

POSITIVE AND NEGATIVE REAPPRAISAL AS LOVE REGULATION STRATEGIES IN
COLLEGE STUDENTS

By

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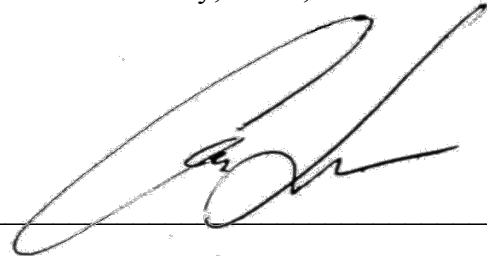
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A handwritten signature in black ink that reads "Lisa Emery". The signature is written in a cursive style with a horizontal line extending from the end of the name.

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Positive and Negative Reappraisal as Love Regulation Strategies in College Students

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Abstract

This study examined the effects of reappraisal of an ex-partner on reducing romantic love-feelings in students who are experiencing distress related to a romantic break-up. The current study was based on the study by Langeslag and Sanchez (2018), which assessed various love regulation strategies. My goal was to replicate their findings that negative reappraisal of an ex-partner reduced love feelings, and to add a positive reappraisal condition to further explore these findings. Forty seven students completed a pre-screening questionnaire. Thirty-two of the participants who met screening requirements were contacted to participate in the final phase of the study, however, only 5 participants completed the study. The 5 participants were randomly assigned to a positive, negative, or control reappraisal task which contained prompts asking them to reflect on a positive or negative aspect of their ex-partner (or on information unrelated to their partner in the control condition) and then completed measures of love-feelings. Participants in the positive reappraisal condition saw almost no reduction in love scores across but did report feeling less unpleasant than those in the negative condition. Those in the negative condition saw reduction in their love scores on both measures.

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Positive and Negative Reappraisal of Ex-Partner as Love Regulation Strategies in College
Students

“Mysterious love, uncertain treasure, Hast thou more of pain or pleasure! Endless
torments dwell about thee: Yet who would live, and live without thee!”

Joseph Addison,
The Works of Joseph Addison
(Vol. 1, p. 77)

Love is something that has inarguably captivated human beings throughout the ages. As evidenced by the writings of historic poets and playwrights, and expressed in modern-day popular culture through our songs and movies, references to love are in no short supply. William Shakespeare crafted what is perhaps his most renowned work around the idea of the lover and the beloved, and the tragedy that can befall them. Cinemas today, with incredible cutting-edge technology, broadcast countless romantic comedies each year that oftentimes express those same bittersweet themes. Clearly and obviously, love has been something of great interest across the generations.

Abraham Maslow, famous for his “hierarchy of needs” theory, criticized the field of psychology decades ago in his 1954 work *Motivation and Personality*, arguing that the science of his time had been largely ignoring those components of human experience, like love, that fall on the “aesthetic” side of life. He declared, “Science must account for all reality, not only the impoverished and bloodless portions of it. The fact that the aesthetic response is useless and purposeless, and that we know nothing about its motivations, if indeed, there are any in the

ordinary sense, should indicate to us only the poverty of our official psychology” (Maslow, 1954, p 235).

Maslow expressed this concern many years ago, and luckily for us, certain fields of psychology have largely embraced the study of “aesthetic” components of human life. The body of research available on the topic of love, and many of the givings and misgivings associated with it, is vast, and thanks to modern technology, largely accessible. However, there is still much left to be understood. In this study, I hope to explore the distressing side of love, and whether a coping strategy called “positive reappraisal” could be useful for reducing feelings of love towards an ex-partner.

Defining Romantic Love

Not all psychologists agree on how to define love. In layman terms, the Merriam-Webster dictionary defines love as “a strong affection for another arising out of kinship or personal ties”, or put another way, “affection based on admiration, benevolence, or common interests” (Love, n.d.). While this is a broad definition which can be applied to a wide range of love-contexts including friendship, familial and paternal love, and romance, this study focuses on the romantic “version” of love and thus, I will further explore the definition of love in this context.

Psychologist Robert Sternberg argued that love can be viewed as having three components which form a triangle: intimacy, passion, and decision/commitment (Sternberg, 1986). He posited that the romantic kind of love is one where people feel very high levels of intimacy and passion but lack the decisive commitment to the other person. These three components are intertwined, and each have an effect on one another. For example, an increase in a couple’s level of intimacy due to an increase in the amount of time they spend together or experiences they share together may also have a profound effect on the passion felt towards each other, or vice versa. This framework

makes for a useful way of conceptualizing the complexities of love in an easy to understand and easily digestible way.

Sternberg also included the concepts of “liking” and “non-love” in his model of love. He described liking as something belonging to the world of friendship, and that is high in intimacy but lacking in passion and commitment. One way that this type of love can be distinguished from other types of love is that an extended absence of the person who is liked will not cause high levels of distress and preoccupation with thoughts of that person. Sternberg argued that friendships may develop into other types of love and may include components of passion and commitment, however, if these elements do develop it is best to reclassify it as some other type of love. Non-love, on the other hand, contains neither intimacy, passion, nor commitment. Relationships which exhibit non-love can be seen as being quite casual, and without emotional significance. This type of love is essentially neutral in that there is simply no deeper emotional connection that drives strong feelings with the other person.

