitude of effect for people who are not predisposed towards gratitude (McCullough, Emmons, & Tsang, 2002). Helping people who are not predisposed towards gratitude mimic the actions of dispositionally grateful people could help these less gratefully-disposed people experience the benefits felt by dispositionally grateful people, such as higher levels of positive affect and subjective well-being.

The Current Study

In addition to increases in positive affect and well-being, the practice of gratitude has been shown to increase one’s prosocial behavior in the form of helping another person or offering emotional support (Bartlett & DeSteno, 2006; Emmons & McCullough, 2003; Tsang, 2006). Thus, practicing gratitude could begin to change one’s own behavior and potentially one’s partner’s behavior. The current study sought to replicate and extend Emmons and McCullough’s (2003) findings by assessing the effects of a gratitude intervention on couples relationships. More specifically, this study measured romantic relationship quality (e.g., dedication, positive connections, danger signs, and confidence) and it added experimental conditions related specifically to participants’ romantic relationships. To better understand the effects, if any, of practicing gratitude focused on one’s relationship, the current study compared three experimental conditions. The first condition to which participants were randomly assigned was a relationship-focused gratitude condition. This condition was designed to see if practicing gratitude that specifically focuses on one’s relationship yielded greater benefits not only in measures of individual well-being, such as life satisfaction, but also in measures of
relationship well-being, like relationship satisfaction. The feelings and behaviors
associated with gratitude are thought to stave off hedonic adaptation, which is the natural
tendency people have to return to a baseline level of happiness, determined largely by
genetics (Lykken & Tellegen, 1996). Finding ways for couples to work against hedonic
adaptation and bring positive energy into the dyad could help couples create an upward
spiral towards better levels of functioning (Fredrickson, 2004). Theoretically, people who
feel grateful towards their relationship partner would have a stronger bond with their
partner, characterized by greater dedication, intimacy, and satisfaction. The bond between
relationship partners could then be used as a source of social support in times of stress,
completing the link between gratitude’s ability to broaden thinking and build personal
resources.

The second condition to which participants were randomly assigned was an
amusement condition, in which participants were asked to write about whatever they
found amusing or funny each day. This condition served as a comparison to the
relationship-focused gratitude conditions, so that the effects of a relationship-focused
gratitude condition could be measured against the effects of experiencing positive affect
that was not specific to a romantic relationship or feelings of gratitude. The third and
final condition controlled for the practice of relationship-focused gratitude and positive
affect, and served as an attentional control. In the third condition, participants were
instructed to write about daily events but were not instructed to write about relationship
events or amusing events per se. Thus, the current study was able to test whether the
intentional practice of relationship-focused gratitude, attention to amusing events, or
simply noticing events within the day yielded different results in outcome measures. In
summary, this study sought to better understand how fostering a sense of gratitude in participants affected both individual well-being as well as relationship well-being. Gratitude, when practiced specifically about one’s relationship, should increase one’s happiness and improve social relationships.
Method

Participants

Participants were recruited using advertisements posted on Craigslist.org and through snowball sampling via email. Participants were initially recruited using a lottery system, in which they had a 1 in 50 chance of winning a $100 gift certificate. Due to low recruitment rates, I began paying participants $20 to complete the study. Four hundred eighty-eight participants were screened for their eligibility for the study. One hundred and one participants were ineligible because they declined to provide informed consent \((n = 4)\), were not currently in a romantic relationship \((n = 19)\), or exited the survey before providing an email address and thus were unable to take part in the intervention and follow-up assessments \((n = 78)\). Three hundred and eighty-seven participants were found to be eligible for the study. Of the 387 participants who were eligible for the study, 56.3% were paid for their participation. In the overall sample \((N = 387)\), 162 \((41.9\%)\) participants were male, 224 \((57.9\%)\) were female, and 1 \((0.3\%)\) person identified as transgender. The ethnic background in the initial sample was as follows: 48.8% White, 17.1% Hispanic or Latino/Latina, 5.2% American Indian/Alaska Native, 7.5% Asian, 4.4% Native Hawaiian or other Pacific Islander, 12.4% African American, and 3.9% Biracial, with 0.8% of participants declining to answer. Women in the sample ranged in age from 18 to 62 \((M = 30.57, SD = 8.02)\), with a median education level of 15 years; men in the sample ranged in age from 18 to 58 \((M = 34.23, SD = 6.94)\), with a median
education level of 17 years. In terms of relationship status, 13.7% were married, 41.6% were engaged, and 44.7% were dating. Of participants who were engaged or dating, 62.6% were living together with a mean relationship length of 57.79 months ($SD = 57.67$ months; range 1.00 – 387.00 months). The average relationship length of married participants was 100.40 months ($SD = 110.02$ months; range = 9.00 – 480.00 months). Of participants who were eligible to complete the study, 11.4% were in a same-sex relationship.

Two hundred and fifty one participants completed the pre assessment, post assessment, and follow-up assessment. Within this sample, 120 (47.8%) participants were male, 130 (51.8%) were female, and 1 (0.4%) person identified as transgender. The ethnic background in the sample of participants who completed the full study was as follows: 45.4% White, 21.9% Hispanic or Latino/Latina, 6.8% American Indian/Alaska Native, 4.4% Asian, 6.0% Native Hawaiian or other Pacific Islander, 12.0% African American, and 2.8% Biracial, with 0.8% participants declining to answer. Women in the sample ranged in age from 18 to 62 ($M = 32.04$, $SD = 7.81$), with a median education level of 17 years; men in the sample ranged in age from 20 to 58 ($M = 34.21$, $SD = 6.45$), with a median education level of 17 years. In terms of relationship status, 8.4% were married, 53.0% were engaged, and 38.6% were dating; 11.6% of participants were in a same-sex relationship. Of participants who were engaged or dating, 63.4% were living together with a mean relationship length of 66.15 months ($SD = 60.52$ months; range 1.00 – 387.00 months). The average relationship length of married participants was 95.67 months ($SD = 117.37$ months; range 9.00 – 398.00 months). Of the 251 participants who
completed the pre, post, and follow-up assessments, 78.9% were paid for their participation.

Using methodology similar to that employed by Emmons and McCullough (2003), participants were asked at the post assessment to invite their partner to participate in the study by filling out measures. Seventy-three participants agreed to invite their partners to participate, with 16 partners completing a survey. Due to the low level of partner participation, these data were not analyzed in the current study.

**Procedure**

**The pre assessment.** After providing informed consent, participants completed an online pre assessment that included demographic questions and measures of individual and relationship functioning described below.

**The intervention.** After completing the pre assessment, participants were assigned to groups using stratified random sampling. Participants were split into a total of eight different groups based on gender (male or female), relationship satisfaction (high or low satisfaction), and dispositional gratitude (grateful or ungrateful). Within each group, participants were then randomly assigned to one of the three experimental conditions: 1) a relationship-focused gratitude condition, 2) an amusement condition, or 3) a general events condition. This form of stratified random sampling was used to ensure that groups were equivalent with regard to dispositional gratitude level and relationship satisfaction, two key variables that could influence the efficacy of the intervention.

Within one week of completing the pre assessment, participants began receiving links by email to short, online questionnaires; participants received a total of 14 daily questionnaires (one per day for two weeks). Questionnaires included the Positive and
Negative PANAS affect scales, the relationship satisfaction item from the DAS, and questions asking participants about their prosocial behavior for the day. Participants were then asked to list relationship gratitudes, amusing events, or general events, depending on the condition to which they were assigned.

**Relationship-focused gratitude condition.** In the relationship-focused gratitude condition, participants received the following instructions:

>There are many things in a romantic relationship, both large and small, that we might be grateful about. Think back over the past day and write down on the lines below up to five things in your romantic relationship that you are grateful or thankful for. (Please do not use any identifying information, such as your partner’s name.)

This group was designed to test whether there are effects of thinking grateful thoughts focused on one’s relationship that are above and beyond simply experiencing positive affect, as in the amusement condition, or simply noticing events in the day.

**Amusement condition.** Participants in the amusement condition received the following instructions:

>There are many funny and amusing events and circumstances, both large and small, that happen in our lives. What were some of the funny or amusing things that happened to you in the past day? Think back over the past day and write down on the lines below up to five funny or amusing things or events that had an impact on you. (Please do not use any identifying information, such as people’s names.)
This group was designed to control for the effects of positive affect, so that a test of whether the presence of positive affect, versus gratitude specifically, accounts for any differences in the outcome variables.

**General events condition.** A general events condition served as a control condition to provide a neutral condition in which one is neither practicing relationship-focused gratitude nor thinking about positive-affect inducing events, as in the amusement condition. The general events condition instructions were the same as those used by Emmons and McCullough (2003) and are as follows:

> There are many events and circumstances, both large and small, that happen in our lives. What were some of the events or circumstances that affected you in the past day? Think back over the past day and write down on the lines below up to five events that had an impact on you. (Please do not use any identifying information, such as people’s names.)

The general events condition served to control for people’s attention. That is, simply thinking about one’s day could produce changes in affect, general well-being, or relationship quality. Thus it was important to include this condition so that tests regarding whether the practice of relationship gratitude, thinking about positive-affect inducing events, or both produce changes above and beyond simply listing events from the day.

Participants were informed that if they forgot to fill out a questionnaire, they should skip that day and fill out the next day’s questionnaire. As such, a questionnaire was considered “on time” only if it was completed on the day on which it was sent. If participants completed a survey outside of the allotted time (e.g., completing the Day 3 survey on Day 4), the data were deleted in the final analyses. At the beginning of the
study, participants’ responses to the daily questionnaires were visually scanned to ensure that the instructions were clear and that participants were completing the task as requested. Participants’ responses appeared to be in keeping with their respective assigned condition. A more thorough discussion of participants’ responses can be found in the Results and Discussion sections. Of the 251 participants who completed the full sample, sixty-one percent completing 12 or more of the interventions on time.

**The post assessment.** After having completed the intervention for 14 days, participants completed an online post assessment that was identical to the pre assessment. All participants were asked to complete the post assessment, regardless of how much they participated in the intervention. After the post assessment, participants were asked to invite their partner to participate. Participants were given a link to a partner survey that they could then forward to their partner. Participants were also given the option of providing their partner’s email address so that I could email a link to the survey to their partner.

**The follow-up assessment.** One month after completing the post assessment, participants were sent a link to complete a follow-up questionnaire that was identical to the pre and post assessments. A one-month follow-up was chosen because it allowed for a test of longer-term intervention effects. A one-month follow-up was also early enough that attrition was not as large as a later follow-up (e.g., a three month follow-up).

All study procedures and questionnaires were approved by the University of Denver Institutional Review Board.
Measures

Demographics. Information about participants’ age, ethnicity, gender, years of education, religiosity, relationship status (e.g., dating, cohabiting, married), and length of relationship was collected.

Dedication. The dedication subscale of the Commitment Inventory (Stanley & Markman, 1992) assesses participants' relationship dedication. Participants answer a total of 14 items using a 7-point likert scale (1 = strongly disagree to 7 = strongly agree). Sample items include "It makes me feel good to sacrifice for my partner " and " My relationship with my partner is clearly part of my future life plans." This measure demonstrates good reliability (Cronbach’s α = .82 to .86).

Relationship confidence. The Confidence Scale (Stanley & Trathen, 1994) assesses participants’ confidence in their current relationship. The Confidence Scale is a 5-item measure that asks participants to rate the extent to which they agree with a statement using a 7-point likert scale (1 = strongly disagree to 7 = strongly agree). An example item is: "We can handle anything that comes our way." The Confidence Scale demonstrates good reliability (Cronbach’s α = .83 to .90).

Positive connection. Positive connection to one’s partner was assessed using a five-item questionnaire. Sample items include “We have a lot of fun together” and “I love my partner.” Participants used a 7-point likert scale to respond to each question (1 = strongly disagree to 7 = strongly agree). The Positive Connection scale demonstrates good reliability (Cronbach’s α = .88 to .93).

Negative interaction. The Danger Signs scale is a 7-item questionnaire that measures negative interaction, including escalation, withdrawal, negative interpretations,
and invalidation, on a five-point likert scale (1 = never to 5 = frequently). Sample items include “Little arguments escalate into ugly fights with accusations, criticisms, name-calling, or bringing up past hurts” and “When we argue, one of us withdraws, doesn’t want to talk about it anymore or leaves the scene.” This scale demonstrated good reliability in the current study (Cronbach’s $\alpha = .87$ to .88).

**Relationship quality.** The four-item version of the Dyadic Adjustment Scale (Dyadic Adjustment Scale; Spanier, 1976) was used to assess relationship quality. The relationship satisfaction item from the DAS was used as in the daily diary surveys sent to participants. The relationship satisfaction item reads: “Please indicate the degree of happiness, all things considered, of your relationship.” Participants are then asked to rank their answers on a 7-point likert scale (0 = extremely unhappy to 6 = perfectly happy). The remaining three items of the DAS ask participants to rank how often they engage in certain relationship behaviors using a 6-point likert scale (0 = never to 5 = all of the time). Sample items include: “How often do you confide in your mate?” and “In general, how often do you think things between you and your partner are going well?” This measure has been shown to have high reliability and validity (see Hunsley, Best, Lefebvre, & Vito, 2001); however, its internal consistency was somewhat low in the current study (Cronbach’s $\alpha = .67$ to .70).

**Dispositional gratitude.** The six-item Gratitude Questionnaire (McCullough, Emmons, & Tsang, 2002) was used to assess the degree to which people are dispositionally grateful, using a 7-point likert scale. Sample items include “I have so much in life to be thankful for,” “I am grateful to a wide variety of people,” and “If I had to list everything that I felt grateful for, it would be a very long list.” This scale has been
shown to be reliable and valid (see McCullough, Emmons, & Tsang, 2002). Reliability in
the current sample was adequate (Cronbach’s $\alpha = .74$ to $.77$).

