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# The Effect of Changing Appraisals of Current Life Success on Memories of Love Towards Parents

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THE EFFECT OF CHANGING APPRAISALS OF CURRENT LIFE SUCCESS ON  
MEMORIES OF LOVE TOWARDS PARENTS

by

Mario Ernesto Herrera

A Thesis  
Submitted to the Graduate School,  
the College of Education and Human Sciences  
and the School of Psychology  
at The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Master of Arts

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## ABSTRACT

As we experience successes and failures in life, do we bias our memories of childhood? Cognitive appraisal theory would predict that emotions are elicited based on the current appraisal of an event or person. There is some research that these current appraisals can also distort memories of emotions surrounding an event. No past research has investigated whether current appraisal of life success would affect important autobiographical memories. Here, we examine the effects on childhood memory of love felt towards parents. Due to current appraisal theory, we expected memory of love towards parents would be prone to distortion and bias. We predicted upward changes in appraisal of success would lead to increases in reported memory of love towards parents. We also explored whether this effect would be moderated by how people attributed their successes towards themselves, parents, and childhood, as well as their level of locus of control and self-esteem. In Experiment 1, we found that within a subsample of undergraduate participants with specific characteristics (e.g., low self-esteem, high external locus of control, and lower attribution of success towards themselves) changing appraisal of success resulted in changes in childhood memories of love towards their mother. In Experiment 2, we found that adults from the general public, regardless of individual differences, were as a whole susceptible to changes in current appraisal of success and recalled more childhood memories of love towards their mother. In both experiments, memory of love towards fathers was not as susceptible to our experimental manipulation.

*Keywords:* Current appraisal of success, memory of love, memory bias, locus of control, attribution of success, self-esteem

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## DEDICATION

First and foremost, I would like to dedicate this thesis to my mother, Maria Gonzalez. Your love and support has undoubtedly helped me complete this project. Additionally, I would like to dedicate this thesis to my sister, Alice Herrera. You are my biggest inspiration and helped spawn my love for psychology. Finally, I would like to dedicate this thesis to Margarita Gonzalez, Salvador Barron, Kevin Carranza Bonilla, and Jose Ernesto Herrera. You four are my heroes (D.E.P.).

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## CHAPTER I - INTRODUCTION

It is not uncommon to read an autobiography of highly successful individuals and to read glowing accounts of their parents (e.g., Cash & Carr, 1997). The affection that they express and remember towards their parents is palpable. It may be the case that they did indeed have loving relationships in childhood. Nevertheless, there are some interesting cases where the highly successful individual had an apparent stressful childhood, yet in their autobiography they find ways to wax lyrical about one or both of their parents. For example, Tupac Shakur, one of the most successful music artist of his time, had a very rough childhood where he experienced poverty and abandonment from his mothers. Nevertheless, he would later write the song “Dear Mama,” dedicating it to his mother, stating “I wrote it for my mama because I love her, and I felt I owed her something deep” (in a news interview written by Philips, 1995, para. 19). These are not the only anecdotal expressions of affection towards mothers following success. Many who receive Oscars express their gratitude towards their parents, and especially mothers (e.g., see Oscars, 2012). These examples raised the question of whether the glow of success biases memories of childhood towards parents. For instance, we wondered whether some of the most precious aspects of autobiographical memory, such as memories of love felt towards parents, could be malleable. Past research gives us reason to suspect that this would be so; memories of emotions have been found to be biased by appraisals of the environment (for a review, see Levine, Lench, & Safer, 2009). The proposed mechanism in which memories of emotions are distorted is based on the change in current cognitive appraisals of the event (Levine, 1997). However, there is little research that links successes in life, or appraisals of life success, to memories for

emotions in childhood. Because people are likely to attribute their successes in life in part to their childhood with their parents, we might suspect changes in current success would lead to changes in childhood memories. In this study, we investigate the effect of changing current appraisals of success in life on memory of love towards parents.

### *Theory*

The experience of success can be viewed as a goal attainment or goal achievement (Nash & Stevenson, 2004). Current cognitive appraisals are evaluations of external stimuli (e.g., event or person) in relation to one's goals that results in the experience of an emotion (Lazarus, 1991; Schachter & Singer, 1962). Cognitive appraisal theorists have also suggested that the appraisal of a positive event where a goal was attained can elicit positive emotions, and if a goal was not met it can elicit negative emotions (e.g., Lazarus, 1991). Some emotions to be elicited by the appraisal of success will be happiness (Storm & Storm, 1987) and pride (Williams & DeSteno, 2008); shame or anger often accompany the appraisal of failure (Tracy & Robins, 2006). For example, for a student who recently performed well on an exam, the appraisal of finding out they passed can produce an experience of success that leads to a bias in memory for emotions (cf. Keuler & Safer, 1998).

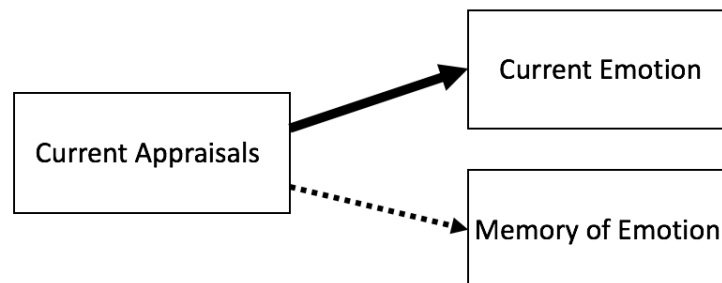


Figure 1. Basic Theoretical Framework of Current Cognitive Appraisals.

Basic theoretical framework where current appraisal can bias memory of emotion and current emotion (Lazarus, 1991; Levine, 1997). Note that the cognitive appraisal theory of emotions at its core says that appraisals of the environment in relation to one's goals are the main cause of the experience of emotions. Levine's (1997) modification and expansion of the theory to relate to *memory* of emotions states that such appraisals are a *partial* cause of memory of emotions, hence the dotted line

As you can see from Figure 1, cognitive appraisal theory of emotions states that current appraisals of the environment are the primary cause of emotions (Lazarus, 1991), and Levine (1997) added that such appraisals are also a partial causal factor in memory of emotions. We view appraisals as the causal factor in changing memory of emotion. Thus, when we review literature that instead emphasizes current emotion as the causal factor on memory of emotion, we value such research. However, we theorize that it is the change in current appraisals that influences both current emotion and memory of emotion.

This thesis makes the argument that current appraisals of an event or person can alter memory of emotions towards that event or person. Further, experiences of success and failure can alter those current appraisals of a person if that person might be in some way connected to that success (e.g., a parent), and in turn alter memories of past emotions towards that person. In the next section, we summarize research that supports the former proposition (current appraisals alter memory of emotions), which is followed by a section that summarizes the latter proposition (that successes can alter current appraisals and/or current emotions). By doing so, we will outline why we predict that experiences of major current successes may bias memory of emotions towards a parent in childhood.