Predictors and Consequences of Non-Marital Romantic Breakups

A meta-analysis conducted by Le, Dove, Agnew, Korn, and Mutso (2010) examined research on romantic breakups spanning 33 years and included 137 studies. The analysis found that in non-marital romantic relationships, “the more positive illusions, commitment, and love individuals experienced toward their relationship partner, the less likely they were to end the relationship” (p 382). In addition, they also found that higher levels of trust, self-disclosure, investment in the other person, dependence on the other person, and closeness to the other person were associated with lower levels of relationship dissolution.

Although romantic love in relationships is generally portrayed as a positive and happy phenomenon, it is well known that it can cause deep amounts of distress when things do not turn

out the way people had hoped. In a review of the literature on emotional responses to interpersonal rejection, Leary (2015) noted that rejection by someone we care about is associated with a number of negative emotional states, including jealousy, loneliness, guilt, shame, sadness, anger, and anxiety. In a previous study, Leary, Ansell, and Evans (1998) examined the source of “hurt feelings”, and found that 166 out of 168 undergraduate participants who had experienced hurt feelings reported that the feelings were caused by their perceptions that people didn’t value the relationship between them and another person.

One study of college students who were experiencing breakup distress reported that higher levels of breakup distress were associated with higher levels of depression, anxiety, and anger (Field et al., 2013). Participants who experienced breakup distress also engaged in more negative behavior patterns such as drinking and poor academic performance. Previous studies by Field (2009) also found that in university students, those experiencing breakup distress reported feeling rejected and betrayed, experienced higher levels of intrusive thoughts, sleep disturbances, and scored higher on scales of depression and anxiety. The study also found gender differences in high-distress versus low-distress groups, such that women tended to have higher breakup distress scores than men did.

Coping with Romantic Breakups

It is clear that romantic break-ups can be a major source of subjective suffering for those who have experienced them, both in the short term and in the long term alike. Luckily, there is a body of research which explores how people tend to cope with these experiences, and what the most effective and ineffective ways of coping with them are. One study examined the use of Post-Relationship Contact and Tracking (PRCT) in participants aged 18-25 who had experienced a romantic break up in the past year (Belu, Lee, & O’Sullivan, 2016). PRCT occurs when people

engage in social contact with their ex-partner after a break-up and/or engage in stalking or “cyberstalking”. The study found that a vast majority (91% of their participants) engaged in some sort of PRCT behaviors following the break up, and that 60% of participants both engaged in the behaviors and were on the receiving end of those behaviors from their ex-partner. No major gender differences were reported in the use of these behaviors; however, women did report experiencing these behaviors from their ex-partner twice as often. Further analyses showed that breakup intensity was a positive predictor of engaging in PRCT behaviors. Another study found that engaging in cyber-stalking type behaviors, such as viewing an ex-partner’s Facebook pictures, “was negatively associated with negative feelings, desire, and longing for the ex-partner [...] [and] was associated with lower personal growth. [...] Facebook surveillance was positively related to current distress, negative feelings, desire, and longing for the ex-partner, and negatively related to personal growth” (Marshall, 2012, p. 525). Results of this study may suggest that engaging in these types of coping behaviors may not be beneficial to emotional and psychological wellbeing. However, it is possible that participants who were already experiencing greater distress were simply more likely to engage in these behaviors.

There are, however, ways of coping with breakup distress that offer more positive outcomes for people who practice them. For example, one study examined the effects that self-compassion, defined by the authors as “self-kindness, an awareness of one’s place in shared humanity, and emotional equanimity”, on participants who had experienced a divorce from their past marital partner (Sbarra, Smith, & Mehl, 2012). The study found that those who scored higher on measures of self-compassion also tended to experience less divorce related emotional distress than those who had lower scores, and that the effect remained constant even after a 9-month follow up. These findings are promising, and the effect of self-compassion on breakup

related distress should be further studied by researchers who are exploring ways of helping people cope with breakups.

Another series of studies which examined self-compassion in the context of romantic breakups, specifically in people who attributed responsibility of the break up to themselves, found that self-compassion, whether experimentally induced or naturally occurring (personality trait) resulted in a number of positive outcomes (Zhang & Chen, 2017). First, the authors found that higher trait self-compassion was a positive predictor of having a better romantic outlook, which is defined as “the ability to perceive that one is able to find new romantic relationships post breakup” (p 733). The study also found that by instructing participants to “respond to a romantic breakup from a self-compassionate perspective, from a perspective of validating their positive qualities” (induced self-compassion), participants increased future partner appreciation (p 745-746). Both trait and induced self-compassion were associated with higher self-improvement motivation.

Cognitive Reappraisal

Cognitive reappraisal, which involves reassessing and reinterpreting emotional experiences in a non-emotional manner as a way of regulating one’s feelings towards an event, has largely been studied in the context of emotion regulation and may help reduce feelings of distress (Gross, 2002; Langeslag & Van Strien, 2016; Langeslag & Sanchez, 2018). One study that examined the effects of reappraisal and suppression as emotion regulation strategies hypothesized that reappraisal should have a cascade of effects on emotions and subsequent behaviors, stating that “efforts to down-regulate emotion through reappraisal should alter the trajectory of the entire emotional response, leading to lesser experiential, behavioral, and physiological responses” (Gross, 2002, p 283). In one of their experiments, participants were

shown a video of an arm amputation; one group was instructed to either think about the film “ in such a way that they did not feel anything at all” (reappraisal), and the other group was instructed to hide their emotional responses (suppression) (p 284). Results of the study showed that both reappraisal and suppression decreased participants’ expressive behaviors such as outward displays of disgust. However, suppression caused an increase in “sympathetic activation of the cardiovascular and electrodermal systems” while reappraisal did not (p 284). In addition to this, those who habitually utilized cognitive reappraisal in their everyday lives were more likely to experience and express higher levels of positive emotion as well as experience and express lower levels of negative emotion (Gross & John, in press).