**Daily gratitude.** Similar to that the measure used by Emmons and McCullough
(2003), participants were asked to rate the extent to which they felt “grateful,” “thankful,”
and “appreciative” each day using a 5-point likert scale ($1 = \text{not at all}$ to $5 = \text{extremely}$).
A mean of participants’ responses to these items was calculated and used as a measure of
their daily level of gratitude. The scale demonstrated adequate reliability (Cronbach’s $\alpha = .72$ to $.86$).

**Life satisfaction.** The Satisfaction with Life Scale (*SWLS*; Diener, Emmons,
Larsen, & Griffen, 1985) is a five-item scale that measures global life satisfaction.
Representative items include “In most ways my life is close to my ideal” and “If I could
live my life over, I would change almost nothing.” Items are rated on a 7-point likert
scale ($1 = \text{strongly disagree}$ to $7 = \text{strongly agree}$). The SWLS has shown good internal
reliability and test-retest reliability (Pavot & Diener, 2009). In the current sample, the
SWLS demonstrated good reliability (Cronbach’s $\alpha = .85$ to $.91$).

**Positive affect.** Positive Affect was assessed using the Positive Affect scale of the
Positive and Negative Affect Schedule (*PANAS*; Watson, Clark, & Tellegen, 1988).
Participants used a 5-point likert scale ($1 = \text{not at all}$ to $5 = \text{extremely}$) to rate the extent
to which they felt each positive emotion that day, including “enthusiastic,” “excited,” and
“proud.” A mean positive affect score was then calculated. This scale demonstrated good
reliability in the current study (Cronbach’s $\alpha = .77$ to $.83$).

**Negative affect.** Negative affect was assessed using the Negative Affect scale of
the Positive and Negative Affect Schedule (*PANAS*; Watson, Clark, & Tellegen, 1988).
Participants rated the extent to which they felt an emotion that day using a 5-point likert scale (1 = not at all to 5 = extremely). Sample items include feeling “upset,” “nervous,” and “irritable.” A mean negative affect score was calculated. This scale demonstrated good reliability in the current study (Cronbach’s α = .79 to .90).

**Helping behavior.** Using a question asked by Emmons and McCullough (2003), participants were asked ”Did you help someone with a problem today?” Participants responded either “yes” or “no” to the question.

**Provision of emotional support.** In keeping with an item used by Emmons and McCullough (2003), participants were asked “Did you offer someone emotional support today? For example, did you provide comfort or encouragement to someone?” Participants responded either “yes” or “no” to the question.
Results

Preliminary analyses

Figure 1 contains a diagram illustrating how participants moved through the study and which participants are included in the final analyses. Of the 387 participants initially assigned to an intervention, one hundred and nine participants completed only the pre assessment, and 27 participants completed either the post assessment or follow-up assessment, but not both. Two hundred and fifty-one participants completed the pre, post, and follow-up assessments. Given that most people who remained in the study after the pre assessment completed both the post and follow-up assessment, data from the 251 participants who completed the full study (pre, post, and follow-up assessments) are used for the primary analyses. Means, standard deviations, and correlations between variables at the pre assessment can be found in Table 1. Before beginning the main analyses described below, I examined the distributional characteristics of the data. The data were found to generally be normally distributed at the pre assessment and there were no significant outliers. If responses seemed odd, for example reporting different birthdays at various time points or multiple responses from the same IP address, I created a variable to identify such cases. Inclusion criteria for “oddness” were liberal, with 106 out of 387 eligible participants being coded as “odd” (mostly for responses from the same IP address). I then compared the data of these respondents to participants whose data did not seem odd. I used a 2 (Odd versus not) X 3 (Condition) X 3 (Time) repeated-measures
analysis of variance (ANOVA) to examine any potential differences over time. I found no significant interactions odd X condition X time interactions and thus these respondents were included in the primary analyses.

**Random assignment.** I examined group differences at the pre assessment using one-way ANOVAs to ensure that random assignment was successful at the beginning of the study. There were no statistically significant differences at the time of group assignment between the three conditions on: dispositional gratitude, \( F(2, 384) = 0.23, p = .80 \); relationship quality, \( F(2, 384) = 0.88, p = .42 \); dedication, \( F(2, 384) = 0.10, p = .90 \); negative communication, \( F(2, 384) = 0.28, p = .76 \); relationship confidence, \( F(2, 384) = 2.25, p = .11 \); negative affect, \( F(2, 384) = 0.71, p = .49 \); positive affect, \( F(2, 384) = 2.87, p = .06 \); or life satisfaction, \( F(2, 384) = 0.15, p = .86 \).

**Examining differential attrition.** Given that some people completed the full study (e.g., pre, post, and follow-up assessment) while others partially completed the study (e.g., pre only, pre/post only, or pre/follow-up only), I used a 2 (Full versus Partial Completion) X 3 (Condition) ANOVA to test for any interactions and differences in attrition with regards to variables at the pre assessment. There was not a significant completion X condition interaction for dispositional gratitude, \( F(2, 381) = 0.56, p = .57 \). However, there was a main effect such that participants who completed the full study tended to be less dispositionally grateful than participants who partially completed the study, \( F(1, 381) = 45.69, p < .001 \).

There was a significant completion X condition interaction for relationship quality, \( F(2, 381) = 3.44, p < .05 \). When examining specific differences between groups, participants assigned to the amusement condition who completed the full study had
nearly statistically significant lower self-reported relationship quality at the pre-assessment than participants assigned to the same condition who partially completed the study, $F(1, 127) = 3.70, p = .06$. Participants assigned to the general events condition who completed the full study had nearly statistically significant higher relationship quality at the pre assessment than participants assigned to the same condition who partially completed the study, $F(1, 126) = 3.10, p = .08$. There were no significant differences in relationship quality between participants assigned to the relationship-focused gratitude condition who completed the full study or only part of the study $F(1, 128) = 0.02, p = .89$.

There were no significant Completion X Condition interactions on: dedication; negative communication; relationship confidence; negative affect; positive affect; or life satisfaction. However, there were some main effects for Completion. Participants who stayed in the study were less dedicated $F(1, 385) = 27.95, p < .001$; more affectively negative, $F(1, 385) = 11.93, p < .01$; had poorer relationship connectivity, $F(1, 385) = 10.91, p < .01$; had more negative interactions, $F(1, 385) = 10.72, p < .01$; but were more satisfied with life than those who partially completed the study at the pre assessment, $F(1, 385) = 7.43, p < .01$. There were no significant differences among full or partial completers on relationship confidence or positive affect at the pre assessment. Partial completers were excluded from the primary analyses because most of the partial completers ($n = 101$) only completed the pre assessment and 27 participants completed pre and post or follow-up, but not both. Given that the primary analyses were interested in changes over time from the pre assessment through the follow-up assessment, partial completers did not provide enough data to be included.
Participants who were paid for their participation in the study were significantly more likely to complete the full study than participants who were entered in the lottery system, $\chi^2(1) = 147.69, p < .001$. I conducted 2 (Paid versus unpaid) X 3 (Condition) X 3 (Time) repeated-measure ANOVAs to assess for interactions between the groups; results of the ANOVAs were non-significant for Paid X Condition X Time interactions for the dependent variables in the study. Thus, all analyses were conducted as Condition X Time repeated-measure ANOVAs.

Amongst the data used in the final analyses ($N = 251$), there were no differences amongst the groups in their rate of attrition, $\chi^2(2) = 0.74, p = .69$. That is to say, people dropped out of the three conditions at the same rate. However, there was differential attrition within groups such that there were some differences between groups on several variables at the pre assessment. I used one-way ANOVAs to test for group differences on each variable at the pre assessment. There was a significant one-way interaction for relationship confidence, $F(2, 248) = 4.80, p < .01$, partial $\eta^2 = .04$. Post hoc analyses using the Bonferroni method revealed that the amusement condition had significantly less confidence ($M = 4.89, SD = 1.22$) than both the relationship-focused gratitude ($M = 5.32, SD = 1.13$) and general events conditions ($M = 5.39, SD = 1.01$). There were no statistically significant mean differences between the relationship-focused gratitude and general events conditions.

A one-way ANOVA of the differences amongst groups on positive connection at the pre assessment was also significant, $F(2, 248) = 4.13, p < .05$, partial $\eta^2 = .03$. Bonferronni post hoc analyses revealed that the amusement condition had less positive connection ($M = 5.14, SD = 1.32$) than the general events condition ($M = 5.69, SD =
1.12). The mean of the relationship-focused gratitude condition was not significantly
different from either the amusement condition or the general events condition ($M = 5.47,\
SD = 1.25$).

Finally, a one-way ANOVA revealed differences in relationship quality at the pre
assessment amongst the conditions, $F(2, 248) = 3.96, p < .05$, partial $\eta^2 = .03$. Bonferonni
post hoc analyses revealed that the amusement condition had less relationship quality ($M = 
13.67, SD = 3.71$) than the general events condition ($M = 15.18, SD = 3.24$). The mean
relationship quality of the relationship-focused gratitude condition was not significantly
different from either the amusement condition or the general events condition ($M = 
14.31, SD = 3.41$). There were no group differences on other variables at the pre
assessment.

**Calculating intervention dosage.** Table 2 contains information on the number of
intervention surveys completed overall, as well as by experimental condition.
Intervention dosage was initially calculated in two ways: the number of “on time”
intervention surveys completed (e.g., Day 3 survey completed on Day 3) and the total
number of intervention surveys completed (e.g., Day 3 survey completed on Day 4). The
correlations between both forms of dose and variables of interest in the study were nearly
identical. Due to the fact that on time completion is in keeping with the spirit of the
intervention, the number of on time intervention surveys was used as the measure of
dosage. I used a one-way ANOVA to examine the difference of paid status on the
intervention dosage received and found no difference, Welch $F(1, 108.73) = 0.98, p = 
.32$. 

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Manipulation check. First, I conducted a 3 (Condition) X 3 (Time) repeated-measures ANOVAs to test for differential increases in gratitude across the three conditions over time, as measured by both dispositional gratitude and daily gratitude. In theory, the relationship-focused gratitude condition should have higher levels of gratitude over time compared to the other two conditions. As reviewed above, I predicted that the increase in gratitude would increase individual and relationship well-being. If there are not significant differences in gratitude amongst the three conditions, it would suggest that the intervention did not work or that all three groups experienced similar effects. There was not a significant Condition X Time interaction for dispositional gratitude, $F(4, 494) = 0.783, p = .54$, partial $\eta^2 = .01$. There were no significant differences in dispositional gratitude between the pre assessment and the post assessment ($M_{post} = 4.84, SD_{post} = 1.00$, $t(250) = -1.63, p = .10, r = .10$) or between the post assessment and the follow-up assessment, $t(250) = -1.39, p = .17, r = .09$. However, there was a significant main effect for time, such that participants’ dispositional gratitude increased from the pre assessment ($M_{pre} = 4.79, SD_{pre} = 1.03$) to the follow-up assessment ($M_{follow-up} = 4.89, SD_{follow-up} = 0.97; t(250) = -2.88, p < .01, r = .18$). This finding indicates that all interventions produced changes in dispositional gratitude, and that the relationship-focused gratitude condition did not produce higher changes in gratitude compared to the other conditions.

I also conducted a 3 (Condition) X 3 (Time) repeated-measures ANOVA to test for changes in daily gratitude. There was not a significant Condition X Time interaction, $F(4, 494) = 1.82, p = .12$, partial $\eta^2 = .02$. There was a significant main effect for time, such that participants’ daily gratitude decreased from the pre assessment ($M_{pre} = 3.71, SD_{pre} = 0.80$) to the post assessment ($M_{post} = 3.56, SD_{post} = 0.93, t(250) = 2.39, p < .05$,
Their daily gratitude increased from the post assessment to the follow-up assessment ($M_{\text{follow-up}} = 3.70$, $SD_{\text{follow-up}} = 0.79$, $t(250) = -2.49$, $p < .05$, $r = .16$). There were no mean differences in daily gratitude between the pre assessment and the follow-up assessment, $t(250) = 0.07$, $p = .95$, $r = .004$). Thus, participants also did not differ between groups in their levels of daily gratitude, indicating that the relationship-focused gratitude condition did not produce unique changes relative to the other conditions.

In addition to examining changes in gratitude across groups, I also coded a subsample of the responses to the intervention prompts as a manipulation check. I coded responses from 90 participants (30 from each condition), with equal numbers of men and women in each group, at Day 1, Day 7, and Day 14. Each response to the intervention was given two codes: the first code measured the affective quality of the response, and was coded as positive, negative, neutral, or indeterminate; the second code measured whether the responses was relationship-oriented, and categorized as being related to the romantic relationship/partner (e.g., husband said…), another relationship (e.g., mother, child), not related to a relationship (e.g., ankle injury), or coded as indeterminate (e.g., chatting, as it is not clear with whom the participant “chatted”). In an attempt to code as blindly as possible, I created a data set such that participants’ group assignment was not visible as I coded responses. However, this blind coding proved impossible because there were some responses in which I had a strong suspicion of the assigned condition. While I tried to remain objective, it is quite likely that my knowledge of the study’s design impacted my coding of responses, leading to decreased code validity. Ideally, participants responses should be coded by two, blind coders so that inter-rater reliability
can be calculated and so that their knowledge of the study does not influence their coding of the data.

In addition to the lack of double-blind coding, it was difficult to code the affect of responses as well as the object of responses. More specifically, 59.7% of the codes for affect and 61.2% of the codes for relationship-focus were found to be indeterminate overall. Affect was coded as indeterminate in 49.2% of the responses in the relationship-focused gratitude condition, 64.4% of the responses in the amusement condition, and 65.6% of the responses in the general events condition. Thus, the affect in the relationship-focused gratitude group might have been slightly easier to code than the other two conditions. With regard to relationship-focus, the number of indeterminate responses was roughly equal across the conditions. More specifically, relationship-focus was coded as indeterminate in 61.8% of the responses in the relationship-focused gratitude condition, 57.1% of the responses in the amusement condition, and 63.8% of the responses in the general events conditions. Many responses were too vague to know if the participant thought they were positive, negative, or neutral, or if another person had participated or was the object of the response. For example, “walk” received an indeterminate code for affect, because a walk could be pleasant (on a crisp fall day, holding hands with one’s partner), unpleasant (walking the dog in the rain), or neutral (walking around the house). Additionally, “walk” was coded as indeterminate in its relationship-focus; one could walk with one’s partner, walk with one’s toddler, or walk by one’s self. When considering group assignment, one can infer more specific codes for each response, but doing so could produce confirmatory biases in the data analysis. Unfortunately, given the large number of indeterminate codes in this preliminary coding
of the data, it is difficult to assess if groups responded in similar ways to the prompts. Implications for coding and future research are explored more thoroughly in the Discussion section.