### *Current Appraisals and the Malleability of Memory of Emotions*

Past researchers have provided some evidence that memory of emotions toward past events are malleable and can be biased by current appraisals of those past events (e.g., Levine, 1997; Levine, Prohaska, Burgess, Rice, & Lulhere, 2001; Levine, Whalen,



Henker, & Jamner, 2005). For example, Levine (1997) found that supporters of the presidential candidate Ross Perot over- or under-estimated their memories for their initial emotions (e.g., surprised, happy, angry, sad, and hopeful) that they felt when they first heard of Ross Perot's withdrawal. Towards the end of the campaign, Ross Perot reentered the campaign, but lost the election. The same supporters were again recruited and instructed to appraise whether they had been upset or glad for his reentrance, and to recall the initial emotional reactions they reported. Supporters who did not plan to vote for Perot after his withdrawal, but wished he had won the election, underestimated the strength of anger they had reported. Supporters who remained loyal to Perot underestimated the intensity of sadness and anger they had originally reported, and supporters who deserted Perot by voting for someone else underestimated their initial hope.

Similarly, Levine et al. (2001) found that memory for initial emotional reactions to an event were distorted when recalled at later times based on current appraisals of the event. In this study, participants reported their initial emotional reactions to the non-guilty verdict of Orenthal James (O. J.) Simpson. The participants were asked to recall their reported initial emotions again, both after two months as well as a year later. Participants who had guilt appraisals had greater instability of their recall of memory for the emotions happy and anger. These findings suggested that appraisals tend to shift and can produce distorted memory of emotions.

Even when an event is not experienced by an individual, memory of emotions towards the event can be biased by current appraisals of that event; specifically, the appraisal of the impact of the event (Levine et al., 2005). Levine et al. (2005) found that

adults and adolescents over- and under-estimated their memory of their initial emotional reaction of the terrorist attack on September 11, 2001. Adults who appraised the event as having an impact on their future overestimated their initial memory of negative emotions. On the contrary, adolescents underestimated their initial memory of negative emotions because of a possible protective factor of viewing the event as less impactful to their future (see Whalen, Henker, King, Jamner, & Levine, 2004 for how adolescents' emotional reactions to terrorist attacks change over time). More recently, Kaplan, Levine, Lench and Safer (2016) found similar results where people who currently appraised an event (e.g., 2012 presidential election) as less important, underestimated their memory of their initial emotional reactions over time.

Current emotions have also shown to bias memory of emotions (Keuler & Safer, 1998; Safer, Bonanno, & Field, 2001; Safer & Keuler, 2002; Safer, Levine, Drapalski, 2002). For example, students who are currently not anxious and find out that they performed well on their graduate comprehensive examination, overestimated the anxiety they felt one day prior to the exam (Keuler & Safer, 1998). Past research has also provided evidence that individuals who experienced the death of a spouse either over-or under-estimated their memory of grief based on their current level of grief after five years post-loss (Safer et al., 2001). Participants were recruited six months after the loss of a spouse and were administered the Texas Revised Inventory of Grief (TRIG; Faschingbauer, 1981) to get a baseline measure of their current grief symptoms. After five years, the same participants were recruited and instructed to recall their initial grief that was reported six months post-loss of their spouse. Overall, participants' memories

for grief were overestimated if they did not cope as well with the loss, and those who coped well underestimated their initial grief.

*Successes May Change Current Emotions, Current Appraisals, and Memory of Emotion*

More in line with the current study, there is evidence that successes can change current emotions, and therefore appraisal theory would suggest that current appraisals also change (see Figure 1). So, we have reason to believe that changing current successes would, via changing appraisals, lead to changes in memory of emotion. In fact, there is some limited research on this. As aforementioned, Keuler and Safer (1998) found that students who successfully passed their graduate comprehensive examination overestimated their pre-exam anxiety. The night prior to their scheduled examinations, students were administered the Comprehensive Exam Anxiety Inventory developed by the researchers, which consisted of the Scale of Thoughts in Oral Examinations (Arnkoff, Glass, & Robinson, 1992), Taylor Manifest Anxiety Scale (Taylor, 1953), and basic emotions measurements (Shaver, Schwartz, Kirson, & O'Connor, 1987). One month after the comprehensive examination, students were randomly placed into either an uninformed group or the informed group. In the informed group, students found out their exam results and were then instructed to recall the anxiety they felt the night prior to the exam. The uninformed group, were also instructed to recall the anxiety they felt while still not knowing the results of their exam. The two groups differed on their accuracy of the intensity of their initial pre-exam anxiety. Feedback of current success led to a biased memory of emotions.

Similarly, Safer et al.'s (2002) study investigated the accurate recall of memory of anxiety, for a mid-term examination in an undergraduate student sample. Students were

given their grades from a midterm exam either before or after being asked to recall their pre-exam anxiety. Students who were given their exam grade and did well, underestimated their memory for their anxiety prior to the exam. We would explain this by saying the experience of current success led to a reappraisal of the situation; this change in appraisals of the event led to a change in memory of emotion for the event. Levine, Schmidt, Kang, and Tinti (2012) also found that high school students who learned they had successfully passed their high school exit exam in Italy, overestimated their pre-exam memory for positive emotions, and underestimated their pre-exam memories of negative emotions. These findings further support that post-event knowledge of success may bias memory of emotions, via the likely causal mechanism of changing current appraisals.

*Potential Moderators: The Experience of Success and Individual Differences*

It is evident that past research suggests an association between experiencing current success and memory for emotion bias based on current cognitive appraisal (Levine et al., 2012; Keuler & Safer, 1998; Safer et al., 2002). To our knowledge though, no past research has investigated whether the experience of success can bias memory for positive emotions towards people, specifically love remembered towards parents in childhood. We expect several mechanisms at work that might affect memory of love in childhood towards parents: how success is attributed towards parents, the self, and childhood; also, how levels of self-esteem may influence the reaction to the experience of success; and, how success is viewed based on an individual's perception of the control they have over their success (i.e., locus of control).

*Attribution of success towards parents, self, and childhood environment.* The first important mechanism that may affect memory of emotions towards parents after experiencing success, is whether people attribute their success to their parents. If people believe that their parents are involved in their success in life, this would moderate how memory of emotions will be biased by such success. Therefore, if children who attribute their success to their parents might remember more positive memory of emotions in childhood when they encounter successes in life.

If children do not attribute their success to their parents, any successes they encounter may not lead to pronounced changes in memory of emotions in childhood towards parents. Success could be attributed to the self and appraisals of parents may not rise in such individuals in response to success. Researchers have shown that many individuals who experience success tend to attribute the success to themselves (e.g., Brady-Amoon & Fuertes, 2011). This suggests that when a person experiences success, their attribution is directed to their skills, motivation, and/or abilities (see also Bar-Tal & Frieze, 1977). In these individuals, the connection between successes and changing appraisals of parents may be relatively tenuous.