One series of studies looked at the application of cognitive reappraisal in the context of romantic break ups. Langeslag and Van Strien (2016) assessed whether or not three different conditions of cognitive reappraisal (negative reappraisal of the ex-partner, reappraisal of the relationship and reappraisal of the future) would be effective at reducing romantic love feelings (infatuation and attachment). Negative reappraisal entailed having participants think about negative aspects of their ex-partner, reappraisal of the relationship involved having participants re-examine potentially hurtful elements of the relationship in a positive manner, and reappraisal of the future involved having participants re-frame their thoughts about the future in a positive manner. Results indicated that reappraisal is an effective tool for reducing romantic love feelings, however, this study allowed for participants to freely choose one of the three conditions. This limits the ability to conclude which of the three specific reappraisal strategies were most effective. In addition to this, the data showed that participants who used negative reappraisal as a regulation strategy reported feeling more unpleasant than did those in the control condition who used no regulation strategy. In Sternberg’s triangular model of love, the effect that

negative reappraisal has on love feelings can be seen as moving participants from a state of romantic love to a state of non-love.

In a follow up study, Langeslag and Sanchez (2018) explored these findings further, looking at whether reappraisal of love feelings would be as effective at reducing romantic love feelings as negative reappraisal of the ex-partner is. To assess reappraisal of love feelings, participants were instructed to re-think about their feelings of love towards their ex by reminding themselves of things like that it is normal to still be in love with an ex or that it is okay to still feel in love. In addition to this, they also assessed whether distraction would be an effective regulation strategy. Results indicated that reappraisal of the ex-partner was the only effective regulation strategy out of the three conditions. However, just like the previous study, participants reported feeling more unpleasant after this strategy than those who used no regulation strategy. Participants who used distraction felt more pleasant than those who used no strategy, and participants who used love reappraisal had no change in how pleasant or unpleasant they felt.

The present study aimed to expand on this finding by assessing different conditions of reappraisal of the ex-partner. While negative reappraisal of the ex-partner showed a large effect at reducing romantic love feelings (as large as *Cohen's d* = -0.96), it also had the effect of making participants feel more unpleasant than if they had not engaged in any regulation strategy at all (Langeslag & Sanchez 2018). I aimed to replicate these findings as closely as possible, and engage in exploratory research by looking at whether positive reappraisal (reframing negative reappraisal prompts in a positive light) would have a similar effect without making participants feel more unpleasant. I felt that while negative reappraisal may help move people from romantic love to non-love by helping participants reframe their ex-partner in a negative light, positive reappraisal may help move people who are in love into a state of liking. Remember that

Sternberg's conception of liking is one that is high in intimacy but low in passion and commitment. If participants' intimacy can be maintained by focusing on and accepting positive elements of that person, but reduce passion and commitment by having participants re-frame their ex-partner in a new way, participants may transition from a state of romantic love into one of simply liking. Specifically, I hypothesized that positive reappraisal would decrease feelings of romantic love but not decrease people's feelings of pleasantness.

Method

The current study was based on the studies by Langeslag and Van Strien (2016) and Langeslag and Sanchez (2018). Two unanticipated issues arose that required changes to the original methodology. First, in both of the prior studies, participants viewed pictures of their ex-partner while completing the emotion regulation tasks. However, The Appalachian State University IRB had concerns about the researchers obtaining photographs of the ex-partner without their permission. I therefore adapted the original protocol to have participants simply imagine their ex-partner. Second, I had planned to have participants perform the emotion regulation tasks in the laboratory. Before this could occur, however, the university was required to suspend in-person research in response to the COVID-19 pandemic. I therefore moved to online data collection (see Appendix C for IRB approval documentation).

Participants

Forty-seven psychology students were recruited for screening from Appalachian State University's student population. An a priori power analysis using G*Power 3.1 revealed that a sample size of 15 participants per condition (positive reappraisal, negative reappraisal, and control group) will allow for 80% power in detecting an effect size of $d = .96$.

After screening was complete (see below for screening procedure), 32 participants who 1) indicated that they had gone through a romantic break up, 2) still have love feelings for their ex-partner (as indicated by a score of 2 or higher on the pre-screen question “on a scale of 1 to 9, how in love with your ex-partner do you feel?”), and 3) were still somewhat upset about the break up (as indicated by a score of 2 or higher on the pre-screen question “on a scale of 1 to 9, how upset are you about the relationship ending?”) were contacted by email to participate in the experimental portion of the study.

A total of 5 participants ($M = 19.6$, $SD = 1.14$, range = 18-21 years, 4 females) completed the experimental portion of the study and were included in the analyses.

Materials

Love Control Questionnaire

To assess how strongly participants felt they could control feelings of love, I used the Love Control Questionnaire II (Langeslag & Van Strien, 2016; Langeslag & Sanchez, 2018). The LCQ-II contained 6 questions each with a statement such as “I can purposely decrease how in love I am” or “I can make feelings of infatuation less intense”, and participants were asked to rate how much they agree or disagree with the statement on a 9 point Likert scale (1 = completely disagree, 9 = completely agree).