In summary, the relationship-focused gratitude condition did not produce higher levels of either dispositional or daily gratitude compared to the amusement and general events conditions. Given that gratitude is the mechanism through which positive changes in individual and relationship well-being are posited to occur, it seems unlikely that there were will be significant differences between the conditions on outcome variables. Unfortunately, preliminary coding of the data was unable to determine the extent to which participants across conditions might have responded in similar ways to the prompts. If participants responded in similar ways (i.e., with positive affect and an orientation to their romantic relationship), this might explain the lack of differentiation amongst the conditions in their level of gratitude.

**Primary Analyses**

Only participants who completed the full study (pre, post, and follow-up assessments) were included in the primary analyses described below.

**Hypothesis 1a.** Participants in the relationship-focused gratitude condition will have higher levels of positive affect than participants in the events or general events conditions after the intervention.

**Positive Affect.** I used a 3 (Condition) X 3 (Time) repeated-measures ANOVA to test for group differences on positive affect across the pre, post, and follow-up assessments. There was not a significant Condition X Time interaction, $F(4, 494) = 0.773, p = .54$, partial $\eta^2 = .01$. There was a significant main effect for time, $F(2, 247) =$
A paired sample t-test indicated that participants across all groups experienced a decrease in their positive affect from the pre assessment (\(M_{\text{pre}} = 3.50, SD_{\text{pre}} = 0.57\)) to the post assessment (\(M_{\text{post}} = 3.36, SD_{\text{post}} = 0.67; t(250) = 3.69, p < .001, r = .23\)). Participants’ positive affect increased significantly from the post assessment to the follow-up assessment (\(M_{\text{follow-up}} = 3.46, SD_{\text{follow-up}} = 0.68; t(250) = -2.77, p < .01, r = .17\)). The differences between positive affect at the pre and follow-up assessments was non-significant, \(t(250) = 0.96, p = .34, r = .06\).

I also examined changes in positive affect across the intervention using a two-level Hierarchical Linear Modeling (HLM). I chose to use HLM because it models data that are non-independent, such as repeated measures, and it allows for testing of variables over time. Level-1 represents within-person characteristics, which in this case is time. Level-2 represents between person characteristics (e.g., gender or condition). I used the following model to test Hypothesis 1a:

\[
\begin{align*}
Y_{ij} & = \pi_{0ij} + \pi_{1ij}(\text{Time})_{ij} + \epsilon_{ij} \\
\pi_{0ij} & = \beta_{00j} + \beta_{01j}(\text{Condition 1}) + \beta_{02j}(\text{Condition 2}) + \beta_{03j}(\text{Pre Positive Affect}) + r_{0ij} \\
\pi_{1ij} & = \beta_{10j} + \beta_{11j}(\text{Condition 1}) + \beta_{12j}(\text{Condition 2}) + \beta_{13j}(\text{Pre Positive Affect}) + r_{1ij}
\end{align*}
\]

In this equation, \(i\) indexes time, and \(j\) indexes each group. There are three separate error terms that are assumed to be distributed normally. The residual error term is \(\epsilon_{ii}\), the random intercept term at the group level is \(r_{0ij}\), and the random slope term is \(r_{1ij}\). \(Y_{ij}\) is positive affect, the outcome variable. Condition 1 represents a dummy coded variable, in which the relationship-focused gratitude condition is coded as “1” and the
amusement and general events conditions are coded as “0.” In the Condition 2 variable, the relationship-focused gratitude and general events groups are coded as “0” while the amusement group is coded as “1.” Time was grand-mean-centered, meaning that the intercept term is interpreted as the average positive affect score for the general events group across the intervention (i.e., when Condition 1 and Condition 2 = 0).

Results of the HLM analyses are in Table 3. Line 1 of the table indicates that the mean of positive affect for the general events group across the intervention when all other variables are zero, including positive affect at the pre assessment, is 0.98 and that this number is significantly different from zero ($p < .001$). Line 2 indicates the change in the positive affect mean score for participants in the relationship-focused gratitude condition compared to the general events condition, which is non-significant in this case ($p = .64$). Line 3 indicates the change in positive affect mean score for the amusement condition compared to the general events condition, which is non-significant ($p = .45$). Line 4 indicates that, for a one-unit change in positive affect at pre, the mean positive affect score across the intervention increases 0.64 points ($p < .001$).

Lines 5 through 8 of Table 3 pertain to the rate of change in positive affect across the intervention. Line 5 is the slope for the general condition group when all other variables in the model are zero; the rate of change in positive affect for the general events condition is not significantly different from zero ($p = .16$). Additionally, the slope coefficients for both the relationship-focused gratitude condition and amusement condition were also non-significant ($p = .35$ and $p = .44$, respectively). Participants’ positive affect at the pre assessment was also not predictive of changes in slope ($p = .16$).
Negative Affect. I used a 3 (Condition) x 3 (Time) repeated-measures ANOVA to test for group differences in negative affect across the study. There was a significant Condition X Time interaction, $F(2, 494) = 2.45, p < .05$, partial $\eta^2 = .02$. Figure 2 shows a graph of condition means for negative affect across the three assessment points.

Participants in the relationship-focused gratitude and general events conditions reported significantly lower levels of negative affect at the post assessment ($M_{\text{post}} = 2.30$, $SD_{\text{post}} = 0.93$ and $M_{\text{post}} = 2.22$, $SD_{\text{post}} = 0.82$, respectively) than at the pre assessment (relationship-focused gratitude: $M_{\text{pre}} = 2.63$, $SD_{\text{pre}} = 0.91$, $t(87) = 3.82, p < .001$, $r = .38$; general events: $M_{\text{pre}} = 2.62$, $SD_{\text{pre}} = 0.86$, $t(81) = 5.04, p < .001$, $r = .49$). However, participants in the amusement condition did not experience a significant decrease in negative affect from the pre assessment ($M_{\text{pre}} = 2.55$, $SD_{\text{pre}} = 0.73$) to the post assessment ($M_{\text{post}} = 2.45$, $SD_{\text{post}} = 0.74$, $t(80) = 1.47, p = .15$, $r = .16$).

Participants in the relationship-focused gratitude condition experienced a significant increase in negative affect from the post-assessment to the follow-up assessment ($M_{\text{follow-up}} = 2.52$, $SD_{\text{follow-up}} = 0.92$, $t(87) = -2.96, p < .01$, $r = .30$), as did participants in the amusement condition ($M_{\text{follow-up}} = 2.61$, $SD_{\text{follow-up}} = 0.80$, $t(80) = -2.69, p < .01$, $r = .29$). These increases in negative affect appear to reflect a return to baseline levels of negative affect, as neither groups’ mean at the follow-up assessment differs significantly from their mean negative affect at the pre assessment (relationship-focused gratitude: $t(87) = 1.13, p = .26$, $r = .12$; amusement: $t(80) = -0.85, p = .40$, $r = .09$).

Participants in the general events condition did not have a significant change in their mean negative affect from the post assessment to the follow-up assessment ($M_{\text{follow-up}} = 2.34$, $SD_{\text{follow-up}} = 0.77$; $t(81) = -1.52, p = .13$, $r = .17$). However, the mean negative
affect of participants in the general events condition continued to be significantly lower at the follow-up assessment than participants’ mean negative affect at the pre assessment, $t(81) = 3.17, p < .01, r = .33$.

I also examined changes in negative affect across groups during the intervention using HLM. I used a model identical to the one described under Hypothesis 1a, which was used to examine positive affect across the intervention. However, the outcome variable is negative affect and I controlled for pre negative affect instead of pre positive affect. Results of the HLM analyses can be found in Table 4. Line 1 of the table is the mean negative affect score for the general events condition when pre negative affect is zero; this coefficient is significantly different from zero ($p < .001$). Neither the relationship-focused gratitude condition’s negative affect mean nor the negative affect mean for the amusement condition were significantly different from that of the general events condition ($p = .94$ and $p = .08$, respectively). Line 4 indicates that for a one-unit increase in participants’ negative affect score at the pre assessment, the mean negative affect score in the intervention was 0.59 points higher ($p < .001$).

There was not a significant slope effect for the general events condition, when all other variables in the model were zero ($p = .12$). There were also no differences in slope for the relationship-focused gratitude condition ($p = .65$) or the amusement condition ($p = .48$) compared to the general events condition. However, there was a significant slope effect for pre negative affect, such that a one-unit increase in the pre negative affect score decreased the slope by 0.02 units ($p < .001$). That is to say, participants who had higher negative affect scores at the pre assessments had smaller slopes than did participants with lower negative affect scores at the pre assessment.
Hypothesis 1b. Participants in the relationship-focused gratitude condition will have higher levels of general well-being than participants in the amusement or general events conditions after the intervention.

I used a 3 (Condition) X 3 (Time) repeated-measures ANOVA to test for group differences on life satisfaction across the study. There was not a significant Condition X Time interaction, $F(4, 494) = 0.728, p = .57$, partial $\eta^2 = .006$. There was a significant main effect for time, such that participants’ life satisfaction increased from the pre assessment ($M_{pre} = 5.01, SD_{pre} = 1.23$) to the follow-up assessment ($M_{follow-up} = 5.16, SD_{follow-up} = 1.08$; $F(2, 247) = 4.45, p < .05$, partial $\eta^2 = .04$).

Hypothesis 1c. Participants in the relationship-focused gratitude condition will have been more likely to have engaged in prosocial behavior at post and follow-up than participants in the amusement or general events conditions.

Helping behavior. Participants were asked about their prosocial behavior at the pre assessment, post assessment, and follow-up assessment. Specifically, participants were asked if they helped someone with a problem that day. I used chi-square analyses to test for differences in responses between the three groups. There were no significant differences in self-reported helping behavior at the pre assessment, $\chi^2(2) = 1.69, p = .43$. Additionally, there were no differences amongst the conditions in helping behavior at the post assessment or follow-up assessment, $\chi^2(2) = 2.60, p = .27$ and $\chi^2(2) = 0.58, p = .75$ respectively.

Participants also reported on their helping behavior (i.e., “Did you help someone with a problem today?”) during the intervention. I used a two-level Bernoulli Hierarchical Linear Model (HLM) to test whether participants in the three conditions
experienced differences in self-reported helping behavior. Level-1 represents within-person characteristics, such as time. Level-2 represents between person characteristics (e.g., gender or condition). I used the following model to test changes in the likelihood of engaging in helping behavior:

Level 1: \( \text{Prob}(Y_{ij} = 1|\pi_i) = \phi_{ti} \)

\[
\log \left[ \frac{\phi_{ti}}{1 - \phi_{ti}} \right] = \pi_{0ij} + \pi_{1ij}(\text{Time})_{ij} + \epsilon_{ij}
\]

Level 2: \( \pi_{0ij} = \beta_{00j} + \beta_{01j}(\text{Condition 1}) + \beta_{02j}(\text{Condition 2}) + r_{0ij} \)

\( \pi_{1ij} = \beta_{10j} + \beta_{11j}(\text{Condition 1}) + \beta_{12j}(\text{Condition 2}) + r_{1ij} \)

In this equation, \( i \) indexes time, and \( j \) indexes each group. There are three separate error terms that are assumed to be distributed normally. The residual error term is \( \epsilon_{ti} \), the random intercept term at the group level is \( r_{0ij} \), and the random slope term is \( r_{1ij} \).

\( Y_{ij} \) is daily helping behavior, the outcome variable. Condition 1 represents a dummy coded variable, in which the relationship-focused gratitude condition is coded as “1” and the amusement and general events conditions are coded as “0.” In the Condition 2 variable, the relationship-focused gratitude and general events groups are coded as “0” while the amusement group is coded as “1.” Time was grand-mean-centered so that the intercept term could be interpreted as the average likelihood of helping behavior score across all available assessment time points for the general events group (i.e., when Condition 1 and Condition 2 = 0).

The results of this analysis are displayed in Table 5. Line 1 of the table indicates that the predicted probability of participants in the general events condition helping someone with a problem is 0.35. Line 2 indicates the difference in the probability of helping behavior for the relationship-focused gratitude condition compared to the general
events condition; it was not significant \((p = .80)\). Line 3 indicates the difference in probability of helping behavior for the amusement condition compared to the general events condition; it was not significant \((p = .81)\). Line 4 indicates the rate of change in the probability of helping behavior for the general events condition during the study and it is non-significant \((p = .58)\). Line 5 and Line 6 indicate the difference in the rate of change in helping behavior for the relationship-focused gratitude and amusement conditions compared to the general events condition, respectively. These differences were not significant \((p = .97\) and \(p = .83\), respectively). There was not a significant difference in the probability of helping behavior for the relationship-focused gratitude group or the amusement group compared to the general events groups. There was also no difference in the rate of change in helping behavior for the relationship-focused gratitude condition or amusement condition, when compared to the general events group.

**Provision of emotional support.** Participants were asked if they provided emotional support to someone on the day that they completed pre assessment, post assessment, and follow-up assessment. There were no significant differences between the groups in their provision of emotional support at the pre assessment, \(\chi^2(2) = 0.26, p = .88\). There were also no differences in the provision of emotional support between groups at the post assessment or follow-up assessment, \(\chi^2(2) = 3.64, p = .16\) and \(\chi^2(2) = 0.91, p = .63\), respectively.