*Locus of control and individual differences on the perception of success.* Locus of control is an individual difference of a person's perception on the extent to which they believe they are in control of their lives (Rotter, 1966). For example, individuals who score low on the locus of control scale are labeled as having an internal locus of control. People with an internal locus of control believe they are in control of their lives (Rotter, 1975) and by extension we theorize that their success is more often attributed to themselves. On the other end of the scale, those with an external locus of control will

likely believe that their success is based on external factors. Some of these external factors are powerful people in their lives (Rotter, 1975); we theorize that parents will fit that role for many people. Evidently, this suggest that an individual's locus of control could moderate the effect of the current appraisal of success on memory of emotions towards an important person.

*Self-esteem and the experience of success.* Self-esteem could be another factor that could affect an individual's experience of success. Self-esteem can elicit emotional states (Brown & Marshall, 2001), and affect appraisals of self-worth in people (Leary, Haupt, Strausser, & Chokel, 1998). Individuals with high self-esteem tend to have more positive emotional states (Brown & Marshall, 2001). On the contrary, those with low self-esteem tend to be less motivated to complete tasks, have poorer performances in academia, and are prone to negative emotional states (Heimpel, Wood, Marshall, & Brown, 2002). People with a lower self-esteem have also been shown to be affected more by experimental manipulation of successes, compared to individuals with higher self-esteems (Campbell & Fairey, 1985). Therefore, we theorize that people with a lower self-esteem may be more susceptible to our manipulation, experiencing and producing more positive emotions; thus, appraisals of success and memory of emotions towards their parents will be more moderate. In contrast, those with a high self-esteem may be less susceptible to the effect of experiencing success as it is consistent with their self-concept (Campbell, 1990).

*Mood.* Mood, or current affect, has been theorized and found to be a lesser predictor of memory of emotion, as compared to current appraisals. Levine (1997) noted that:

...recall of past emotions was not mood congruent, and a general tendency to over- or underestimate the intensity of past emotions was not observed. Rather, recall of past emotions resembled the emotions that would follow if the emotion-eliciting event had occurred in the context of current appraisals (p. 175).

In addition, Patihis, Cruz, Herrera (2018a), recently found that current appraisal of mothers biased childhood memories of love felt towards mother; whereas, current mood (measured with the Positive and Negative Affect Schedule; Watson, Clark, & Tellegen, 1988) did not impact this effect.

### *The Current Study*

The proposed research will use the experimental approach to investigate changes in memory of emotion towards a parent. Past research has shown that current appraisals and current emotional state can distort memory of emotion (Levine, 1997), sensations (Hovasapian & Levine, 2015) or feelings (Safer, Bonanno, & Field, 2001); some researchers have argued that love is an emotion (Lazarus, 1991; Roseman, 1994; Shaver, Morgan, & Wu, 1996). Therefore, we predict manipulating current appraisals may change memory of love towards parents. More specifically, changes in current appraisal of success may lead to changes in appraisals of a parent, in turn changing memory of love towards that parent. The participants' experiencing recent failures could lead to a lowering of current appraisals of a parent, possibly negatively biasing their memory of love towards that parent. Out of these arguments, we formulated the following research questions:

*Research Question 1.* Will changing current appraisals of success bias memory of love towards parents? If a positive current appraisal of success is experienced, we predict a positive bias in the recall of childhood memory of love towards parents.

*Research Question 2.* Will peoples' attributions of success (e.g., towards themselves, childhood, and parents) moderate the effect the current appraisal of successes on memory of love in childhood towards parents? We predict, if people do not attribute their success towards themselves, memory of love towards parents is susceptible to a positive bias. We also predict, if participants attribute their success to their parents, childhood memory of love towards their parent can be distorted in a positive direction following a positive current appraisal of success. Additionally, if people attribute their successes towards their childhood environment, memory of love towards their parents can be biased in a positive direct.

*Research Question 3.* Will individual difference of locus of control (i.e., more internal or more external) moderate the effect of current appraisal of success on memory of love towards parents? We predict locus of control will be a moderator. Specifically, those with a more external locus of control will perceive their success to be controlled by external factors such as powerful people (i.e., their parents). Therefore, people with an external locus of control may be more susceptible to positive current appraisal of success.

*Research Question 4.* Will Mood moderate the effect of current appraisal of successes on memory of love towards parents? We predict that mood will not be a moderator based on past research that has suggested that current appraisal is a more robust predictor of distorting memory of emotions (e.g., Levine, 1997) and memory of love towards mothers (Patihis et al., 2018a).



*Research Question 5.* Will self-esteem be a moderator of current appraisal of success on memory for love towards parents? Specifically, if those who have a lower self-esteem may be more susceptible to the experience of a positive current appraisal of success and distort their memory of love towards their parents in a positive direction? Due to there being no past research that has investigated this, we have no a priori prediction.

## CHAPTER II – EXPERIMENT 1 METHOD

### *Participants*

Participants were recruited via SONA System, an undergraduate student pool, from a university in the southern United States, and 331 participated for course credit. The participants' age ranged from 18 to 51 ( $M_{\text{age}} = 20.3$ ;  $SD = 3.81$ ). Of these, the sample consisted of 222 females (67.2 %) and 109 males (32.9%). A majority of the sample reported as being not Hispanic or Latino (97.3%;  $n = 322$ ). In respect to race, 173 self-reported as White (52.3%), 150 as Black or African American (45.3%), eight as Asian (2.4%), 3 as American Indian or Alaska Native (.9%), 1 as Native Hawaiian or Pacific Islander (.3%), and 5 people reported as "other" (1.5%). Because several participants reported more than one race, the sum of these percentages exceed 100% (sum = 102.7%).

### *Materials*

Participants were administered several self-report demographic questions about their age, gender, and race and ethnicity. Participants were also asked in-depth questions about their parents.

*Rosenberg Self-Esteem Scale.* The Rosenberg Self-Esteem Scale was used (Rosenberg, 1965). The Rosenberg Self-Esteem Scale has been shown to have good internal reliability and construct validity in different populations (e.g., university students; Martín-Albo, Núñez, Navarro, & Grijalvo, 2007). One sample of the item is "on the whole, I am satisfied with myself". Participants were instructed to answer how strongly they agree or disagree with a statement on a 4-point Likert type scale (1 = *strongly agree* or 4 = *strongly disagree*; see Appendix A). The 10-item scale had a high internal reliability in our dataset ( $\alpha = .882$ ).

*Locus of Control 10-item short form scale.* A 10-item short form scale was used to assess whether participants had external locus of control or internal locus of control (Rotter, 1966). It was adapted for the current study to utilize 10-items from the original 29-item scale created by Rotter (1966). Each item consists of an *A* or *B* option about how important events in society affect different people and participants pick the best option that describes them (see Appendix B). One example item was “*A. Many times I feel that I have little influence over the things that happen to me or B. Sometimes I feel that I don’t have enough control over the direction my life is taking.*” The scale demonstrated a moderate internal-reliability in our dataset ( $\alpha = .626$ ).