Emotional Regulation Questionnaire

To assess participants’ use of emotional regulation strategies in their every-day lives, I used the Emotional Regulation Questionnaire (Gross & John, 2003). The ERQ contained 6 questions each with a statement such as “I can control my emotions by changing the way I think about the situation I’m in” or “When I want to feel less negative emotion (such as sadness or anger), I change what I’m thinking about”, and participants were asked to rate how much they

agree or disagree with each statement on a 9 point Likert scale (1 = completely disagree, 9 = completely agree). For the purposes of this study, the ERQ did not include question items related to the use of suppression techniques, as this study aims to assess reappraisal techniques only.

Passionate Love Scale

To measure passion component of romantic love felt towards participants' ex partners, I used the Passionate Love Scale (Hatfield & Sprecher, 1986). The PLS contained 30 questions regarding how participants felt about their ex-partner. Questions contained items like "Sometimes I feel I can't control my thoughts; they are obsessively on _____." or "I feel happy when I am doing something to make _____ happy." and participants were asked to indicate how much they agree or disagree with each statement on a 9 point Likert scale (1 = completely disagree, 9 = completely agree).

Infatuation and Attachment

To measure general love feelings as used in Langeslag and Van Strien's 2016 study and Langeslag and Sanchez's 2018 study, I will use the Infatuation and Attachment Scale (Langeslag, Muris, & Franken, 2013). The IAS contained 20 statements regarding how participants felt about their ex-partner. Statements contained items like "I stare into the distance while I think of _____." or "_____ is part of my plans for the future." and participants were asked to indicate how much they agree or disagree with each statement on a 7 point Likert scale (1 = completely disagree, 7 = completely agree). These studies did not do pre-task and post-task measures as I will do, however, I opted for this method because I was unable to collect EEG data which they used for measuring an effect.

Pleasantness

In order to measure how pleasant or unpleasant participants were feeling, I used a 7-point Likert scale valence slider (1 = very unpleasant, 7 = very pleasant) on which participants indicated how they were feeling.

Procedure

Due to the COVID-19 virus outbreak, I opted to move data collection procedures to an online format and divide the study into 2 phases: a pre-screen phase (Phase 1) and a regulation-task phase (Phase 2). In the first phase of the study, each participant was given a Phase 1 consent form to complete before beginning (see Appendix A). Next, I collected data about each participants' ex-partner, including gender, length of the relationship, the quality of the relationship (ranging from 1 = very bad to 9 = very good), status of the relationship (married, not married, cohabiting (not married), non-cohabiting), which partner ended the relationship (1 = the participant, 2 = their ex-partner, 3 = mutual), the length of time (in months) since the relationship ended, and how upset the participant is about the relationship ending (1 = not at all, 9 = extremely upset). Participants then completed the Love Control Questionnaire II (LCQ-II) and the Emotional Regulation Questionnaire (ERQ). Next, participants were given the Passionate Love Scale (PLS) and the Infatuation and Attachment Scales (IAS). After completing these tasks, pre-screen responses were checked and participants who qualified were sent a link via email to complete the second phase of the study.

In the second phase, participants were given a Phase 2 consent form (see Appendix B) to complete before continuing. Next, they were presented with a valence-rating slider (1 = very unpleasant, 7 = very pleasant) in order to assess how pleasant or unpleasant they felt before completing their regulation task. Participants were then randomly assigned to one of three love regulation task conditions: negative reappraisal, positive reappraisal, or a neutral control task.

For the negative reappraisal task, first, participants were shown instructions regarding their regulation task. Participants were informed that they would see a series of 28 different prompts, each containing a question regarding their ex-partner (see Appendix D for prompts). They were instructed to silently read each prompt and answer the question in their head as best they could while the prompt was displayed. Participants were then shown a regulation prompt for 10s followed by a fixation cross for 5s, and then the process was repeated a total of 28 times using different prompts.

Those assigned to the positive reappraisal task underwent an identical procedure as those who are assigned to the negative reappraisal task, however, regulation prompts contained 28 positive questions about their ex-partner (see Appendix E for list of prompts). Those assigned to the control condition underwent the same procedure as the previous two regulation tasks, however, participants were shown questions about their lives which did not pertain to romantic relationships in any way (see Appendix F for list of prompts). Unlike the study by Langeslag and Sanchez (2018), no EEG data was collected and instead participants were given the PLS and IAS after completing their respective regulation task, and no photographs of ex-partners were used as stimuli during the regulation task.

After completing the regulation task, participants were given the Passionate Love Scale and the Infatuation and Attachment Scale again to measure pre and post-test differences in love feelings towards the ex-partner, as well as the 7-point valence-rating slider. Participants were then thanked for their time and were granted credit for participation.

Statistical Analyses

I had initially planned to enter pre-task and post-task scores from the Passionate Love Scale and Infatuation and Attachment Scales into Jamovi and run a repeated measures ANOVA

with the regulation task as the factor condition. I also planned to enter valence slider scores into Jamovi and run a repeated measures ANOVA with the regulation task as the factor condition. However, due to the COVID-19 outbreak, I unfortunately was not able to gather enough data to complete the analyses I had initially wished to run. However, I was able to conduct basic descriptive analyses for participants who did complete the study and plotted pre-task and post-task data from the valence slider, the PLS, and the IAS on charts to visually compare scores across all participants who completed the study.

Results

A total of 47 participants were screened via Sona for participation in this study. Thirty-two participants qualified for the study and were contacted via email to complete the regulation task portion of the study. Only 5 participants finished the regulation task and completed the study.