Similar to the test of helping behavior described above, I used a two-level Bernoulli Hierarchical Linear Model (HLM) to test whether participants in the three conditions experienced differences in providing emotional support during the intervention. A model identical to the one described above was used, with emotional
support as the dichotomous outcome variable. The results of the analyses are presented in Table 6. The difference in the probability of providing emotional support for the relationship-focused gratitude compared to the general events group was not significant \( (p = .64) \). The difference in the probability of the provision of emotional support for the amusement condition compared to the general events condition was also non-significant \((p = .77)\). Additionally, participants in the general events condition had a significant rate of change in the probability of emotionally supportive behavior across the intervention \((B = 0.04, p < .05)\). The difference in the rate of change in the provision of emotional support for the relationship-focused gratitude and amusement conditions compared to the general events condition were non-significant \((p = .35\) and \(p = .20\), respectively\). In summary, there was not a significant difference in emotional supportive behavior for the relationship-focused gratitude group or the amusement group compared to the general events groups. Although emotionally supportive behavior increased overall during the intervention, there was no difference in the rate of change in emotional supportive behavior for the relationship-focused gratitude condition or amusement condition, when compared to the general events group.

**Hypothesis 2a.** Participants in the relationship-focused gratitude condition will report increases in relationship quality compared to participants in the amusement and general events conditions.

I conducted 3 (Condition) X 3 (Time) repeated-measure ANOVAs to assess for potential group differences on relationship variables, including: relationship quality as measured by the Dyadic Adjustment Scale (DAS); dedication; relationship confidence; and positive connection in the relationship.
**Relationship quality.** There was not a significant Condition X Time interaction for relationship quality, as measured by the DAS, $F(4, 494) = 1.06, p = .38$, partial $\eta^2 = .01$. There was also not a significant time effect, $F(2, 247) = 1.41, p = .25$, partial $\eta^2 = .01$.

**Dedication.** There was no significant Condition X Time interaction for dedication, $F(4, 494) = 0.30, p = .88$, partial $\eta^2 = .002$. There was also not a significant main effect for time with regard to dedication, $F(2, 247) = 2.241, p = .11$, partial $\eta^2 = .02$.

**Relationship confidence.** When testing a Condition X Time interaction for relationship confidence, I found no significant interaction, $F(4, 494) = 1.16, p = .33$, partial $\eta^2 = .01$. There was a significant main effect for time, $F(2, 247) = 4.11, p < .05$, partial $\eta^2 = .03$. I conducted paired-sample t-tests and found that there was not a significant difference between relationship confidence at the pre assessment ($M_{pre} = 5.21$, $SD_{pre} = 1.14$) and post assessment ($M_{post} = 5.18$, $SD_{post} = 1.11$; $t(250) = 0.53, p = .60, r = .07$). However, there was a significant increase in relationship confidence from the post assessment to the follow-up assessment ($M_{follow-up} = 5.31$, $SD_{follow-up} = 1.00$; $t(250) = -2.76, p < .01, r = .17$). The increase in relationship confidence at the follow-up assessment was also significantly higher than relationship confidence at the pre assessment, $t(250) = -2.08, p < .05, r = .13$.

**Positive relationship connection.** I used a Condition X Time ANOVA to assess for group differences over time on positive relationship connection. The Condition X Time interaction was non-significant, $F(4, 494) = 1.21, p = .31$, partial $\eta^2 = .01$. However, there was a significant effect for time, $F(2, 247) = 11.29, p < .001$, partial $\eta^2 = .08$. I ran paired t-tests to assess for differences over time. Positive connection at the post assessment ($M_{post} = 5.33$, $SD_{post} = 1.31$) was significantly lower than at the pre assessment.
However, positive connection increased significantly from the post assessment to the follow-up assessment ($M_{\text{post}} = 5.44$, $SD_{\text{pre}} = 1.24$; $t(250) = 2.07$, $p < .05$, $r = .13$). However, positive connection increased significantly from the post assessment to the follow-up assessment ($M_{\text{post}} = 5.64$, $SD_{\text{post}} = 1.11$; $t(250) = 4.70$, $p < .001$, $r = .25$). Positive connection at the follow-up assessment was statistically significantly higher than positive connection at the pre assessment, $t(250) = -2.53$, $p < .05$, $r = .16$.

**Relationship satisfaction.** During the intervention, participants were asked daily about their relationship satisfaction using one item from the DAS. I used a 2-level hierarchical linear model to assess for changes in relationship satisfaction between groups over the intervention period. Similar to the model used to test changes in affect over the intervention, I used the following model:

Level 1:  
$$Y_{ij} = \pi_{0ij} + \pi_{1ij}(\text{Time})_{ij} + \varepsilon_{ij}$$

Level 2:  
$$\pi_{0ij} = \beta_{00j} + \beta_{01j}(\text{Condition 1}) + \beta_{02j}(\text{Condition 2}) + \beta_{03j}(\text{Pre Relationship Satisfaction}) + r_{0ij}$$

$$\pi_{1ij} = \beta_{10j} + \beta_{11j}(\text{Condition 1}) + \beta_{12j}(\text{Condition 2}) + \beta_{13j}(\text{Pre Relationship Satisfaction}) + r_{1ij}$$

Time was grand-mean centered, meaning that the intercept term is the mean relationship satisfaction score when all other variables in the model are zero. Results of the HLM analysis can be found in Table 7. Line 1 of the table is not very meaningful; it simply indicates the mean relationship satisfaction score for people in the general events condition when all other variables in the model are zero (i.e., when participants report feeling extremely unhappy with their relationship at the pre assessment) and that this value is significantly different from zero, $p < .001$. More importantly, there is not a significant change in the mean relationship satisfaction score when moving from the
general events condition to the relationship-focused gratitude condition or amusement condition, as reflected by the non-significant coefficients ($p = .84$ and $.53$, respectively). As pre relationship satisfaction increases one unit, the mean relationship satisfaction score across the intervention increases 0.40 units, $p < .001$. There were no significant effects of slope, indicating that relationship satisfaction did not change significantly during the intervention for any of the three conditions.

**Hypothesis 2b.** Additionally, participants in the relationship-focused gratitude condition will report lower levels of negative interaction than participants in the amusement and general events conditions.

I used a 3 (Condition) X 3 (Time) repeated-measures ANOVA to test for differences in negative interaction across the study. The Condition X Time interaction was non-significant, $F(4, 494) = 0.87, p = .48$, partial $\eta^2 = .01$. However, there was a significant main effect for time, $F(2, 247) = 11.91, p < .001$, partial $\eta^2 = .09$. I conducted paired t-tests to better understand the mean differences on negative interaction over time. Participants’ negative interaction decreased from the pre assessment ($M_{pre} = 2.97, SD_{pre} = 0.89$) to both the post assessment ($M_{post} = 2.75, SD_{post} = 0.82; t(250) = 4.77, p < .001, r = .29$) and follow-up assessment ($M_{follow-up} = 2.72, SD_{follow-up} = 0.93; t(250) = 3.96, p < .001, r = .24$). There were no significant differences in the level of negative interaction from the post assessment to the follow-up assessment ($t(250) = 0.51, p = .61, r = .03$).

**Hypothesis 2c.** Partners of participants in the relationship-focused gratitude condition will report higher levels of relationship quality than partners in the amusement and general events conditions. Due to the low partner response rate ($n = 16$), I was unable to run analyses for this hypothesis.
Exploratory analyses

In addition to the analyses described above, I also conducted several exploratory analyses.

**Moderators.** I tested several moderator variables, including gender and relationship status. Moreover, I created moderator variables by conducting a median split of participants’ scores at the pre assessment on the following variables: dose, dedication, relationship quality, relationship confidence, positive connection, negative interaction (danger signs), dispositional gratitude, positive affect, negative affect, life satisfaction, relationship length, ethnicity, and religiosity. I then conducted 3 (Condition) x 3 (Time) x 2 (Moderator) repeated-measures ANOVAs to test for any moderation effects in the analyses described above; all analyses were non-significant.

**Gratitude at the pre assessment.** I used hierarchical regression to test the power of gratitude as a predictor of relationship variables at the pre-assessment. For these analyses, all participants who were eligible to complete the study (N = 387) were included. In each analysis, age, education, and gender were controlled for in Step 1. At Step 2, positive affect, negative affect, and life satisfaction were added; these variables are the three components of subjective well-being (Diener, 1984; 1994). Gratitude was added at Step 3 to test whether it explained any unique variance in relationship variables above and beyond subjective well-being.

**Relationship quality.** Results of the hierarchical regression predicting relationship quality at the pre assessment can be found in Table 8. Positive affect, negative affect, and life satisfaction were significant predictors of relationship quality at Step 2. At Step 3, positive affect became a non-significant predictor of relationship quality. Adding
gratitude to the model in Step 3 resulted in a statistically significant change in $R^2$, albeit by a small amount ($\Delta R^2 = 0.02, p < .001$). For a one-unit increase in gratitude, relationship quality increased 0.71 points ($p < .001$).

**Dedication.** Table 9 includes information for the hierarchical regression predicting dedication at the pre assessment. Gratitude was a significant predictor of dedication when controlling for other variables in the model, including positive affect, negative affect, and life satisfaction. For a one-unit increase in gratitude, dedication increased 0.46 points ($p < .001$). Adding gratitude to the model explained an additional 12% of the variance in dedication ($p < .001$).

**Relationship confidence.** Results of the hierarchical regression predicting relationship confidence at the pre assessment can be found in Table 10. Adding gratitude to the model explained an additional 3% of the variance in relationship confidence at the pre assessment ($p < .001$). For a one-unit increase in gratitude, relationship confidence increased 0.28 points ($p < .001$).

**Positive connection.** Table 11 includes information for the hierarchical regression predicting positive connection. Gratitude was a significant predictor of positive connection: for a one-unit increase in gratitude, positive connection increased 0.49 points when controlling for other variables in the model ($p < .001$). Adding gratitude to the model explained an additional 9% of the variance in positive connection ($\Delta R^2 = 0.09, p < .001$).

**Negative interaction.** Results of the hierarchical regression predicting negative interaction at the pre assessment can be found in Table 12. Gratitude was a significant predictor of negative interaction at pre, such that for a one-unit increase in gratitude,
negative interaction decreased 0.12 points, while controlling for other variables in the model ($p < .05$). Although including gratitude in the model led to a statistically significant change in $R^2$, it only accounted for a 1% increase in variance explained ($p < .05$).

**Changes in gratitude from pre to post.** I used hierarchical regression to test whether changes in gratitude from the pre to post assessment predicted changes in individual and relationship-variables at the follow-up assessment. The gratitude score at pre was entered at Step 1 for each analysis; gratitude at post was entered at Step 2.

**Positive affect.** Table 13 includes the results of the hierarchical regression of pre and post gratitude on positive affect at the follow-up assessment. Gratitude at the pre assessment was predictive of positive affect at Step 1 such that a one-unit increase in gratitude at pre predicted a 0.13-point increase in positive affect at follow-up ($p < .01$); however, the pre gratitude score dropped to non-significance in Step 2 when gratitude at post was added. Neither gratitude at pre nor gratitude at post were significant predictors of positive affect at follow-up. Gratitude at pre predicted 3.6% of the variance in positive affect at follow-up ($p < .01$); adding the post gratitude score did not significantly increase the value of $R^2$.

**Negative affect.** Table 14 includes the results of the hierarchical regression of pre and post gratitude on negative affect at the follow-up assessment. Gratitude at pre was predictive of negative affect at follow-up at Step 1, such that a one-unit increase in gratitude resulted in a decrease of 0.42 points in negative affect at follow-up ($p < .001$). However, pre gratitude dropped to non-significance at Step 2 of the model. For a one-unit increase in gratitude at post, negative affect decreased 0.37 points ($p < .001$). Adding the
score for gratitude at the post assessment at Step 2 explained 5% more of the variance in negative affect at the follow-up assessment, for a total of 32.2% of explained variance ($p < .001$).

**Life satisfaction.** Table 15 contains the results of the hierarchical regression of pre and post gratitude on life satisfaction at the follow-up assessment. Gratitude at the pre assessment was a significant predictor of life satisfaction at follow-up in both Steps 1 and 2 of the model ($B_{pre} = 0.46, p < .001$; $B_{post} = 0.45, p < .01$). Gratitude at post, however, was not a significant predictor of life satisfaction at follow-up. Gratitude at post did not significantly increase the amount of variance explained ($\Delta R^2 = 0.01$). Gratitude at pre explained 18.6% of the variance in life satisfaction at follow-up ($p < .001$).

**Relationship quality.** Results of the hierarchical regression of pre and post gratitude on relationship quality at the follow-up assessment can be found in Table 16. At Step 1, a one-unit increase in gratitude at pre predicted a 2.01-point increase in relationship quality at follow-up. Both the pre and post gratitude scores were significant predictors of relationship quality at Step 2. For a one-unit increase in gratitude at pre, relationship quality increased 1.01 points while controlling for gratitude at post ($p < .01$). For a one-unit increase in gratitude at post, relationship quality increases 1.21 points while controlling for pre gratitude ($p < .001$). Additionally, adding gratitude at post predicted an additional 3% of variance in relationship quality at follow-up ($p < .001$). Together, gratitude at pre and post explained 37.2% of the variance in relationship quality at follow-up ($p < .001$).

**Dedication.** Results of the hierarchical regression of pre and post gratitude on dedication at follow-up can be found in Table 17. Gratitude at pre was predictive of
dedication at Step 1, such that a one-unit increase in gratitude resulted in an increase of 0.59 points in dedication at follow-up ($p < .001$). Gratitude at pre continued to be a significant predictor of dedication at follow-up at Step 2, such that a one-unit increase in pre gratitude predicted a 0.15-point increase in dedication ($p < .05$). For a one-unit increase in gratitude at post, dedication increased 0.52 points ($p < .001$). Adding the score for gratitude at the post assessment at Step 2 explained 12% more of the variance in dedication at post ($p < .001$). Together, gratitude at pre and post explained 56.1% of the variance in dedication at follow-up.