*Attribution of Success.* Participants were administered three subscales to assess their attribution of success towards self (the participants themselves), parents, and childhood environment. The parent subscale consisted of two 5-item scales for each parent (mother and father). An example was, “To what extent do you attribute your current success in life to your father’s guidance during childhood?” Both scales of attribution of success towards parents had high internal reliability in our dataset (mother  $\alpha = .933$ ; father  $\alpha = .954$ ). The attribution of success towards childhood environment scale consisted of 3-items with a moderate internal reliability ( $\alpha = .791$ ). An example item is: “To what extent do you attribute your current success in life to the things that happened during childhood?” The attribution scale to the “self” or themselves consisted of 5-items and had a moderate internal reliability ( $\alpha = .788$ ). An example is: “To what extent do you attribute your success to yourself?” All subscales had a Likert-type scale ranging from 1 = *Not at All* to 5 = *A lot*, as well as the option of *Not Applicable* (see Appendix C).

*Writing prompts: Success and failure experimental manipulation.* Writing prompts were used to manipulate participant's current appraisals of their life success. This was done using three conditions: Success Appraisal Up condition, Success Appraisal Down condition, and Null condition (for materials, see Appendix D). All the conditions, except the neutral condition, required that the participants write three to four sentences on each of three writing prompts (totaling approximately 9–12 sentences). In the Success Appraisal up condition, participants were instructed to write about life successes no matter how small those success were for the past year (writing prompt 1), in the past five years (writing prompt 2) and over their lifetime (writing prompt 3). One example is: "In three or four sentences, please give examples of successes in your life that have meant the most to you that have happened in the last year." In the Success Appraisal Down condition, participants wrote about recent failures in the past year, failures in the past five years, and failures throughout their life time. The Null condition did not write anything, and were simply asked to continue the survey by clicking on the arrow to continue the survey.

*Current Appraisal of Success.* A 5-item manipulation check scale was administered to assess participants' current appraisal of success (Appendix E). One example item was: "How successful do you currently rate yourself at successfully overcoming obstacles or challenges?" Another example was: "To what extent do you feel you are a successful person overall?" All 5-items contained a 7-point Likert-type scale (1 = *not successful* or 7 = *very successful*). The scale demonstrated a high internal reliability in our dataset ( $\alpha = .912$ ).

*Memory of Love towards Parents Questionnaire (MLPQ; 4-item short-form).* The MLPQ 4-item was administered to measure the participant's memory of love towards their mother and father (separately) during yearlong periods of first, sixth, and ninth grade (Patihis, Herrera, Huff, & Arnau, 2018b; Appendix F). The participants self-reported their memory of the strength and frequency of love and affection felt towards their parents. Overall, there were six subscales for each mother or father within the time periods of first, sixth, or ninth grade. A sample of one such item assessing the frequency of love was "During the whole year when you were in first grade, *how often on average* did you feel love toward your mother?" An example measuring the strength of love was "During the whole year when you were in first grade, *how strong on average* was your love toward your mother?" All subscales contained a Likert-type scale ranging from 0 = *Never* to 6 = *All the time*, as well as the option of *I Never Knew This Parent*, which was coded as missing data. All MLPQ subscales had high internal reliability in the current dataset (mother: first grade  $\alpha = .938$ , sixth grade  $\alpha = .947$ , ninth grade  $\alpha = .943$ ; father: first grade  $\alpha = .971$ , sixth grade  $\alpha = .970$ , ninth grade  $\alpha = .974$ ).

*Positive and Negative Affect Schedule (PANAS).* The PANAS consists of two 10-item subscales representing negative and positive current affect/mood (Watson et al., 1988; see Appendix H). Crawford and Henry (2004) have recently shown that the PANAS has high internal reliability and construct validity measure in non-clinical population. In the current study, both scales had high internal reliability (positive affect:  $\alpha = .896$ ; negative affect:  $\alpha = .904$ ) and the two subscales were not significantly correlated ( $p = .273$ ).

#### *Procedure*

Some participants were administered the study online ( $n = 120$ ), while some participated in a laboratory ( $n = 211$ ). Patihis et al. (2018a), in their psychometric development of the MLPQ, found evidence to suggest that the MLPQ was not affected by the method by which it was administered—online or in lab. Online participants completed the study at a computer, at a time and place of their choosing. In lab participants took the study at a specified appointment time in person. No more than four undergraduates participated at the same time within the lab, and were under the supervision of one or two research assistants. After consenting, participants answered demographic questions and background questions about their parents. Then, participants answered baseline measurements of their current self-esteem, locus of control, and attributions of success towards the self, parents, and childhood environment. Afterwards, participants were randomly assigned to either the Success Appraisal Up condition, Success Appraisal Down condition, or the Null condition (a between-subjects experimental manipulation). In the Success Appraisal Up and Success Appraisal Down conditions participants wrote 3-4 sentences for each of the three writing prompts (in respective to the condition). In the Null condition, participants did not receive any writing prompts, and did not write out sentences. Following this, all participants filled out a manipulation check, where participants self-reported their current appraisal of success in life. Then, the MLPQ subscales were filled out. These MLPQ subscales were counterbalanced—participants were randomly assigned to either receive the MLPQ mother subscales first or the MLPQ father subscales first. Participants then filled out the PANAS measure of mood. They were then debriefed about the purpose of the study. The median time to complete the study was 23 minutes.

### CHAPTER III – EXPERIMENT 1 RESULTS

*Manipulation Check: Current Appraisal of Success*

We compared participants’ self-assessed appraisal of how successful they are in their lives (the independent variable) between the three groups: Success Appraisal Up condition, Success Appraisal Down condition, and the Null condition. We conducted a one-way ANOVA and found an omnibus significant difference between the conditions  $F(2, 334) = 8.23, p < .001$ . A LSD post-hoc analysis revealed that there was no significant difference between the Null condition and Success Appraisal Down condition;  $p = .318$  (See Table 1 for means and standard deviations). This finding suggested that the Success Appraisal Down condition was not an effective manipulation; therefore, we decided to drop the Success Appraisal Down condition from this analysis and continued to collect more data for the Success Appraisal Up conditions and Null conditions. All following analyses were conducted comparing the latter two conditions.

Table 1

*ANOVA Comparison of Conditions on Current Appraisal of Success (Manipulation Check on the Measure of the Independent Variable)*

Condition	<i>M</i>	<i>SD</i>	<i>n</i>	LSD Comparison	
				Success Appraisal Up	Success Appraisal Down
Success Appraisal Up	5.17	1.03	111		
Success Appraisal Down	4.75	1.03	112	$p = .004^*$	
Null	4.60	1.18	114	$p = .000^{**}$	$p = .318$

Note. A LSD post- hoc analysis revealed a significant difference between conditions; Success Appraisal up and the Null condition, Success Appraisal Down and the Success Appraisal Up. However, there was no difference between the Success Appraisal Down and Null Condition.

An independent sample t-test was conducted between Success Appraisal Up condition and the Null condition on Current Appraisal of Success as a manipulation check. There was a significant difference between the Success Appraisal Up condition ( $n = 164$ ) and the Null condition ( $n = 167$ ) on Current Appraisal of Success;  $t(329) = -3.665$ ,  $p < .001$ . Participants in the Success Appraisal Up condition reported a higher score on Current Appraisal of Success compared to participants in the Null condition (see Table 2 for means and standard deviations). This significant difference allowed us to proceed with our data analyses.