Of the 5 participants included in the initial analyses, all 5 were dating members of the opposite sex. Participants reported being slightly more than “somewhat upset” about the relationship ending on a 9 point Likert Scale ($M = 6.4$, $SD = 2.3$), and reported feeling slightly less than “somewhat in love” with their ex-partner on a 9 point Likert Scale ($M = 4.6$, $SD = 2.7$). Relationship length varied: 0 participants reported relationships less than 1 month, 1 participant reported their relationship to have been 1 to 6 months, 1 participant reported 6 months to 1 year, 1 participant reported 13 months to 2 years, and 2 participants more than 2 years. Participants reported the quality of their relationship to be above “good” on a 9-point Likert Scale ($M = 6.8$, $SD = .45$). Regarding marital status, 0 participants reported being married, 2 reported being not married, 1 reported cohabiting with their ex-partner, and 2 reported not cohabiting with their ex-

partner. Three participants reported that they ended the relationship themselves, while the remaining 2 participants reported that their ex-partner ended the relationship.

I also plotted pre-task and post-task scores for the valence slider, the Passionate Love Scale, and the Infatuation and Attachment Scale in Figures 1, 2, and 3. For valence slider scores, I found that those in the positive condition had mixed results; 1 participant had a 2 point reduction in scores from pre-task to post-task, while the other participants' score remained the same (see Figure 1). The 1 participant in the negative condition had a 3-point reduction in their score, and both participants in the control condition had no change in their scores at all. For PLS scores, I summed participants' scores across all questions (there were 15 questions on a 9-point scale for a maximum total of 135 points). I found that those in the positive condition had mixed results (see Figure 2); 1 participant had the same score across pre-task and post-task measures, and the other participant had a reduction of 1 point. The 1 participant in the negative condition had a 4 point decrease in scores, and those in the control condition both had decreases in their scores; 1 participant had a 9 point reduction in their score while the other had a 14 point reduction. For IAS scores, I also summed participants' scores across all questions (there were 20 questions on a 7-point scale for a maximum total of 140 points). I found that those in the positive condition also had mixed results; 1 participant had an increase of 14 points while the other participant had a decrease of 3 points. The 1 participant in the negative condition had a 33-point reduction in their score, and both participants in the control condition had decreases in their scores by 8 points and 16 points respectively.

I would also like to note the two participants who had the largest decrease in valence slider scores also had the highest scores on the pre-task PLS and IAS, and both reported that their

breakup was initiated by their ex-partner. This may indicate a potential interaction between how in love participants feel and how much the regulation task reduces feelings of pleasantness.

Discussion

I set out to build on a pair of studies which examined the use of negative reappraisal of an ex-partner as a love regulation technique (Langeslag & Van Strien, 2016; Langeslag & Sanchez, 2018). These studies have shown that having participants recall negative aspects of their ex-partner has the effect of reducing feelings of romantic love towards that person. This effect has many implications and may be useful if harnessed in a therapeutic setting for people seeking help from therapists or psychologists after a particularly difficult breakup. However, one major drawback from this technique is that it tends to make participants feel more unpleasant than if they had not used this method. Positive reappraisal, on the other hand, had not been studied in this context until now. I felt that positive reappraisal may share enough characteristics with negative reappraisal (namely, the act of re-examining something that is emotionally troubling in a different way) that it would have a similar effect of reducing feelings of romantic love in participants. However, unlike negative reappraisal which can be seen as moving participants from romantic love to non-love, I felt that the positive element may prevent participants from feeling more unpleasant and may move them from romantic love to liking. As Sternberg's definition of liking includes intimacy, but no passion or commitment, I hypothesized that having participants revisit their ex-partner from a positive perspective may allow participants to see their ex-partner in a new way; one that is founded on positivity and acceptance of that person's positive traits rather than negativity and rejection of that person's negative traits.

Unfortunately, when I had reached the point of beginning to collect data for this study, nationwide shutdowns of non-essential businesses and services went into effect due to the

worldwide COVID-19 pandemic. Appalachian State University was required to suspend all in-person research, so I adapted the protocol to an entirely online format and re-submitted an IRB application with the updated format. Due to these extenuating circumstances, I was only able to collect full data on 5 participants. While this was quite disappointing to those who were involved in making this study happen over the last year, I am happy to still be able to present a very small amount of data. Unfortunately, there was not enough data to indicate any statistically significant findings, however, this study serves as a sort of exploratory pilot study for those wishing to expand the body of research in this area and build on these ideas.

I found that although positive reappraisal did make people feel less unpleasant than negative reappraisal, the 2 participants in that condition only had a net reduction of 1 point in their PLS scores and had a net increase of 11 points in their IAS scores. However, the replication of negative reappraisal did produce similar results as seen in previous studies. The 1 participant in this condition had a 33-point reduction in their IAS scores and felt more unpleasant after participation, however, there was only a 4-point reduction in PLS scores.

One finding that I felt to be particularly noteworthy was that the two participants who had the largest decrease in valence slider scores also had the highest pre-task scores on the PLS and IAS. Both participants reported that their breakup was initiated by their ex-partner. As mentioned previously, this may be indicative of a potential interaction between how in love participants feel and how much the regulation task reduces feelings of pleasantness. As seen in previous studies of Post Relationship Contact and Tracking, viewing pictures of an ex-partner may be a source of distress for people who are upset about a relationship ending. It may be possible that simply reminding participants about certain aspects of their ex-partner, in both positive and negative capacities, could make participants feel worse. A larger dataset would allow us to analyze

whether higher initial scores of romantic love can lead to smaller reductions in romantic love-feelings through reappraisal techniques. Which person initiated the breakup may also be an important factor in how these reappraisal techniques effect feelings of romantic love. Further studies should be done to explore these lines of inquiry.