**Relationship confidence.** Results of the hierarchical regression of pre and post gratitude on relationship confidence at the follow-up assessment can be found in Table 18. Gratitude at pre was predictive of relationship confidence at Step 1, such that a one-unit increase in gratitude resulted in a statistically significant increase of 0.56 points in relationship confidence at follow-up ($p < .001$). Pre gratitude remained significant at Step 2 of the model, such that a one-unit increase in gratitude at pre predicted a 0.27-point increase in relationship confidence at follow-up ($p < .01$). For a one-unit increase in gratitude at post, relationship confidence increased 0.35 points ($p < .001$). Adding the score for gratitude at the post assessment at Step 2 explained 3.5% more of the variance in relationship confidence at follow-up ($p < .001$). Together, pre and post gratitude predicted 36.5% of the variance in relationship confidence at the follow-up assessment ($p < .001$).

**Positive connection.** Results of the hierarchical regression of pre and post gratitude on positive connection at the follow-up assessment can be found in Table 19. Gratitude at pre was predictive of positive connection at follow-up at Step 1, such that a
one-unit increase in gratitude resulted in a statistically significant increase of 0.67 points in positive connection ($p < .001$). Pre gratitude remained significant at Step 2 of the model, such that a one-unit increase in pre gratitude predicted an increase of 0.28 points in positive connection at follow-up ($p < .01$). For a one-unit increase in gratitude at post, positive connection increased 0.46 points ($p < .001$). Adding the score for gratitude at the post assessment at Step 2 explained 4.8% more of the variance in positive connection at follow-up, with pre and post gratitude explaining 43.0% of the variance in positive connection at follow-up ($p < .001$).

**Negative interaction.** Results of the hierarchical regression of pre and post gratitude on negative interaction at the follow-up assessment can be found in Table 20. Gratitude at pre was predictive of positive connection at follow-up at Step 1, such that a one-unit increase in gratitude resulted in a statistically significant decrease of 0.33 points in negative interaction at follow-up ($p < .001$). However, pre gratitude dropped to non-significance at Step 2 of the model. For a one-unit increase in gratitude at post, negative interaction decreased 0.33 points ($p < .01$). Adding the score for gratitude at the post assessment at Step 2 explained 3.6% more of the variance in negative interaction at follow-up, for a total of 16.7% of variance in negative interaction explained by pre and post gratitude scores ($p < .01$).
Discussion

The current study examined the extent to which a positive psychology intervention, namely a practice of relationship-focused gratitude, could enhance both individual and relationship well-being. The intervention’s impact was evaluated on a range of individual and relationship variables. Data were collected at a pre assessment, post assessment, and at a follow-up assessment that took place one month after the post assessment. Analyses were conducted to understand the effect of the relationship-focused gratitude condition on outcome measures relative to two other conditions. Changes within experimental conditions over time, as well as simple changes over time, are discussed in detail below.

Discussion of Main Findings

The findings in the current study are organized into three sections: 1) Discussion of group differences for Aim 1 and Aim 2; 2) Discussion of findings across groups over time and possible explanations for main effects of time in light of many non-significant group differences; and 3) Exploratory analyses are discussed. Before discussing the main findings, I will briefly discuss: assessment participation, particularly at the pre-assessment; participation in the intervention itself; and attrition.

Assessment and intervention completion. Participants were asked to do quite a bit of work in the current study; they were asked to complete a total of 17 surveys, including 14 daily diary surveys. Seventy-eight participants stopped in the middle of the
pre assessment before providing their email address for the intervention portion of the study. Of the 387 participants assigned to an intervention group, only 65% completed the post and follow-up assessments. Paying participants greatly increased the retention rate; future studies should consider paying participants for their participation in longitudinal, daily diary studies. On average, participants completed 10.82 days of the intervention on time, with the majority of the sample completing 12 or more of the interventions on time. There were no significant group differences with regard to dosage.

Although attrition was relatively even amongst the three groups, with each group having roughly the same number of participants, there was differential attrition overall such that participants who remained in the study tended to be less grateful, as assessed by the Gratitude Questionnaire, than participants who partially completed the study (e.g, completed pre only, pre and post, or pre and follow-up). It is difficult to say with certainty why less grateful participants were more likely to complete the survey without having data from the partial completion group because the missing data make it impossible to examine how the partial completion group responded to the intervention. One possible explanation is that gratefully predisposed participants received less benefit from the study. Participants who remained in the study generally experienced increases in relationship confidence, life satisfaction, and gratitude, and decreases in negative interaction. Gratefully predisposed participants might have experienced a ceiling effect wherein, already having higher levels of individual and relationship well-being, there was less gained during the intervention and thus less motivation to complete the study.

Interestingly, participants who remained in the amusement condition tended to have lower relationship confidence, less positive connection, and lower relationship
quality at the pre assessment compared to participants in the relationship-focused
gratitude condition and general events condition. Again, it is difficult to say why this
difference appeared without having data from participants assigned to the amusement
condition who then partially completed the study. However, one possibility is that
participants assigned to this condition who had happier relationships found the task less
interesting or noticed less of an effect on their mood than participants in less happy
relationships; they too might have experienced a ceiling effect akin to the one described
in the previous paragraph on overall attrition. Interestingly, for those who completed the
full study, participants across all conditions experienced increases in relationship
confidence, life satisfaction, and gratitude as well as decreases in negative interactions, as
will be described in greater detail below. Perhaps partial completers had less room for
improvement, reaped less benefit, and thus were more likely to drop out of the study.
Alternatively, participants in less happy relationships might have found the amusement
condition easier than the relationship-gratitude condition and general events condition,
and thus more likely to stay in the amusement condition. One might expect participants
with lower relationship quality to be more likely to drop out of the relationship-gratitude
condition; it could put too much strain on them or their relationship to generate gratitudes
when not feeling particularly grateful or have nothing for which to feel grateful.
Unfortunately, preliminary coding of the data was not able to answer this question.
However, the general events condition was very neutral in that participants were neither
asked to identify positive emotions nor relationship-based events and could therefore list
any type of event. Given the relatively non-directive nature of the general events
condition, it seems that this condition could potentially be the easiest to follow. Thus, it
seems unlikely that the amusement condition was easier than both the relationship-focused gratitude and general events condition for less relationally happy participants.

I will now discuss the major findings of my dissertation. Due to the large number of non-significant findings between conditions, I will briefly report the findings for differences between conditions before describing differences across conditions over time, and possible explanations for these findings.

**Differences between conditions.** Aim 1 sought to replicate existing findings demonstrating that practicing gratitude increases positive affect, general well-being, and prosocial behavior compared to control conditions wherein participants engage in similarly frequent activities that are not believed to cause the same effects (e.g., listing events of the day). There were no significant group differences between the relationship-focused gratitude, amusement, and general events conditions on positive affect, life satisfaction, or frequency of prosocial behavior across the pre, post, and follow-up assessments.

In addition to positive affect, this study also examined changes in negative affect. Previous research on gratitude interventions showed mixed effects for changes in negative affect, with some studies finding no differences in negative affect and others finding that negative affect decreases (Emmons & McCullough, 2003). The current study found a significant difference amongst the three conditions in their self-reported level of negative affect over time. The relationship-focused gratitude and general events conditions reported lower levels of negative affect from the pre assessment to the post assessment, compared to participants in the amusement condition, who experienced no change in negative affect during any part of the study. This study also examined negative
affect during the daily diary portion of the study, while participants were completing the intervention. However, there were no significant differences in either mean negative affect across the intervention or rate of change in negative affect amongst the three groups. Nevertheless, the relationship-focused gratitude and general events groups had lower levels of negative affect at the post assessment compared to their scores at the pre assessment. Perhaps the relationship-focused gratitude and general events conditions were responding to prompts in similar ways or were simply more relationship-focused than the amusement condition, which caused the changes in negative affect for both conditions relative to the amusement condition at the post assessment. Responses to the intervention, and their potential overlap amongst the three conditions, will be discussed more thoroughly below.

Interestingly, participants in the relationship-focused gratitude condition experienced an increase in negative affect from the post assessment to the follow-up assessment, returning to their baseline levels. Given that there were no significant group differences in negative affect during the intervention period itself, it is difficult to definitively point to the cessation of the daily intervention for the increase in negative affect. Perhaps the increase in negative affect for the relationship-gratitude group is simply regression to the mean. Importantly, participants in the general events condition not only experienced a decrease in negative affect from the pre assessment to the post assessment, but they continued to experience lower levels of negative affect at the follow-up assessment, indicating that they had not returned to their baseline level of negative affect. The general events condition was included to serve as an active control group. Thus, it is possible that this finding reflects noise in the data and not a true effect for the
general events condition. Alternatively, given that the general events condition was the only condition to have maintained decreased negative affect one month after the intervention, it is possible that it was a poor control group and was more of an active condition than anticipated. Moreover, the general events condition could have served as a relatively emotionless distraction task compared to the emotionally toned relationship-focused gratitude and amusement conditions, thereby producing differential effects. Participants’ responses to the three conditions, and particularly to the general events condition, and the potential effects on this study’s findings are discussed in more detail later.

Aim 2 sought to extend the existing literature on gratitude by examining how a practice of relationship-focused gratitude affects self-reported relationship quality as well as self-reported relationship behaviors. There were no differences amongst the conditions on relationship quality, dedication, relationship confidence, positive connection, or negative interaction across the study. Additionally, I examined relationship satisfaction during the daily diary period of the study, during which participants were completing the intervention, and found no differences amongst the groups in either their mean level of relationship satisfaction during the intervention nor the rate with which their relationship satisfaction changed.

Finally, I attempted to collect partner data. Seventy-three participants agreed to invite their partner to participate, but unfortunately only 16 partners completed the partner assessment. Due to the low number of partner data available, these data were not analyzed. Future research should examine partner report to help better understand whether self-reported changes in affect and behavior are perceived by others too.
Main effects for time. Although there was only one significant group difference (with regard to negative affect), there were many main effects for time in the current study. Participants in all three conditions experienced increases in life satisfaction over the course of the study. Research on gratitude has demonstrated that a daily gratitude practice increases life satisfaction (Emmons & McCullough, 2003). However, in the current study, this change was seen across groups indicating that perhaps other interventions can increase life satisfaction too. Indeed, other positive psychology interventions (e.g., visualizing one’s best possible self, practicing mindfulness, etc.) have been shown to increase life satisfaction (Lyubomirsky, Sheldon & Schkade, 2005).

Participants also reported decreases in negative interaction from the pre assessment to the post assessment, and these changes were maintained at the follow-up assessment. Relationship confidence did not change significantly from the pre assessment to the post assessment, but did significantly increase from the post assessment to the follow-up assessment. The changes in relationship confidence across groups could reflect a “sleeper effect” of the intervention, wherein therapeutic changes occur after the intervention. Taken together, these findings indicate that the three conditions produced some beneficial changes in individual and relationship functioning. Before discussing why this might be, it is important to examine some of the other, more paradoxical findings from the study.

The first paradoxical finding is with regard to positive affect and positive connection. Previous research on gratitude found increases in positive affect (Emmons & McCullough, 2003) and one would also expect that the amusement condition might also have higher levels of positive affect given that the task aims to such affect. However,
participants in all groups experienced a decrease in positive affect from the pre assessment to the post assessment, and then an increase in positive affect from the post assessment to the follow-up assessment. Participants’ level of positive affect at the follow-up assessment was not significantly different than their level of positive affect at the pre assessment, indicating that their positive affect had returned to baseline one month after completing the intervention. I also examined changes in positive affect during the daily diary portion of the study, while participants were completing the intervention. There were no differences between the three conditions in either their mean level of positive affect during the intervention, nor was their a significant change in participants’ positive affect during the intervention. Given that there was not a significant decrease in positive affect within the intervention itself, it is possible that decreases in positive affect occurred after the intervention but before participants completed the post assessment for some unknown reason. Surprisingly, positive connection also decreased significantly from the pre assessment to the post assessment, and then significantly increased from the post assessment to follow-up. Participants’ positive relationship connection scores were significantly higher at follow-up than they were at the pre assessment, indicating a potential “sleeper effect” wherein positive connection ultimately became stronger over the course of the study.

This set of findings raises an important question. Why do positive affect and positive connection significantly decrease from the pre to post assessment while other measures of positivity, such as life satisfaction, increase? It is possible that the decreases in positive affect and positive connection from the pre to post assessment are spurious findings. Alternatively, the study could have produced iatrogenic short-term effects.
There is no clear explanation for why all interventions would produce iatrogenic effects in these two constructs while producing beneficial effects in other constructs (e.g., life satisfaction). As discussed above, it is easy to see how the relationship-focused gratitude condition could have been harder for less happy, less relationally satisfied participants. In attempting to generate relationship-focused grattitudes, participants in this condition could have realized the extent to which they find their relationship unsatisfying and have little for which to feel grateful. However, all groups experienced declines in positive affect and positive connection from the pre to post assessment indicating that this finding is not condition-specific. Given that participants who remained in the study were less predisposed to feel grateful (i.e., feeling less intensely grateful mood, recognizing fewer things for which to be grateful, feeling gratitude less frequently), perhaps they also had more difficulty experiencing or recognizing positive affect. A third possible explanation is that monitoring one’s mood, helping behavior, and relationship satisfaction daily for 14 days produces decreases in positive affect, regardless of the intervention following the questionnaire. Perhaps being mindful of these things and knowing that one will report on their affect, behavior, and relationship satisfaction at the end of the day increased participants’ expectations to have positive affect, more helping behavior, and higher relationship satisfaction. When participants fell short of their goals and expectations, it could have produced lower levels of positive affect and positive connection. Fourth, all three interventions could have led to increased monitoring of the relationship and perhaps increased score-keeping. One would expect score-keeping to be most notable in the relationship-focused gratitude condition, because of its focus on acts that produce feelings of gratitude. However, score-keeping could have been present across conditions.
because participants in all conditions were asked to rate their relationship satisfaction each day. Participants’ increased attention to their relationship satisfaction could have altered the way they viewed themselves or their partner, as well as their behavior within the relationship. Upon the termination of the intervention, participants could have reduced their score-keeping, thereby producing increases in positive affect and positive connection from the post assessment to the follow-up assessment.