Table 2

*Means and Standard Deviations of Conditions on Current Appraisal of Success  
(Manipulation Check on the Measure of the Independent Variable)*

Condition	<i>M</i>	<i>SD</i>	<i>n</i>
Success Appraisal Up	5.18	1.03	164
Null	4.73	1.18	167

*Note.* There was significant difference between the two conditions:  $t(329) = -3.66$ ,  $p < .001$ .

*Research Question 1*

For our research question 1, we conducted a 2 (Condition: Success Appraisal Up, Null) x 3 (Time Period: first, sixth, ninth grade) mixed factorial ANOVA with Memory of love Towards the Parent (mother and father separately) as the outcome measure. The first factor, Condition is between subjects, and the other factor is within subjects (Time Period).

*Memory of Love towards Mother.* We analyzed data from 322 participants (Success Appraisal Up condition  $n = 160$ ; Null condition  $n = 162$ ; 9 participants were excluded for not answering all time periods of the MLPQ towards mother). There was a



significant main effect of Time Period;  $F(2, 640) = 60.04, p = < .001, \eta_p^2 = .158$ ; indicating memory of love towards mothers declined for memories corresponding to first grade (age 6-7), to memories of sixth grade (age 11-12), to memories of ninth grade (age 14-15; See Table 3 for means and standard deviation). There was no significant interaction between Conditions and Time Period;  $F(2, 640) = .721, p = .487$ . There was no significant main effect for Condition on Memory of Love towards Mother;  $F(1, 320) = 1.25, p = .263, \eta_p^2 = .004$ .

*Memory of Love towards Father.* We analyzed data from 314 participants (Success Appraisal Up condition  $n = 153$ ; Null condition  $n = 161$ ). Seventeen participants were excluded because they did not answer all time points of the MLPQ for fathers. There was a significant main effect of time;  $F(2, 624) = 52.22, p < .001, \eta_p^2 = .143$ ; indicating, memory of love towards fathers declines from first grade, to sixth, to ninth grade (see Table 3 for means and standard deviations). There was no significant interaction between Time Period and Condition;  $F(2, 624) = .575, p = .563, \eta_p^2 = .002$ . Condition was not a significant main effect on memory of love towards father;  $F(1, 312) = .059, p = .808, \eta_p^2 < .001$ .

Table 3

*Means and Standard Deviations of Memory of Love towards Parents at Grade Levels 1, 6, and 9: By Condition and Gender of Parent*

Time Period	Condition	Gender of Parent					
		Mothers			Fathers		
		<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Grade 1{	Success Appraisal Up	5.32	1.08	160	4.47	1.69	153
	Null	5.25	1.07	162	4.41	1.71	161

Table 3 (continued)

Grade 6{	Success Appraisal Up	4.95	1.30	160	4.04	1.77	153
	Null	4.79	1.36	162	3.94	1.82	161
Grade 9{	Success Appraisal Up	4.78	1.43	160	3.70	1.97	153
	Null	4.58	1.44	162	3.74	1.79	161
Grand Means {	Success Appraisal Up	5.02	1.17	160	4.07	1.61	153
	Null	4.87	1.13	162	4.03	1.68	161

*Note.* Grade 1 for most participants corresponded to the first year of elementary school (ages 6-7), Grade 6 to the first year of middle school (ages 11-12), and Grade 9 to the first year of high school (ages 14-15). Likert scale on frequency and strength items ranged from 0 to 6, with 6 representing remembering feeling love “*all the time*,” (0 = *never*); or remembering the strength of the love as being “*extremely strong*” (0 = *not at all*).

### *Moderation Analyses for the Effects of Current Appraisal on MLPQ*

For all moderation analyses our dependent measure was Memory of Love towards Parents (mother and father separately). For each potential moderator variable, we conducted a 2 (Condition: Success Appraisal Up, Null; between subjects variable) x 3 (Time Period: first, sixth, ninth grade; within subjects variable) mixed custom ANCOVA, with the potential moderator as a covariate, with a custom interaction term added. The potential moderation variable in each analysis was Attribution of Success towards Mother, Father, Self or Childhood Environment, Locus of Control, PANAS (Positive or Negative Mood), or Self-Esteem (see Table 4 for descriptive statistics). All potential moderation variables were kept as continuous measures, and not dichotomized, to avoid Type II error (McClelland, Lynch, Irwin, Spiller, & Fitzsimons, 2015). All moderation variables were also centered-mean. If a moderator was statistically significant a regression model was then conducted to estimate low and high levels of the moderator because this is not possible in an ANCOVA (Spiller, Fitzsimons, Lynch, & McClelland, 2013). This was then followed by a flood-light analysis to test the effect of Condition and low (-1 *SD* below the mean; hereafter -1 *SD*) and high (+1 *SD* above the mean; hereafter

+ 1 *SD*) scores of the moderator on Memory of Love towards Parents to determine the direction of the effect(s) (Spiller et al., 2013).

Table 4

*Descriptive Statistics of Potential Moderators on the Effect of Current Appraisal of Success by Condition in Undergraduate Student (Younger Adult) Sample*

Potential Moderators	Condition							
	Success Appraisal Up				Null			
	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>n</i>
Attribution of Success towards Mother	4.24	.986	-1.65	163	4.30	.873	-1.56	166
Attribution of Success towards Father	3.34	1.36	-.415	159	3.31	1.33	-.427	167
Attribution of Success towards Childhood Environment	3.91	.871	-.821	164	3.86	.851	-.687	167
Attribution of Success towards Self	4.07	.707	-.684	164	4.09	.681	-.467	167
Locus of Control	4.16	2.04	.288	164	4.36	2.24	.232	167
Positive Affect (PANAS)	31.0	9.23	-.168	164	30.6	8.84	.188	167
Negative Affect (PANAS)	17.8	7.66	1.01	164	18.5	8.52	.188	167
Self-Esteem	21.3	5.23	-.395	164	20.5	5.38	-.123	167

*Note.* The PANAS was administered after the experimental manipulation. All other potential moderators were administered as baseline measurements.

*Research Question 2*

*Attribution of Success towards Mothers.* There was no significant interaction between Attribution of Success towards Mother and Conditions on Memory of Love towards Mother; therefore, Attribution of Success Towards Mother was not a moderator;  $F(1, 317) = .164, p = .686, \eta_p^2 = .001$ .

*Attribution of Success towards Fathers.* There was no significant interaction between Condition and Attribution of Success towards Father on Memory of Love towards Father;  $F(1, 307) = .014, p = .905, \eta_p^2 < .001$ . Attribution of Success towards Father was therefore not a moderator.