One limitation in the methodology is that I was only able to examine these effects on a very short-term scale in a single session. There may be other potential benefits and/or drawbacks of these techniques if applied daily over a period of weeks or months. Long-term practices such as loving-kindness meditation could be a useful model to base a daily reappraisal practice on, as loving-kindness meditation generally involves sitting quietly and wishing love and wellbeing towards the person of meditation which is somewhat similar to a positive reappraisal task. This practice, which has been associated with quicker recovery from negative emotions and feelings of rejection after facing social rejection in patients with Borderline Personality Disorder, may provide a good framework to place long-term daily use of reappraisal techniques in (Keng & Tan, 2018). In this way, a regular reappraisal practice can be established, and the long-term effects of reappraisal techniques can be studied.

In hindsight, another limitation of this study is the lack of specific measures for the intimacy and commitment components Sternberg's theory of love. I opted for the measures I used in order to try to replicate Langeslag and Van Strien's 2016 and Langeslag and Sanchez's 2018 negative reappraisal condition as closely as possible. However, I was unable to collect any EEG data which they used to measure the effect, so I decided to use a pre-task and post-task model using the same stimuli. Because I was only interested in the passion component of love, I opted not to include measures of intimacy and commitment. However, future studies that wish to explore love regulation strategies could include measures that assess these components.

As the review of the literature has shown, romantic breakups are a major source of distress in young people, and although there are a handful of negative and unhelpful ways that people choose to cope with heartbreak, there are also a handful of positive and helpful ways to help people cope as well. Although the small sample did not indicate any type of effect, positive reappraisal should not be ruled out as a potentially life-improving method of helping distressed people get through an incredibly difficult time in their lives until further testing is done. I hope that this study has helped build on a promising framework established by Langeslag, Sanchez, and Van Strien (2016; 2018), and will be utilized in some capacity by researchers in the future.

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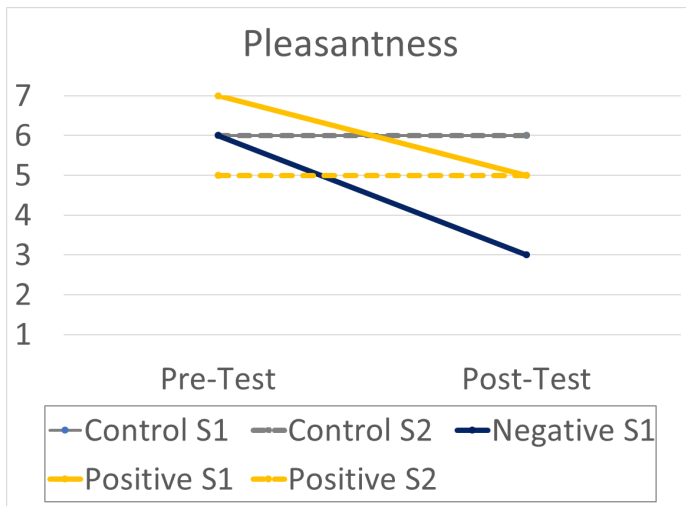


Figure 1

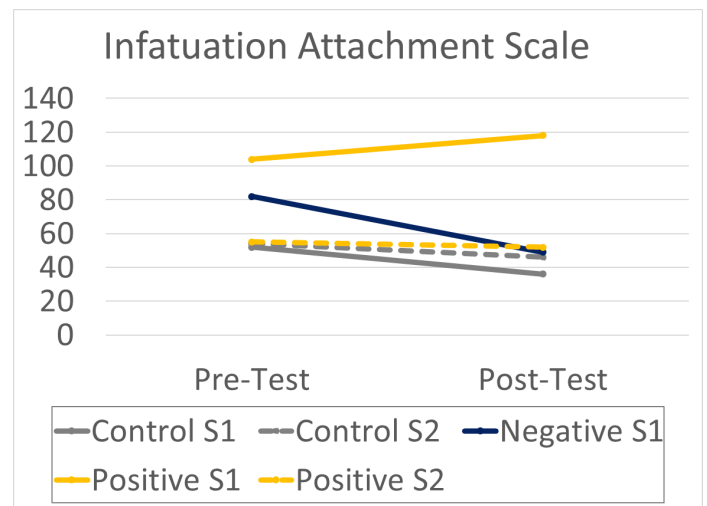


Figure 2

Figure 1 shows valence slider scores in pre-test and post-test conditions. Participants in the control condition had virtually no change in feelings of unpleasantness after completing the control task. Participants in the positive condition had either no change in scores or a 2-point decrease in scores. The 1 participant in the negative condition had a 3-point decrease in their score. Note that the line indicating Control S1 is not shown because their score was identical to Control S2, so both lines occupy the same space in the graph.

Figure 2 shows Infatuation and Attachment Scale scores in pre-test and post-test conditions. 1 participant in the positive condition had a slight decrease in scores, while the other participant in that condition had an increase in their scores. The 1 participant in the negative condition had a decrease in their score, and both participants in the control condition had slight decreases in their scores.