The second paradoxical finding is related to helping behavior during the study. Previous research on gratitude indicates that gratitude is a prosocial emotion, encouraging one to help others and “pay forward” the benefit they have received (Bartlett & DeSteno, 2006; Tsang, 2006a). Research also indicates that gratitude, and not simply the experience of positive emotion, prompts people to engage in helping behavior (Tsang, 2006a). While participants across conditions reported no change in their helping behavior, all groups experienced increases in the provision of emotional support during the daily diary intervention. This finding indicates that the experience of gratitude is not unique in producing greater helping behavior compared to the amusement and general events conditions. Additionally, the finding that participants experienced no change in their self-reported helping behavior, but were more likely to provide emotional support during daily diary portion of the study is paradoxical in the sense that providing emotional support is a type of helping behavior. Thus, to see changes in emotional support but not helping behavior itself is odd and difficult to explain. Perhaps participants conceptualized helping someone with a problem in terms of providing instrumental support (e.g., running an errand for someone) versus emotional support. If this were the case, providing emotional support and encouragement might have been easier than
helping someone with a problem in a concrete manner. Additionally, opportunities to provide emotional support might have been more frequent than opportunities to provide more instrumental forms of support. Thus, for these two reasons participants would be more likely to engage in the encouraging and emotionally supportive behavior. Alternatively, perhaps the interventions in the current study enabled people to be more encouraging and emotionally supportive, but did not produce changes in more instrumentally supportive behaviors, which might take more effort and/or time to provide.

The last paradoxical findings pertain to the lack of change in relationship quality and dedication; these two constructs did not change over the course of the study. The most parsimonious explanation for the lack of change in relationship quality and dedication is that all of the interventions used in the current study were ineffective in creating increases in relationship quality and dedication. More specifically, relationship quality and dedication might be less malleable than relationship confidence and positive connection, due to their use of commitment-oriented items, and thus more difficult to change with a two week intervention. Indeed, intervention studies using PREP have also found it difficult to create changes in relationship quality and dedication within a short time frame; changes in relationship quality and dedication appear to occur over longer periods of time (Markman, Stanley, & Blumberg, 2010; Markman, Stanley, Blumberg, Jenkins, & Whiteley, 2004; Stanley, Blumberg, & Markman, 1999).

In summary, aside from changes in negative affect, participants in all conditions experienced similar patterns of changes in life satisfaction, relationship confidence, positive affect, positive connection, and the provision of emotional support and
encouragement. Likewise, all participants saw no change in the frequency of their helping behavior and no changes in relationship quality and dedication. The current study also tested many potential moderators, including gender, and found no significant moderators of the findings described above. The many main effects for time raise the question: why did participants across conditions generally change in similar ways across the study? There are several plausible explanations for the similar effects found across conditions.

**Possible explanations for main effects of time.** First, perhaps the prompts pulled for similar responses. More specifically, and in contrast to previous studies on gratitude (Bartlett & DeSteno, 2006; Emmons & McCullough, 2003; McCullough, Kilpatrick, Emmons, & Larson, 2001; Tsang, 2006a), participants in the current study were recruited to participate in relationship research. As such, it is possible that participants were primed to think about their relationship more frequently than if they had been recruited in a study simply examining mood and behavior over time, as Emmons and McCullough (2003) conducted. A preliminary coding of a subsample of participants’ responses revealed that it was often difficult to discern whether the responses to the prompts involved participants’ partners or others. However, some responses in both the amusement and general events conditions were clearly about the romantic relationship. For example, a participant in the amusement condition wrote, “My boyfriend told me a funny joke” and a participant in the general events condition wrote, “I went out to eat with my girlfriend and roommate.” Future research should code participants’ responses to the prompts to gain a qualitative sense of how participants interpreted the instructions and responded. Coding participants’ responses would allow one to better understand the extent to which participants in each condition wrote about their relationships.
Second, a qualitative analysis of participants’ responses to the prompts should examine the extent to which responses were affectively positive. Research suggests that people tend to report feeling happy and also tend to have more positive cognitions than negative cognitions (see Diener & Diener, 1996 for an overview). Thus, perhaps the general events condition was not substantially different from the amusement or relationship-gratitude condition in eliciting positive affect. Preliminary coding of a subsample of the data indicates that it would be difficult to code the affect underlying all statements. For example, when a participant in the general events condition writes “Phone call with Mom,” it is difficult as an outside observer to know if this is positive, negative, or neutral. If positive affect was responsible for the changes seen in Emmons and McCullough’s (2003) study, and not gratitude, then three conditions in which participants generally responded in a positive manner would yield non-significant group differences on outcome measures while still predicting decreases in negative outcomes and increase in positive outcomes. In sum, coding responses to the intervention could yield important data for understanding the relationship between response styles and outcomes.

Third, coding responses would also reveal the extent to which people were able to generate new thoughts in response to each daily prompt. Preliminary coding did not examine whether comments were novel across days or not. However, analyzing the extent of repetitions could yield interesting data. For example, was the relationship-focused gratitude condition more or less likely to list global attributes of their partner for which they were thankful (e.g., he is a great listener), or a specific event (e.g., he took out the trash)? To what extent does being mindful and grateful of global positive attributes
versus day-to-day events affect concurrent and future mood and behavior? Additionally, were people in the general events condition more or less likely to list the same activities or events each day (e.g., woke up, brushed my teeth, ate breakfast) or new events? It seems unlikely that participants in the amusement condition would repeat the same amusing events each day, but it would be important to assess nevertheless.

Finally, perhaps simply completing the questionnaires induced people to be more mindful of their affect and relationship and the interventions themselves were relatively inert in comparison to the effects of research participation. Indeed, Rubin and Mitchell (1976) and Bradbury (1994) found that research participation acts as its own form of intervention. In Rubin and Mitchell’s (1976) study, they found that nearly half of all women and men in their study reported that the study had at least a slight impact on their relationship. Interestingly, only 4% of the respondents in their study reported negative effects of participation (e.g., becoming less close), with most participants reporting positive outcomes from research participation. Bradbury (1994) found that a minority of respondents reported negative consequences from participating in a relationship study, with most respondents reporting that a videotaped task was the source of distress. Thus, most people who report effects from research participation report positive outcomes from such participation. Given that there seem to be some brief, iatrogenic effects of the intervention across groups (i.e., declines in positive affect and positive connection from pre to post), and that most effects of research participation seem to be positive, it seems unlikely that research participation is the only explanation for the similar pattern of findings across groups. However, it might be one factor contributing to the similarity of results amongst all three conditions.
Exploratory analyses. I also conducted several exploratory analyses. First, I was interested in gratitude as a predictor of relationship outcomes. Using data from the pre-assessment, I examined whether gratitude explained significant variance in relationship quality when controlling for subjective well-being (i.e., positive affect, negative affect, and life satisfaction; Diener, 1984; 1994) as well as variables like age, education, and gender. Gratitude was significantly associated with relationship quality, dedication, relationship confidence, positive connection, and negative interaction. These results indicate that people who are more dispositionally grateful tend to have better relationships that are characterized by higher levels of relationship quality, dedication, relationship confidence, positive connection, and lower levels negative interaction. Gratitude predicted the most variance in dedication, indicating that more dedicated people are likely to also be more grateful people.

These findings are not surprising given the research on gratitude. People with a stronger predisposition towards gratitude have higher levels of subjective well-being and tend to be more empathic, supportive, helpful, and forgiving (McCullough, Emmons, & Tsang, 2002). Thus, people who are more grateful are more likely to engage in positive relationship behaviors, such as providing emotional support, and less likely to engage relationship-damaging interactions and behaviors, such as the Danger Signs (Markman, Stanley, & Blumberg, 2010; Markman, Stanley, Blumberg, Jenkins, & Whiteley, 2004; Stanley, Blumberg, & Markman, 1999). Additionally, as a positive emotion, gratitude has the capacity to help broaden one’s thought action repertoire and build resources, including relational resources, creating an upward spiral of functioning (Fredrickson & Joiner, 2002). Similarly, as a positive emotion, gratitude has the capacity to “undo”
negative emotions (Fredrickson & Levenson, 1998; Fredrickson, Manusco, Branigan, & Tugade, 2000), thereby providing a protective factor to relationships when negative emotions do arise. Thus, feelings and expressions of gratitude might serve to strengthen a positive relationship, making it easier for partners to support one another during the good times and the bad.

It is important to note that these findings are cross-sectional in nature. Thus, it is not possible to determine whether dispositional gratitude increases relationship well-being, whether relationship well-being increases people’s level of gratitude, or whether both are affected by an unmeasured third variable. However, if it were possible to increase gratitude, this could potentially help increase couples’ relationships as well. Such a finding would indeed support Fredrickson’s (1998; 2001) broaden and build model, as high levels of dedication, relationship confidence, positive connection, and relationship quality are a protective factor in relationships.

Finally, I examined whether changes in gratitude from the pre to post assessment predicted outcomes at the follow-up assessment. Increased gratitude was a significant predictor of increased relationship quality, dedication, relationship confidence, and positive connection. Increases in gratitude were also associated with decreased negative affect and negative interaction. Surprisingly and counter to other research on gratitude, changes in gratitude were not significant predictors of positive affect or life satisfaction. Thus, although gratitude was not associated with positive affect or life satisfaction in the ways that are predicted by existing research (Emmons & McCullough, 2003; McCullough, Emmons, & Tsang, 2002), it is related to dyadic variables indicating that
perhaps gratitude helps strengthen social bonds with others while decreasing harmful behaviors, such as negative interactions as described above.

**Contributions of the Current Study**

To date, there has been a relative paucity of research examining gratitude and nearly no research on the ways in which gratitude is related to relationship variables. The current study expands current knowledge by examining the ways in which gratitude is related to relationship variables cross-sectionally as well as longitudinally. It also sought to replicate and extend a gratitude intervention (Emmons & McCullough, 2003) by crafting a relationship-focused gratitude intervention. Participants in the relationship-focused gratitude condition were asked to write up to five things each day that they were thankful for about their partner or relationship. Participants in the relationship-focused gratitude condition experienced decreases in negative affect, whereas participants in the amusement condition experienced no changes in negative affect. These results replicate, in part, findings by Emmons and McCullough (2003) demonstrating that a gratitude practice can lead to decreases in negative affect. However, it is important to note that decreases in negative affect were also seen in the general events condition, which served as the active control condition. Thus, gratitude’s effects at decreasing negative affect might not be unique.

Although this study found non-significant group differences, with the exception of changes in negative affect, the current study contributes to understanding the ways in which a gratitude practice can help or hinder individual and relationship well-being. Taken together, these results indicate that converting individual interventions into relationship interventions should be done with caution because they might not produce
the desired effects or they might be indistinguishable from other interventions. Indeed, given that there were several significant main effects for time, it seems that all three conditions responded in similar ways. Blind, double coding of participants’ responses would allow for a test of what type of response style accounts for the similarities in findings. More specifically, coding the data would allow one to assess the extent to which writing about one’s relationship versus the experience of positive emotion produces changes in individual and relationship well-being. It is possible that gratitude is not the active intervention ingredient, and that the experiences of positive affect and/or becoming more sensitive to one’s relationship produce similar findings.

**Limitations and Future Directions**

The current study had several limitations and areas for future research, which I explain in further detail below.

**Experimental manipulation.** Given that participants across groups experienced similar changes in both individual and relationship variables, future research should examine participants’ responses to the intervention prompts. Future researchers could code participants’ responses to assess their level of compliance and the degree to which responses are similar (e.g., positive, relationship-focused, etc. as described above). Additionally, using software, such as the Linguistic Inquiry and Word Count (LIWC) program could help researchers better understand the ways in which participants’ responses were similar across conditions. The LIWC software analyses the types of words used (e.g., first person pronoun) as well as the affective valence of the word, providing an objective evaluation that quantifies participants’ qualitative responses.
**Relationship-focused gratitude condition.** The prompt for the relationship-focused gratitude condition (i.e., *There are many things in a romantic relationship, both large and small, that we might be grateful about. Think back over the past day and write down on the lines below up to five things in your romantic relationship that you are grateful or thankful for.*) was adapted from the prompt used in the studies conducted by Emmons and McCullough (2003), which this study attempted to replicate and extend. Although the original prompt (i.e., *There are many things in our lives, both large and small, that we might be grateful about. Think back over the past day and write down on the lines below up to five things in your life that you are grateful or thankful for.*) was used in several studies conducted by Emmons and McCullough (2003) and was shown to increase feelings of gratitude, it is more cognitive in nature than emotive. Thus, perhaps the prompt in the current study failed to elicit feelings of gratitude and instead initiated more cognitive-based processes, such as thinking about events that produce feelings of gratitude instead of actually feeling grateful. Future research should consider using a prompt that helps people experience feelings of gratitude more directly and then measure the effects on individual and relationship well-being. For example, participants could be instructed to: “Take a couple minutes and just let a sense of gratitude for your partner wash over you.” Future research should also examine for whom more cognitive versus emotion-inducing instructions work better and to what degree.

**Control conditions.** The amusement and general events conditions served as the control groups in the current study. The amusement condition was included to control for the effects of positive affect induction, so that any effects unique to the experience of gratitude itself, as opposed to simple positive emotion, could be teased apart. The
general events condition was designed to serve as an active control condition. However, it might have been too active of a control condition given that participants in this group experienced changes in numerous variables over the course of the study. Additionally, participating in a daily diary study in and of itself might have served as its own form of intervention. Future research should include a group who fills out the daily diary questionnaires but does not complete an intervention to better assess the ways in which noticing parts of one’s day can change individual and relationship well-being compared to simply completing forms. Moreover, future research should also include a group who does not complete the daily diary questionnaires and only completes the pre, post, and follow-up assessments to understand the potential effects of daily diary research participation (and increased monitoring/score-keeping) on outcome measures.