*Attribution of Success towards Self.* As illustrated by Figure 2, there was a significant interaction between Condition and Attribution of Success towards Self on Memory of Love towards Mother;  $F(1, 318) = 2.368, p = .018, \eta_p^2 = .007$ . In an initial model regressing Memory of Love towards Mother (grand mean of first, sixth, and ninth grade) onto Condition (dummy-coded: 0 = Null, 1 = Success Appraisal Up), Attribution of Success towards Self, and the interaction between Condition and Attribution of Success towards Self. The model showed a significant interaction;  $b = -.429, SE = .181, \beta = -.185, t(321) = -2.37, p = .018$ , as well as a main effect of Attribution of Success towards Self;  $b = .563, SE = .130, \beta = .339, t(321) = 4.34, p < .001$ . There was no main effect of condition;  $b = .150, SE = .125, \beta = .065, t(321) = 1.20, p = .231$ .

To probe this interaction, we first conducted a floodlight analysis to test the effect of Condition and low (-1 *SD*) and high (+1 *SD*) levels of Attribution of Success towards Self on Memory of Love towards Mothers. Figure 2 illustrates that at low (-1 *SD*) Attribution of Success towards Self scores, we found that participants in the Success Appraisal Up condition reported significantly greater Memory of Love towards Mother,

compared to those in the Null condition;  $b = .448$ ,  $SE = .176$ ,  $\beta = .194$ ,  $t(321) = 2.54$ ,  $p = .011$ . At higher Attribution of Success towards Self scores, there was no differences between the Conditions;  $b = -.147$ ,  $SE = .178$ ,  $\beta = -.064$ ,  $t(321) = -.824$ ,  $p = .410$ .

In the Null condition, we found that higher Attribution of Success towards Self scores predicted higher Memory of Love towards Mother scores;  $b = .563$ ,  $SE = .123$ ,  $\beta = .340$ ,  $t(161) = 4.57$ ,  $p < .001$ . In contrast, this effect was eliminated in the Success Appraisal Up condition;  $b = .135$ ,  $SE = .132$ ,  $\beta = .081$ ,  $t(159) = 1.02$ ,  $p = .308$ .

We found that there was no significant interaction between Condition and Attribution of Success towards Self on Memory of Love towards Fathers;  $F(1, 310) = 1.28$ ,  $p = .258$ ,  $\eta_p^2 = .004$ . Attribution of Success towards Self was not a moderator.

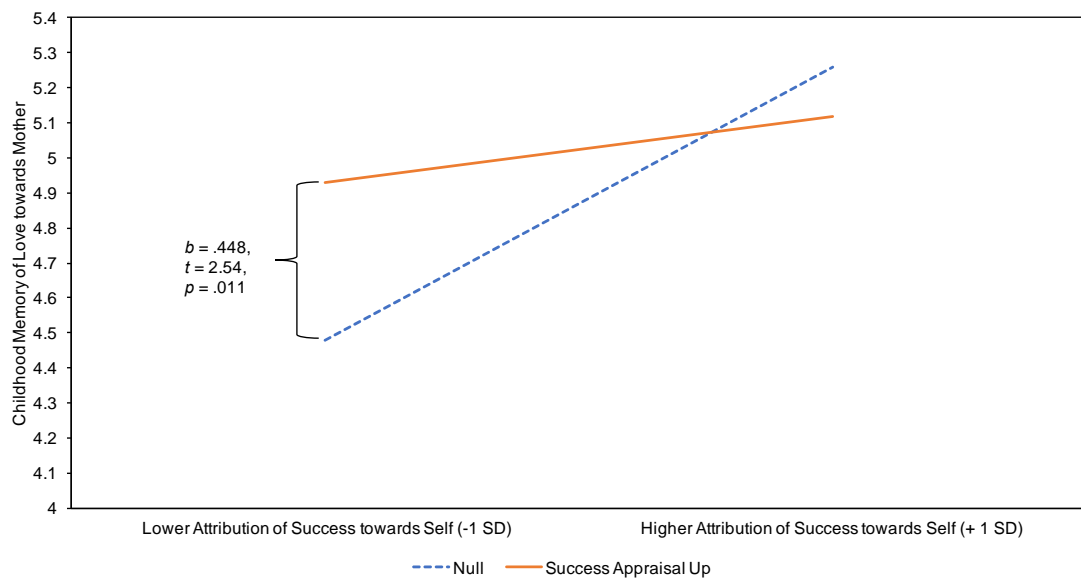


Figure 2. An illustration of the interaction between Attribution of Success towards Self and Condition.

Overall, participants with a higher Attribution of Success towards themselves remembered more Memory of Love towards their Mother, compared to those with a lower score. However, there was no significant difference between the Success Appraisal Up and Null conditions on Memory of Love towards Mother;  $t(321) = -.824$ ,  $p = .410$ . When participants had a lower score, there was a significant difference between Conditions on Memory of Love towards Mother;  $t(321) = 2.54$ ,  $p = .011$ . Participants with a lower

score in the Success Appraisal Up condition remembered more Memory of Love towards their Mother, compared to participants in the Null condition.

*Attribution of Success towards Childhood Environment.* There was no significant interaction between Condition and Attribution of Success towards Childhood Environment on Memory of Love towards Mother;  $F(1, 318) = 1.45, p = .229, \eta_p^2 = .005$ . Attribution of Success towards Childhood Environment was not a moderator.

There was no significant interaction between Condition and Attribution of Success towards Childhood Environment on Memory of Love towards Father;  $F(1, 310) = 1.70, p = .193, \eta_p^2 = .005$ ; indicating that Attribution of Success towards Childhood Environment was not a moderator.

### *Research Question 3*

*Locus of Control.* There was a significant interaction between Condition and Locus of Control on Memory of Love towards Mother;  $F(1, 318) = 3.92, p = .048, \eta_p^2 = .012$ . In an initial model, we regressed Memory of Love towards Mother (grand mean) onto Condition (dummy-coded: 0 = Null, 1 = Success Appraisal Up condition), Locus of Control, and the interaction between Condition and Locus of Control. The model showed that there was a significant interaction ( $b = .118, SE = .059, \beta = .147, t(321) = 1.93, p = .048$ ), as well as a main effect of Locus of Control ( $b = -.123, SE = .040, \beta = -.230, t(321) = -3.10, p = .002$ ). There was no main effect of Condition;  $b = .134, SE = .127, \beta = .058, t(321) = 1.05, p = .294$ ).

To probe this interaction, we conducted a floodlight analysis to test the effect of Condition and low ( $-1 SD$ ) and high ( $+1 SD$ ) levels of Locus of Control on Memory of Love towards Mother. At lower (i.e., more Internal) Locus of Control scores, the Null and Success Appraisal Up condition did not differ;  $b = -.119, SE = .179, \beta = -.052, t(321)$

= -.667,  $p = .505$ . At high (+1 *SD*) or more External Locus of Control, we found that those in the Success Appraisal Up condition reported significantly greater Memory of Love towards Mother compared to those in the Null condition;  $b = .387$ ,  $SE = .182$ ,  $\beta = .168$ ,  $t(321) = 2.12$ ,  $p = .034$  (see Figure 3).