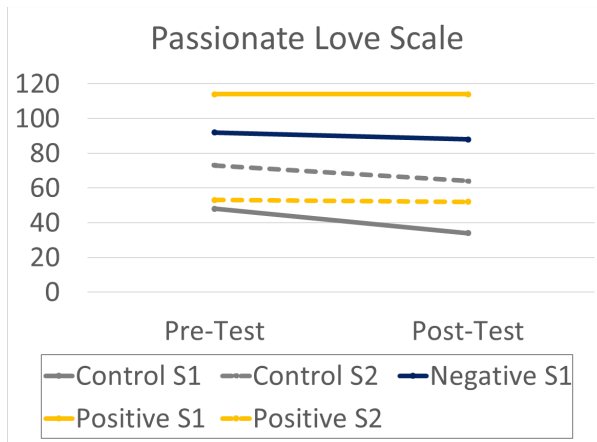


Figure 3

Figure 3 shows Passionate Love Scale scores (passion) in both pre-test and post-test conditions. Participants in the positive condition showed either no change in scores or a miniscule decrease (1 point) in scores. The 1 participant in the negative condition had a very small decrease in their score, and both participants in the control condition had small decreases in scores.

Appendix A: Consent Form Phase 1

Information to Consider about this Research

Love Regulation Strategies in College Students

Principal Investigator: Austin Carnes

Department: Psychology

Contact Information: carnesag@appstate.edu; 214-704-0768

Faculty Advisor: Lisa Emery

Contact Information: emerylj@appstate.edu; 828-262-8941

You are invited to participate in a research study about **your feelings towards an ex-romantic partner.**

If you agree to be part of the research study, **you will fill out some information about a recent romantic breakup. You will also be asked to fill out some questionnaires about how you manage your emotions. Based on your responses to the questionnaires in this study, you may be invited to participate in a second phase of the study.**

Risks and discomforts of this study may include **feelings of hurt or sadness when thinking about your past relationship.**

You will be compensated with **1 ELCs for completing this study.** If you are invited to participate in the next phase, you will have the opportunity to earn up to 2 more ELCs.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to continue for any reason. You do not need to participate in the next phase of the study to earn the ELC for this survey.

If you have questions about this research study, you may contact **Austin Carnes or Dr. Lisa Emery**

The Appalachian State University Institutional Review Board (IRB) has determined that this study is exempt from IRB oversight.

By continuing to the research procedures, I acknowledge that I am at least 18 years old, have read the above information, and agree to participate.

Appendix B: Consent Form Phase 2

Information to Consider about this Research

Love Regulation Strategies in College Students

Principal Investigator: Austin Carnes

Department: Psychology

Contact Information: carnesag@appstate.edu; 214-704-0768

Faculty Advisor: Lisa Emery

Contact Information: emerylj@appstate.edu; 828-262-8941

You are invited to participate in a research study about **your feelings towards an ex-romantic partner.**

If you agree to be part of the research study, **you will first be asked to submit non-explicit pictures of your ex-partner by uploading them to the following questionnaire. You will then come into the lab and view these pictures. While viewing the pictures, you may be asked to think about good or bad aspects of your ex-partner. After viewing each picture, you will be asked to rate how you feel. The photographs you submit will be deleted from our database once you complete the in-lab portion of the study, or if you withdraw from the study before completion.**

Benefits of the research may include **learning to think about your ex-partner in ways that help you move on from the relationship.**

Risks and discomforts may include **feelings of hurt or sadness when thinking about the relationship.**

You will be compensated with **2 ELCs for completing the remaining parts of the study: 1 ELC for uploading the photographs, and 1 for completing the laboratory picture-viewing task.**

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to continue for any reason.

If you have questions about this research study, you may contact **Austin Carnes or Dr. Lisa Emery**

The Appalachian State University Institutional Review Board (IRB) has determined that this study is exempt from IRB oversight.

By continuing to the research procedures, I acknowledge that I am at least 18 years old, have read the above information, and agree to participate.

Appendix C: IRB Approval

From: Nat Krancus, IRB Administrator

Date: 3/29/2020

RE: Notice of Exempt Research Determination

STUDY #: 20-0192

STUDY TITLE: Love Regulation Strategies In College Students

Exemption Category: 3.Benign Behavioral Intervention

This study involves no more than minimal risks and meets the exemption category or categories cited above. In accordance with the 2018 federal regulations regarding research with human subjects [45 CFR 46.101(b)] and University policy and procedures, the research activities described in the study materials are exempt from IRB review. If this study was previously reviewed as non-exempt research under the pre-2018 federal regulations regarding research with human subjects, the Office of Research Protections staff reviewed the annual renewal and the initial application and determined that this research is now exempt from 45 CFR 46.101(b) and thus IRB review.

What a determination of exempt research means for your project:

1. The Office of Research Protections staff have determined that your project is research, but it is research that is exempt from the federal regulations regarding research.
2. Because this research is exempt from federal regulations, the recruitment and consent processes are also exempt from IRB review. This means that the procedures you described and the materials you provided were not reviewed Office of Research Protections staff, further review if these materials are not necessary, and you can change these procedures and materials without review from this office. You can use the consent materials you may have provided in the application, but you can change the consent procedures and materials without submitting a modification. Note that if your consent form states that the study was "approved by the IRB" this should be removed. You can replace it with a sentence that says that the study was determined to be exempt from review by the IRB Administration.
3. You still need to get consent from adult subjects and, if your study involves children, you need to get assent and parental permission. At the very least, your consent, assent, and parental permission processes should explain to research subjects: (a) the purpose, procedures, risks, and benefits of the research; (b) if compensation available; (c) that the research is voluntary and there is no penalty or loss of benefits for not participating or discontinuing participation; and (d) how to contact the Principal Investigator (and faculty advisor if the PI is a student). You can also use exempt research consent template, which accounts for all of these suggested elements of consent: <https://researchprotections.appstate.edu/human-subjects-irb/irb-forms>.
4. Special Procedures and populations for which specific consent language is suggested. Research involving children, the use of the SONA database for recruitment, research with students at Appalachian State University, or MTurk should use the specific language outlined by Office of Research Protections on our website: <https://researchprotections.appstate.edu/human-subjects-irb/consent-corner>.
5. Non-procedural Study Changes: most changes to your research will not require review by the Office of Research Protections. However, the following changes require further review by our office:
 - the addition of an external funding source,
 - the addition of a potential for a conflict of interest,
 - a change in location of the research (i.e., country, school system, off site location),
 - the contact information for the Principal Investigator,