**Participant fatigue.** The current study implemented a daily intervention, wherein participants completed a task each day. However, this could have placed too much of a burden on participants. An intervention that is less frequent could provide as great, or even greater, benefit and prevent possible participant fatigue. Research on the frequency with which to “count one’s blessings” is somewhat mixed. Emmons and McCullough (2003) found that a weekly practice of gratitude increased participants’ optimism and the amount of time spent exercising while decreasing participants’ reports of physical complaints. However, a weekly gratitude practice did not produce changes in positive affect or negative affect compared to the control groups. When participants practiced gratitude daily for two to three weeks, they experienced increases in positive affect, life satisfaction, and optimism. They were also more likely to help others. In slight contrast, Lyubomirsky, Tkach, and Sheldon (2005; as cited in Sheldon & Lyubomirsky, 2006)
found that practicing gratitude once per week was more beneficial than practicing gratitude three times per week. The relationship-focused gratitude condition appears to have the greatest potential for causing participant fatigue in this study. Not only were participants asked to cultivate gratitude, they were asked to do so with a very specific target in mind: their relationship and their partner. A weekly practice of relationship-focused gratitude might be easier for participants to complete and prevent participant fatigue.

**Self-report data.** The current study uses only self-reported data. Self-reported data can be prone to method variance problems as well as inaccurate reporting. Future studies should include observational measures so that behavioral effects of the intervention can be assessed. Additionally, this study tried to obtain partner-report data but was unsuccessful. An attempt to collect partner report data was made because it would provide important information about the extent to which partners noticed participants’ changes in affect and behavior. Over the course of the study, participants experienced self-reported increases in life satisfaction, gratitude, and relationship confidence. Additionally, participants experienced declines in negative interactions across the study. Were these changes apparent to partners as well? Partner data would allow one to test the extent to which changes in participants’ affect and self-reported behavior correlate with partner-reported changes in the participant’s affect and behavior. Future researchers would also be able to examine any changes in partner’s affect and behavior. Understanding the extent to which individual changes in affect and behavior affect the dyad could provide helpful information with regards to the creation of relationship education and intervention programs. There is a move in the couples field to
create relationship education programs for individuals, in large part because it can be difficult to engage both members of a couple in relationship education programs (see Markman & Rhoades, 2012 for an overview).

**Online methodology.** The current study used Survey Monkey, an internet website, to collect data electronically. While collecting data electronically is fast, convenient, and cost-effective, it can potentially result in a higher drop-out rate as participants get bored in the survey and fail to complete it. In the current study, seventy-eight participants exited the pre-assessment before providing all of the necessary information for the subsequent surveys, including their email address. Future research using online surveys should use short surveys as well as enabling the option that allows participants to see how much of the survey they have completed (e.g., 75%) so that they are less fatigued and more willing to continue.

**Power.** Although the current study recruited more participants than had been originally proposed, the sample might have been too small to detect effects of the intervention. Additionally, when adding moderators to my analyses, cell sizes became smaller and the analyses were negatively impacted by the loss of power. Recruiting a larger sample would allow for a robust test of findings.

**Scale reliability for the measure of relationship quality.** The Dyadic Adjustment Scale demonstrated somewhat low internal consistency within the current sample. Thus, analyses using this scale might be inaccurate, although it is difficult to predict if the analyses are underreporting possibly significant findings or not.

**Participant-task fit.** The current study did not include a measure to assess what participants’ reactions were to the condition to which they were assigned, and whether
the activity was a good “fit” for the participant. Fordyce (1983) found that the effectiveness of happiness-inducing activities was moderated by person-task fit. That is to say, some happiness-inducing activities are easier for some people due to differences in personality, strengths, motives, and needs. Indeed, research by Sheldon and Elliot (1999) indicates that goals that are perceived to be concordant with one’s values and interests are more engaging than goals that represent external pressures. Perhaps being assigned to practice gratitude daily seemed “cheesy” to some participants while for others, it felt deeply meaningful and fulfilling. Future research should include a measure to assess the person-task fit, as this could influence both attrition/retention rates as well as overall benefit from the intervention itself.

**Indebtedness.** It is possible that, for some participants, being asked to list relationship gratitudes actually caused participants to feel indebted and not grateful. Gratitude has been defined as a positive emotion felt when one has received something a gift of some sort through the intentional action of a benefactor (McCullough, Kilpatrick, Emmons, & Larson, 2001; McCullough & Tsang, 2004). When feeling grateful, people tend to want to behave in prosocial ways. In contrast, indebtedness is defined as feeling obliged to repay a favor in a tit-for-tat manner to the benefactor; it is often conceptualized as a negative emotion that engenders feelings of discomfort and uneasiness (Tsang, 2006b). Including a measure of indebtedness would provide another way to evaluate whether the intervention induced feelings of gratitude as intended, or whether it actually produced a different emotion. If participants in the gratitude condition felt more indebted than grateful, this could account for the non-significant group differences in the outcome variables associated with gratitude, such as increased life satisfaction and positive affect.
Importantly, participants in all three conditions experienced increases in gratitude across the intervention, indicating that indebtedness was likely not the predominant emotion elicited by the three conditions. Future research should include a measure of indebtedness to assess for any possible adverse reactions to the gratitude condition.

**Measure of discussion of the study and intervention with partner.** The current study did not include a measure to assess the extent to which participants discussed the study or intervention with their partner. In hindsight, inclusion of such a measure would have been very interesting. Discussion of the study and/or intervention would provide another important test of moderation for the outcome variables. This would be particularly important for the relationship-focused gratitude condition. For example, did talking about the study or intervention make people more or less likely to thank their partner? If partner-report data were available, it would be interesting to test how discussion of the study (or not) affected partner’s affect and behavior. Including a measure of participant discussions of the study and intervention would have allowed one to run analyses to predict which participants would be more likely to talk about the study and intervention as well as assess how such discussion affects outcomes at the post and follow-up assessments. For example, are happy or less happy participants more likely to discuss the study with their partner? Do participants who discuss the study with their partner experience more or less change in outcome variables than participants who do not discuss the study? These are empirical questions, which should be examined in future research on relationship interventions targeted to individuals.

**Generalizability.** Finally, the current study recruited participants using online methods, including advertisements on Craigslist.org and email snowball sampling.
Participants self-selected into the study and many were from large metropolitan areas, where Craigslist advertisements were targeted. Participants needed access to a computer to participate in the study. Thus, participants without the means to access a computer and participants from rural areas are likely underrepresented in the current sample. Additionally, relatively few participants were married; thus, the results of this study might be more applicable to unmarried individuals than married couples. Interestingly, a higher number of participants identified as American Indian and Hawaiian/Pacific Islander participated in this study than would be expected given the prevalence of these races in the U.S. population (Humes, Jones, & Ramirez, 2011). Future research should focus on recruiting an ethnically and socioeconomically diverse sample, as well as recruiting large numbers of both married and non-married participants to see if there are differences in effects based on relationship status.

**Conclusion**

Despite these limitations, the current study demonstrates the importance of looking at positive psychology constructs, including gratitude, as a way to better understand dyadic relationships and potential ways to protect or increase relationship well-being. Couples therapy and relationship education efforts have typically focused on the prevention and amelioration of distress. However, the absence of acute relationship dysfunction does not necessarily mean that couples are functioning at their full potential, or building other relational or emotional resources that might help them “weather the storm” when life stressors occur. Indeed, research by Amato (2001) found that over half of divorces are characterized by low levels of conflict, wherein partners seemed to have simply “grown apart.” Positive psychology interventions, including a gratitude practice,
have the potential to help couples recover or rediscover positive feelings for one another and find both greater individual and relationship well-being.
References


States Census Bureau website:


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Appendix: Tables and Figures
Table 1

Measures of central tendency and correlations between variables at the pre assessment.

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<tr>
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|M| 10.82 | 2.97 | 4.59 | 14.39 | 5.21 | 5.44 |
|SD| 3.94 | 0.89 | 0.91 | 3.50 | 1.14 | 1.24 |
|Median| 12.00 | 3.17 | 4.21 | 14.00 | 5.40 | 5.80 |

Note. N = 251 for all cells; *p < .05, **p < .01.
Table 1, continued

*Measures of central tendency and correlations between variables at the pre assessment.*

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*Note. N = 251 for all cells; *p < .05, **p < .01.*
Table 2

Dosage: Number of days the intervention was completed on time and overall.

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<th>Days of Intervention</th>
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Mean 10.33 11.09 11.16 11.53 11.00 11.67 10.82 11.42  
SD  4.32  3.96  3.98  3.80  3.45  2.92  3.94  3.59  

Note. N = 251.
Table 3  
*Summary of Hierarchical Linear Modeling analyses for positive affect across the intervention.*

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Table 5

*Summary of Hierarchical Linear Modeling Analyses for helping behavior.*

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Table 6

Summary of Hierarchical Linear Modeling analyses for provision of emotional support.

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<td>0.04</td>
<td>0.02</td>
<td>2.04</td>
<td>247</td>
<td>.04</td>
</tr>
<tr>
<td>5</td>
<td>Condition 1</td>
<td>-0.03</td>
<td>0.03</td>
<td>-0.94</td>
<td>247</td>
<td>.35</td>
</tr>
<tr>
<td>6</td>
<td>Condition 2</td>
<td>0.03</td>
<td>0.03</td>
<td>1.29</td>
<td>247</td>
<td>.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed Effect</th>
<th>B</th>
<th>Odds Ratio</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.56</td>
<td>1.75</td>
<td>1.29 – 2.38</td>
</tr>
<tr>
<td>Condition 1</td>
<td>-0.10</td>
<td>0.90</td>
<td>0.59 – 1.39</td>
</tr>
<tr>
<td>Condition 2</td>
<td>-0.06</td>
<td>0.94</td>
<td>0.61 – 1.45</td>
</tr>
<tr>
<td>Slope</td>
<td>0.04</td>
<td>1.04</td>
<td>1.00 – 1.08</td>
</tr>
<tr>
<td>Condition 1</td>
<td>-0.03</td>
<td>0.98</td>
<td>0.93 – 1.03</td>
</tr>
<tr>
<td>Condition 2</td>
<td>0.03</td>
<td>1.04</td>
<td>0.98 – 1.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Random Effect</th>
<th>Variance Component</th>
<th>SD</th>
<th>χ²</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>r_{0ij}</td>
<td>1.52</td>
<td>1.23</td>
<td>832.48</td>
<td>237</td>
</tr>
<tr>
<td>14</td>
<td>r_{1ij}</td>
<td>0.004</td>
<td>0.07</td>
<td>235.84</td>
<td>237</td>
</tr>
</tbody>
</table>
Table 7
Summary of Hierarchical Linear Modeling analyses for relationship satisfaction across the intervention.

<table>
<thead>
<tr>
<th>Line</th>
<th>Fixed Effect</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept</td>
<td>2.21</td>
<td>0.18</td>
<td>12.32</td>
<td>246</td>
<td>.001</td>
</tr>
<tr>
<td>2</td>
<td>Condition 1</td>
<td>0.03</td>
<td>0.12</td>
<td>0.21</td>
<td>246</td>
<td>.84</td>
</tr>
<tr>
<td>3</td>
<td>Condition 2</td>
<td>-0.08</td>
<td>0.13</td>
<td>-0.65</td>
<td>246</td>
<td>.52</td>
</tr>
<tr>
<td>4</td>
<td>Pre Relationship Satisfaction</td>
<td>0.40</td>
<td>0.04</td>
<td>10.79</td>
<td>246</td>
<td>.001</td>
</tr>
<tr>
<td>5</td>
<td>Slope Intercept</td>
<td>0.04</td>
<td>0.02</td>
<td>1.84</td>
<td>246</td>
<td>.07</td>
</tr>
<tr>
<td>6</td>
<td>Condition 1</td>
<td>-0.02</td>
<td>0.01</td>
<td>-1.59</td>
<td>246</td>
<td>.11</td>
</tr>
<tr>
<td>7</td>
<td>Condition 2</td>
<td>0.01</td>
<td>0.01</td>
<td>0.75</td>
<td>246</td>
<td>.46</td>
</tr>
<tr>
<td>8</td>
<td>Pre Relationship Satisfaction</td>
<td>-0.004</td>
<td>0.004</td>
<td>-0.95</td>
<td>246</td>
<td>.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Random Effect</th>
<th>Variance Component</th>
<th>SD</th>
<th>χ²</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>r_{0ij}</td>
<td>0.54</td>
<td>0.74</td>
<td>1801.21</td>
<td>236</td>
</tr>
<tr>
<td>10</td>
<td>r_{1ij}</td>
<td>0.002</td>
<td>0.05</td>
<td>337.30</td>
<td>236</td>
</tr>
<tr>
<td>11</td>
<td>ε_{ij}</td>
<td>0.84</td>
<td>0.92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8
Predictors of relationship quality at the pre assessment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>Model 3 B</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>14.52***</td>
<td>11.45***</td>
<td>8.50***</td>
<td>[5.79, 11.20]</td>
</tr>
<tr>
<td>Age</td>
<td>-0.05*</td>
<td>-0.03</td>
<td>-0.02</td>
<td>[-0.06, 0.02]</td>
</tr>
<tr>
<td>Education Level</td>
<td>0.05</td>
<td>-0.02</td>
<td>0.01</td>
<td>[-0.08, 0.10]</td>
</tr>
<tr>
<td>Gender</td>
<td>1.76***</td>
<td>0.83**</td>
<td>0.41</td>
<td>[-0.22, 1.05]</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>0.71**</td>
<td></td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Negative Affect</td>
<td>-1.59***</td>
<td></td>
<td>-1.21***</td>
<td>[-1.60, -0.83]</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>1.03***</td>
<td></td>
<td>0.97***</td>
<td>[0.72, 1.23]</td>
</tr>
<tr>
<td>Gratitude</td>
<td></td>
<td></td>
<td>0.71***</td>
<td>[0.35, 1.08]</td>
</tr>
</tbody>
</table>

R^2                      | 0.07        | 0.44        | 0.46      |
F                        | 10.08***    | 49.20***    | 45.91***  |
ΔR^2                     | 0.07***     | 0.36***     | 0.02***   |
ΔF                       | 81.92       | 35.46       |