In the Null condition, we found that higher or more External Locus of Control scores predicted lower Memory of Love towards Mother ( $b = -.123$ ,  $SE = .038$ ,  $\beta = -.246$ ,  $t(161) = -3.21$ ,  $p = .002$ ). In contrast, we found that the effect was eliminated within the Success Appraisal Up condition ( $b = -.005$ ,  $SE = .046$ ,  $\beta = -.009$ ,  $t(159) = -.111$ ,  $p = .912$ ).

There was no significant interaction between Conditions and Locus of Control on Memory of Love towards Father;  $F(1, 310) = 1.65$ ,  $p = .200$ ,  $\eta_p^2 = .005$ ; therefore, Locus of Control was a moderator.

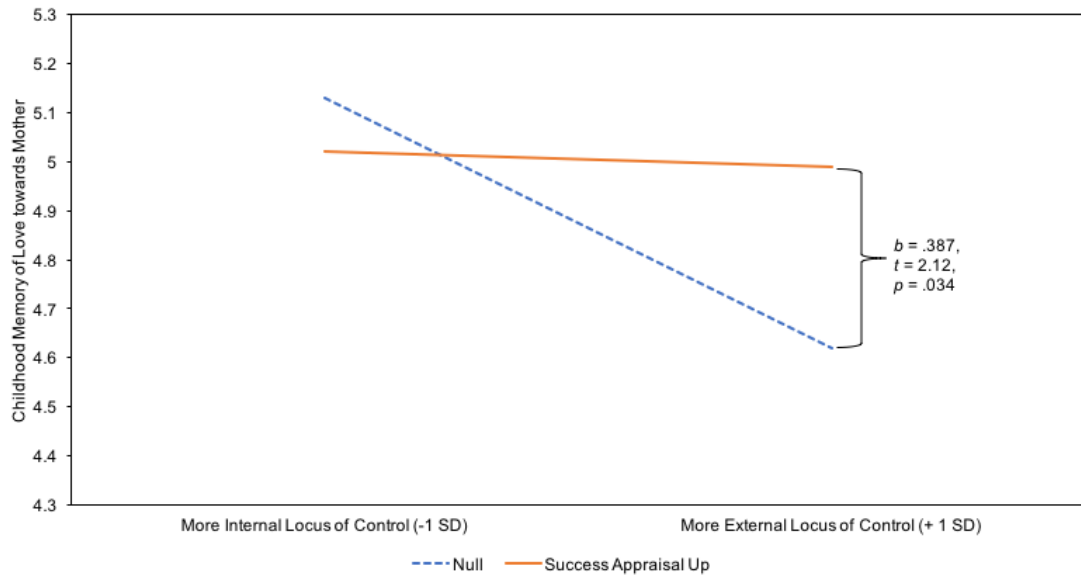


Figure 3. An illustration of the interaction between Locus of Control and Condition.

Participants with a more Internal Locus of Control remembered more Memories of Love towards their Mother, compared to participants with a more External Locus of Control. However, there was no significant difference between The Success Appraisal Up

and Null condition in participants with a more Internal of Control. There was a significant difference between Conditions in participants with a more External Locus of Control;  $t(321) = -.667, p = .505$ . Participants with a more External Locus of Control in the Success Appraisal up condition remembered more Memory of Love towards their Mothers, compared participants in the Null condition with a more External Locus of Control.

#### *Research Question 4*

*PANAS*. There was no significant interaction between Positive Mood and Condition on Memory of Love towards Mother;  $F(1, 318) = .594, p = .442, \eta_p^2 = .002$ .

There was also no significant interaction between Negative Mood and Condition on Memory of Love towards Mother;  $F(1, 318) = .767, p = .382, \eta_p^2 = .002$ .

There was no significant interaction between Positive Mood and Condition on Memory of Love towards Father;  $F(1, 310) = .011, p = .915, \eta_p^2 < .001$ . There was no significant interaction between Negative Mood and Condition on Memory of Love towards Father;  $F(1, 310) = .022, p = .883, \eta_p^2 < .001$ .

#### *Research Question 5*

*Self-Esteem*. As illustrated by Figure 4, there was a significant interaction between Condition and Self-Esteem on Memory of Love towards Mother;  $F(1, 318) = 5.393, p = .021, \eta_p^2 = .017$ . In an initial model, we regressed Memory of Love towards Mother (grand mean of first, sixth, and ninth grade) on Condition (dummy-coded: 0 = Null, 1 = Success Appraisal Up), Self-Esteem, and the interaction between Condition and Self-Esteem. The model showed a significant interaction between Condition and Self-Esteem ( $b = -.052, SE = .023, \beta = ., t(321) = -2.32, p = .021$ ), as well as a main effect of Self-Esteem ( $b = .099, SE = .016, \beta = .460, t(321) = 6.33, p < .001$ ). There was no main effect of Condition ( $b = .084, SE = .121, \beta = .037, t(321) = .701, p = .484$ ).



To probe this interaction, we conducted a floodlight analysis to test the effect of Condition and low (-1 *SD*) and high (+1 *SD*) Self-Esteem. At low (-1 *SD*) Self-Esteem scores, we found that those in the Success Appraisal Up condition reported higher scores of Memory of Love towards Mother, compared to the Null condition; ( $b = .363$ ,  $SE = .169$ ,  $\beta = .157$ ,  $t(321) = 2.14$ ,  $p = .032$ ). At high (+1 *SD*) Self-Esteem, we found that those in the Null condition and Success Appraisal Up condition did not differ ( $b = -.194$ ,  $SE = .171$ ,  $\beta = -.084$ ,  $t(321) = -1.13$ ,  $p = .257$ ).

In the Null condition, as Figure 4 illustrates, high Self-Esteem predicted higher Memory of Love towards Mother;  $b = .099$ ,  $SE = .015$ ,  $\beta = .476$ ,  $t(321) = 6.83$ ,  $p < .001$ . In the Success Appraisal Up condition, this effect maintained;  $b = .047$ ,  $SE = .017$ ,  $\beta = .210$ ,  $t(321) = 2.70$ ,  $p = .008$ .

There was no significant interaction between Condition and Self-Esteem on Memory of Love towards Father;  $F(1, 310) = .105$ ,  $p = .746$ ,  $\eta_p^2 < .000$ ; therefore, Self-Esteem was not a moderator.