-the addition of non-Appalachian State University faculty, staff, or students to the research team, or

6. Changes to study procedures. If you change your study procedures, you may need to submit a modification for further review. Changes to procedures that may require a modification are outlined in our SOP on exempt research, a link to which you can find below. Before submitting a modification to change procedures, we suggest contacting our office at irb@appstate.edu or (828)262-4060.

Investigator Responsibilities: All individuals engaged in research with human participants are responsible for compliance with University policies and procedures, and IRB determinations. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records. The PI should review the IRB's list of PI responsibilities.

To Close the Study: When research procedures with human participants are completed, please send the Request for Closure of IRB Review form to irb@appstate.edu.

If you have any questions, please contact the IRB Administrator at (828) 262-4060.

Best wishes with your research.

Important Links for Exempt Research:

<https://researchprotections.appstate.edu/human-subjects>.

1. Standard Operating Procedure for exempt research (#9): https://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/sop_9_approved_1.21.2019.pdf
2. PI responsibilities: <https://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI%20Responsibilities.pdf>
3. IRB forms: <http://researchprotections.appstate.edu/human-subjects/irb-forms>

Appendix D: Negative Reappraisal Prompts (taken from Langeslag & Sanchez 2018)

1. What is a bad way your ex acted?
2. What is a bad way your ex behaved?
3. What is a bad way your ex sounded?
4. What is a time your ex looked bad?
5. What is an annoying habit of your ex?
6. What is a bad personality trait of your ex?
7. What bad values does your ex have?
8. What bad beliefs does your ex have?
9. What is your ex's bad habit?
10. What is a bad way your ex talked to you?
11. What is a bad way your ex looked at you?
12. What is something stupid your ex said?
13. What is something stupid your ex did?
14. What is something annoying your ex did?
15. What is something mean your ex did?
16. What is something mean your ex said?
17. Who is the annoying friend of your ex?
18. Who is the annoying family member of your ex?
19. What is an annoying hobby of your ex?
20. What is something gross your ex ate?
21. What is something dumb your ex thought?
22. What is something annoying your ex watched?
23. What is something disrespectful your ex did?
24. What is something disrespectful your ex said?
25. What is something your ex didn't understand?
26. What is something your ex didn't support?
27. What is something your ex wouldn't participate in?
28. How did your ex not fit into your future plans?

Appendix E: Positive Reappraisal Prompts (adapted from Langeslag & Sanchez 2018)

1. What was a good way in which your ex acted towards you?
2. What was a good behavior your ex exhibited?
3. What was a good way your ex sounded?
4. What was a time when your ex looked good?
5. What was a good habit of your ex?
6. What was a good personality trait of your ex?
7. What good values did your ex have?
8. What was a good belief your ex had?
9. What was a helpful or useful habit that your ex had?
10. What was a good way in which your ex talked to you?
11. What was a good way in which your ex looked at you?
12. What was something smart your ex said?
13. What was something smart your ex did?
14. What was something helpful your ex did for you?
15. What was something kind or compassionate your ex did for you or others?
16. What is something kind or compassionate your ex said to you or others?
17. What was one good element of your ex's social life?
18. What was one good element of your ex's family life?
19. What was a good that your ex had?
20. What was one positive way in which your ex behaved during meal times?
21. What is something insightful your ex thought?
22. What is a good TV show, movie, or song that your ex introduced you to?
23. What was something respectful your ex said to you or others?
24. What was something respectful your ex did for you or others?
25. What was one way in which your ex was understanding of you or others?
26. What is one good thing which your ex supported? (personal hobbies, political causes, etc.)
27. What is one good thing that your ex participated in? (socializing, hobbies, etc.)
28. What is one thing you wish your ex well with? (future plans, jobs, education, etc.)

Appendix F: Control Task Prompts

1. What did you eat for breakfast today?
2. What is your favorite color?
3. How many siblings do you have?
4. What is your favorite food?
5. What is the name of the street you grew up on?
6. What is the name of the high school you went to?
7. What is your favorite sport?
8. What is the name of your childhood best friend?
9. What is your favorite article of clothing you own?
10. What is the name of your pet (if you have any)?
11. Where did you attend elementary school?
12. What is your favorite TV show?
13. What year did you graduate from high school?
14. What state/country did you grow up in?
15. What is your shoe size?
16. What is your favorite movie?
17. Where was your first job (if any?)
18. What year will you graduate from college?
19. What is your favorite animal?
20. What is your favorite memory from high school?
21. What is your favorite band/musical artist?
22. What is your favorite type of car?
23. What color shirt are you currently wearing?
24. Who is your favorite character from a TV show or movie?
25. What is your favorite memory from college?
26. Where did you attend middle school?
27. What is your favorite song?
28. What did you eat for lunch today?