Note. N = 387. CI = confidence interval. * p < .05, ** p < .01, *** p < .001.
Table 9
Predictors of dedication at the pre assessment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 $B$</th>
<th>Model 2 $B$</th>
<th>Model 3 $B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.71***</td>
<td>5.70***</td>
<td>3.82***</td>
<td>[3.08, 4.57]</td>
</tr>
<tr>
<td>Age</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.001</td>
<td>[-0.01, 0.01]</td>
</tr>
<tr>
<td>Education Level</td>
<td>-0.03</td>
<td>-0.02</td>
<td>-0.004</td>
<td>[-0.03, 0.02]</td>
</tr>
<tr>
<td>Gender</td>
<td>0.76***</td>
<td>0.56***</td>
<td>0.30**</td>
<td>[0.12, 0.47]</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>0.02</td>
<td>-0.24**</td>
<td>-0.39, -0.10</td>
<td></td>
</tr>
<tr>
<td>Negative Affect</td>
<td>-0.50***</td>
<td>-0.26***</td>
<td>[-0.36, -0.15]</td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>0.05</td>
<td>0.01</td>
<td>[-0.06, -0.08]</td>
<td></td>
</tr>
<tr>
<td>Gratitude</td>
<td>0.46***</td>
<td></td>
<td>[0.36, 0.55]</td>
<td></td>
</tr>
</tbody>
</table>

$R^2$ 0.17 0.59 0.68
$F$ 25.93*** 33.24*** 46.21***
$\Delta R^2$ 0.17*** 0.18*** 0.12***
$\Delta F$ 0.64 35.46

Note. $N = 387$. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$. 
Table 10  
*Predictors of relationship confidence at the pre assessment.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>Model 3 B</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>5.17****</td>
<td>3.35***</td>
<td>2.20***</td>
<td>[1.23, 3.16]</td>
</tr>
<tr>
<td>Age</td>
<td>-0.02*</td>
<td>-0.01</td>
<td>-0.01</td>
<td>[-0.02, 0.01]</td>
</tr>
<tr>
<td>Education Level</td>
<td>0.04</td>
<td>0.01</td>
<td>0.01</td>
<td>[-0.02, 0.05]</td>
</tr>
<tr>
<td>Gender</td>
<td>0.61***</td>
<td>0.36**</td>
<td>0.20</td>
<td>[-0.03, 0.42]</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>0.31**</td>
<td>0.15</td>
<td>-0.20**</td>
<td>[-0.34, -0.06]</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>-0.35***</td>
<td>-0.20**</td>
<td>-0.20**</td>
<td>[-0.34, -0.06]</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>0.36***</td>
<td>0.33***</td>
<td></td>
<td>[0.24, 0.42]</td>
</tr>
<tr>
<td>Gratitude</td>
<td></td>
<td>0.28***</td>
<td>0.28***</td>
<td>[0.15, 0.41]</td>
</tr>
</tbody>
</table>

*Note.* N = 387. CI = confidence interval. * p < .05, ** p < .01, *** p < .001.
Table 11
*Predictors of positive connection at the pre assessment.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 $B$</th>
<th>Model 2 $B$</th>
<th>Model 3 $B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>5.62***</td>
<td>3.80***</td>
<td>1.76***</td>
<td>[0.84, 2.68]</td>
</tr>
<tr>
<td>Age</td>
<td>-0.02*</td>
<td>-0.02*</td>
<td>-0.01</td>
<td>[-0.02, 0.002]</td>
</tr>
<tr>
<td>Education Level</td>
<td>0.03</td>
<td>0.001</td>
<td>0.02</td>
<td>[-0.01, 0.05]</td>
</tr>
<tr>
<td>Gender</td>
<td>0.71***</td>
<td>0.46***</td>
<td>0.17</td>
<td>[-0.04, 0.39]</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>0.48***</td>
<td>0.20*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Affect</td>
<td>-0.39***</td>
<td>-0.13</td>
<td></td>
<td>[-0.26, 0.001]</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>0.26***</td>
<td>0.22***</td>
<td></td>
<td>[0.14, 0.31]</td>
</tr>
<tr>
<td>Gratitude</td>
<td></td>
<td>0.49***</td>
<td></td>
<td>[0.37, 0.62]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.10</td>
<td>0.40</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>14.21***</td>
<td>41.33***</td>
<td>50.16***</td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.10***</td>
<td>0.30***</td>
<td>0.09***</td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td>61.69</td>
<td>62.79</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* $N = 387$. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$. 
<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>B</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.75***</td>
<td>1.06**</td>
<td>1.55***</td>
<td>[0.78, 2.32]</td>
</tr>
<tr>
<td>Age</td>
<td>0.001</td>
<td>0.003</td>
<td>0.002</td>
<td>[-0.01, 0.01]</td>
</tr>
<tr>
<td>Education Level</td>
<td>0.04*</td>
<td>0.02</td>
<td>0.01</td>
<td>[-0.01, 0.04]</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.40***</td>
<td>-0.19*</td>
<td>-0.12</td>
<td>[-0.30, 0.06]</td>
</tr>
<tr>
<td>Positive Affect</td>
<td></td>
<td></td>
<td>0.01</td>
<td>[-0.07, 0.23]</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>0.59***</td>
<td>0.53***</td>
<td>0.42, 0.64</td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td></td>
<td>0.03</td>
<td>0.04</td>
<td>[-0.03, 0.11]</td>
</tr>
<tr>
<td>Gratitude</td>
<td></td>
<td></td>
<td>-0.12*</td>
<td>[-0.22, -0.02]</td>
</tr>
</tbody>
</table>

| $R^2$             | 0.07      | 0.33      | 0.34  |
| $F$               | 9.86***   | 30.88***  | 27.50*** |
| $\Delta R^2$      | 0.07***   | 0.26***   | 0.01*  |
| $\Delta F$        | 48.26     | 5.16      |

*Note. N = 387. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$.  

Table 13
*Change in gratitude as a predictor of positive affect at the follow-up assessment.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th></th>
<th>Model 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>95% CI</td>
<td>B</td>
<td>95% CI</td>
</tr>
<tr>
<td>Constant</td>
<td>2.86***</td>
<td>[2.45, 3.29]</td>
<td>2.87***</td>
<td>[2.45, 3.29]</td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>0.13**</td>
<td>[-0.02, 0.29]</td>
<td>0.13</td>
<td>[-0.02, 0.29]</td>
</tr>
<tr>
<td>Post Gratitude</td>
<td>-0.01</td>
<td>[-0.17, 0.15]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.04</td>
<td></td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>( F )</td>
<td>9.30**</td>
<td></td>
<td>4.64*</td>
<td></td>
</tr>
<tr>
<td>( \Delta R^2 )</td>
<td>0.04**</td>
<td></td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>( \Delta F )</td>
<td></td>
<td></td>
<td>0.01</td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 251. CI = confidence interval. * \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \).*
Table 14
*Change in gratitude as a predictor of negative affect at the follow-up assessment.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th></th>
<th>Model 2 B</th>
<th></th>
<th>95% CI</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.52***</td>
<td>4.85***</td>
<td></td>
<td></td>
<td>[4.41, 5.28]</td>
<td></td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>-0.42***</td>
<td>-0.12</td>
<td></td>
<td></td>
<td>[-0.28, 0.04]</td>
<td></td>
</tr>
<tr>
<td>Post Gratitude</td>
<td></td>
<td>-0.37***</td>
<td></td>
<td></td>
<td>[-0.54, -0.21]</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.27</td>
<td></td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>91.03***</td>
<td></td>
<td>58.84***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.27***</td>
<td></td>
<td>0.05***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td></td>
<td></td>
<td>19.78</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 251. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$.  


Table 15
Change in gratitude as a predictor of life satisfaction at the follow-up assessment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th></th>
<th>Model 2 B</th>
<th></th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.99***</td>
<td></td>
<td>2.98***</td>
<td></td>
<td>[2.36, 3.60]</td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>0.46***</td>
<td></td>
<td>0.45***</td>
<td></td>
<td>[0.22, 0.68]</td>
</tr>
<tr>
<td>Post Gratitude</td>
<td></td>
<td></td>
<td>0.007</td>
<td></td>
<td>[-0.23, 0.24]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.19</td>
<td></td>
<td>0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>56.91***</td>
<td></td>
<td>28.34***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.19***</td>
<td></td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td></td>
<td></td>
<td>0.004</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 251$. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$. 
Table 16

_Conditions of gratitude as a predictor of relationship quality at the follow-up assessment._

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>95% CI</th>
<th>Model 2 B</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>5.08***</td>
<td>4.02***</td>
<td>[2.24, 5.79]</td>
<td></td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>2.01***</td>
<td>1.01**</td>
<td>[0.36, 1.66]</td>
<td></td>
</tr>
<tr>
<td>Post Gratitude</td>
<td></td>
<td>1.21***</td>
<td>[0.55, 1.88]</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.34</td>
<td>0.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>127.95***</td>
<td>73.42***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.34***</td>
<td>0.03***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td></td>
<td>12.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_Note._ $N = 251$. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$. 
Table 17
*Change in gratitude as a predictor of dedication at the follow-up assessment.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>95% CI</th>
<th>Model 2</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.73***</td>
<td>1.27***</td>
<td>[0.90, 1.64]</td>
<td></td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>0.59***</td>
<td>0.15*</td>
<td>[0.02, 0.29]</td>
<td></td>
</tr>
<tr>
<td>Post Gratitude</td>
<td>0.52***</td>
<td></td>
<td>[0.39, 0.66]</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.46</td>
<td>0.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>214.91***</td>
<td>158.47***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.46***</td>
<td>0.10***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td></td>
<td>55.23***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 251. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$. 
Table 18
"Change in gratitude as a predictor of relationship confidence at the follow-up assessment."  

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 $B$</th>
<th></th>
<th>Model 2 $B$</th>
<th></th>
<th>95% CI</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.63***</td>
<td>2.32***</td>
<td></td>
<td></td>
<td>[1.82, 2.82]</td>
<td></td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>0.56***</td>
<td>0.27**</td>
<td></td>
<td></td>
<td>[0.08, 0.45]</td>
<td></td>
</tr>
<tr>
<td>Post Gratitude</td>
<td></td>
<td>0.35***</td>
<td></td>
<td></td>
<td>[0.16, 0.54]</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.33</td>
<td></td>
<td>0.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>122.87***</td>
<td></td>
<td>71.29***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.33***</td>
<td></td>
<td>0.04***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td></td>
<td></td>
<td>13.52***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 251$. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$. 
Table 19
Change in gratitude as a predictor of positive connection at the follow-up assessment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th></th>
<th>Model 2</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.34***</td>
<td>1.94***</td>
<td>[1.41, 2.47]</td>
<td></td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>0.67***</td>
<td>0.29**</td>
<td>[0.09, 0.48]</td>
<td></td>
</tr>
<tr>
<td>Post Gratitude</td>
<td></td>
<td>0.46***</td>
<td>[0.26, 0.66]</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.38</td>
<td></td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>153.79***</td>
<td></td>
<td>93.41***</td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.38***</td>
<td></td>
<td>0.05***</td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td></td>
<td></td>
<td>20.80***</td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 251$. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$. 
Table 20

*Change in gratitude as a predictor of negative interaction at the follow-up assessment.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.29***</td>
<td>4.59***</td>
<td>[4.05, 5.12]</td>
</tr>
<tr>
<td>Pre Gratitude</td>
<td>-0.33***</td>
<td>-0.05</td>
<td>[-0.25, 0.15]</td>
</tr>
<tr>
<td>Post Gratitude</td>
<td></td>
<td>-0.33***</td>
<td>[-0.53, -0.13]</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.13</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>( F )</td>
<td>37.55***</td>
<td>24.81***</td>
<td></td>
</tr>
<tr>
<td>( \Delta R^2 )</td>
<td>0.13***</td>
<td>0.04***</td>
<td></td>
</tr>
<tr>
<td>( \Delta F )</td>
<td></td>
<td>10.62</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* \( N = 251. \) CI = confidence interval. * \( p < .05, ** p < .01, *** p < .001. \)
Figure 1. Participant flow chart showing response rate throughout the study.
† Number of Paid Participants

Assessed for eligibility (n = 488; 232†)

Enrollment

Assignment (n = 387; 218†)

Assigned to Relationship Gratitude Condition (n = 130; 75†)
Please see Table 2 for rates of completion within the intervention.

Assigned to Amusement Condition (n = 129; 72†)
Please see Table 2 for rates of completion within the intervention.

Assigned to General Life Events Condition (n = 128; 71†)
Please see Table 2 for rates of completion within the intervention.

Post Test

Lost at Post (n = 38; 7†) because they did not answer the questionnaire
Discontinued participation (n = 0)

Lost at Post (n = 44; 3†) because they did not answer the questionnaire
Discontinued participation (n = 1; 1†), no reason given

Lost at Post (n = 39; 8†) because they did not answer the questionnaire
Discontinued participation (n = 0)

Follow-Up

Lost at Follow-up (n = 39; 7†) because they did not answer the questionnaire
Discontinued participation (n = 0)

Lost at Follow-up (n = 45; 2†) because they did not answer the questionnaire
Discontinued participation (n = 0)

Lost at Follow-up (n = 38; 5†) because they did not answer the questionnaire
Discontinued participation (n = 1), no reason given

Analysis

Analyzed (n = 88; 67†)
Excluded from analysis (n = 42; 8†) because they were missing data at post or follow-up

Analyzed (n = 81; 68†)
Excluded from analysis (n = 48; 4†) because they were missing data at post or follow-up

Analyzed (n = 82; 63†)
Excluded from analysis (n = 46; 8†) because they were missing data at post or follow-up

Excluded (n = 101; 14†) because:
Refused to participate (n = 4; 0†)

Did not meet inclusion criteria:
Single (n = 19; 6†)
No email address (n = 78; 8†)
Figure 2. Negative affect for each condition over the course of the study.