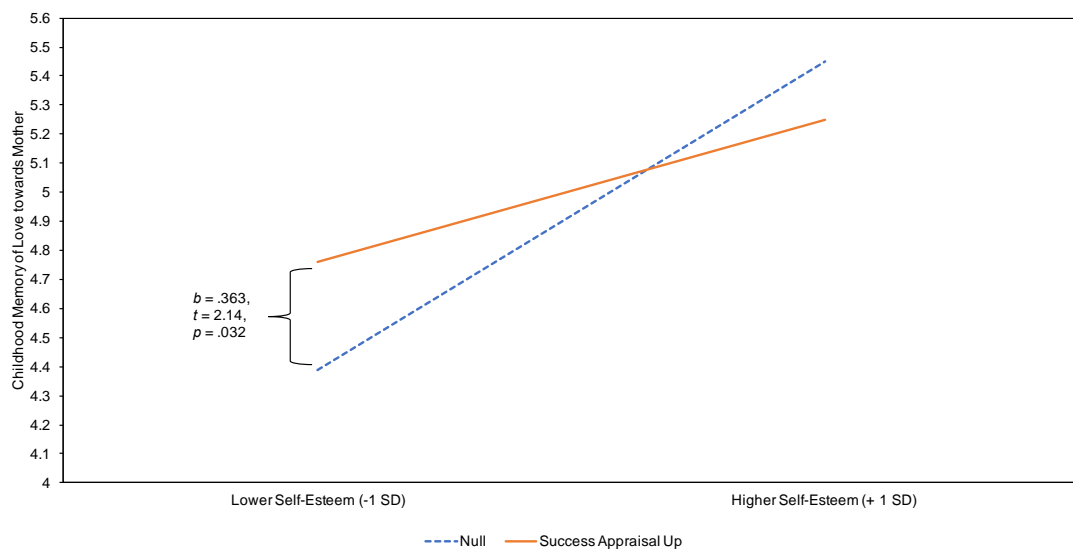


Figure 4. An illustration of the interaction between Self-esteem and Condition.

Overall, participants with a higher Self-Esteem remembered more Memory of Love towards their Mother, compared to participants with a lower Self-Esteem. However, there was no significant difference between the Success Appraisal Up and the Null condition within participants with a higher Self-Esteem;  $t(321) = -1.13, p = .257$ . There was a significant difference between Conditions in participants with a lower Self-Esteem on Memory of Love towards their Mothers;  $t(321) = 2.14, p = .032$ . Participants with a lower Self-Esteem in the Success Appraisal Up condition remembered more Memory of Love towards their Mother, compared to participants in the Null condition.

## CHAPTER IV –EXPERIMENT 1 DISCUSSION

In Experiment 1, we investigated, in undergraduate young adults, whether experimentally manipulating current appraisals of success in life would bias memories of love towards parents felt in childhood. We also explored whether there were individual differences on the susceptibility of our experimental manipulation. For example, whether these effects would be moderated by how the participant attributed their success (e.g., attributions of their success towards their childhood, parents, or self). We also explored participants' locus of control, mood, and self-esteem as potential moderators. Overall, in the total sample, the effect of raising appraisal of success did not raise memories of love for participants in the success appraisal up condition, compared to the null. Nevertheless, some individual differences within our participants were more susceptible to our experimental manipulation. We found that participants with a lower attribution of success towards themselves, a more external locus of control, or a lower self-esteem were more susceptible to our manipulation.

For our first research question, we explored whether manipulating current appraisal of success would lead to a bias of childhood memories of love felt towards parents. We did not find support for a difference between success conditions in the dataset as a whole (e.g., success appraisal up vs. null). We only found that effect within specific subgroups of the young adult sample, depending on how the individuals scored on plausible moderator variables (discussed below in our moderation analysis).

For our second research question, we explored the effects of manipulating current appraisal of success based on how individuals attributed their success (e.g., towards childhood, parents or themselves). We found support that participants who had a low

attribution of success towards themselves recalled higher memory of love towards their mother in the condition that raised current appraisals of success (compared to the control group). This suggest that participants that are less likely to attribute success to themselves are more susceptible to changing appraisals of success leading to these types of memory distortions.

We also found support for our third research question. We confirmed our prediction that participants with a more external locus of control were more susceptible to our manipulation, compared to participants with a more internal locus of control. Participants with an external locus of control and with a positive current appraisal of success may be attributing life successes to their mother. Past research has suggested that people with an external locus of control may believe that their successes are controlled by outside forces or powerful people (e.g., Rotter, 1966, 1975); and mothers may be viewed as such an agentic person. However, memories of love towards fathers appeared less malleable in the context of our manipulation.

In line with past research, we found that current mood was not a strong predictor of distortions for memory of emotions (see Levine, 1997; Patihis et al., 2018a). Positive nor negative mood did not have a large effect on the relationship between positive current appraisal of success and the participants' memory of love towards their parents. Nevertheless, another potential moderator did have an effect on that relationship: within participants with lower self-esteem, those in the group that raised current appraisal of success recalled more memories of love towards their mother compared to the control group. People who have a low self-esteem and experience a positive current appraisal of life successes, have childhood memories of love towards their mother that are malleable.

We found that participants with higher self-esteem reported higher childhood memories of love towards their mother (regardless of condition). We hypothesize that our manipulation was more robust in those with a low self-esteem because there might be a ceiling-effect in those with a high self-esteem.

## CHAPTER V – EXPERIMENT 2 METHOD

### *Participants*

Participants were recruited via Amazon Mechanical Turk (AMT; Buhrmester, Kwang, & Gosling, 2011). A total of 383 adults participated and were compensated \$2 each. The age of participants ranged from 18 to 70 years old ( $M_{\text{age}} = 35.09$ ;  $SD = 10.4$ ). Of these, there were 205 males (53.5%) and 178 females (46.5%). There were 346 (90.3%) participants that reported not being Hispanic or Latino and 37 (9.7%) participants did report being Hispanic or Latino. The race and ethnicity of the sample consisted of 297 White (77.5%), 52 Black or African American (13.6%), 38 Asian (9.9%), 12 American Indian or Alaska Native (3.1%), and one Native Hawaiian or Pacific Islander (.3%). Participants reported that they were more than one race; therefore, the total percentage of race adds up to over 104.4%.

### *Materials*

In Experiment 2, the same materials were utilized from Experiment 1 except for the removal of the Rosenberg Self-Esteem Scale and a Success Appraisal Down condition (the “failure” condition that did not consistently affect the IV in Experiment 1). The Rosenberg Self-Esteem Scale was not utilized because of a coding error in Experiment 1 (now corrected).

*Locus of Control.* A 10-item short-form Locus of Control Scale was developed from original items of the Locus of Control 28-item (Rotter, 1966). In the current data, there was a moderate internal reliability ( $\alpha = .754$ ).

*Attribution of Success.* Three attribution of success subscales were used: towards parents, towards childhood environment, and towards the “self” (towards themselves, the

participant). All three subscales in the current dataset displayed high internal reliability (towards parents: mother  $\alpha = .942$ , father  $\alpha = .937$ ; towards childhood environment  $\alpha = .835$ ; towards themselves  $\alpha = .826$ ).

*Writing prompt: Success manipulation and null condition.* Three writing prompts were administered to participants in the Success Appraisal condition to manipulate current feeling of success similar to Experiment 1 (for materials see Appendix D). In the Null condition, participants were not administered writing prompts.

*Current Appraisal of Success.* The 5-item Current Appraisal of Success scale was used as a measure of the IV and a manipulation check to capture participants' current self-reported evaluation of their success in life (see Appendix E). In the current study's dataset, the scale had a high internal reliability ( $\alpha = .952$ ).

*MLPQ 4-item short form.* In the current dataset, the MLPQ 4-Item short form subscales (Appendix F) displayed high internal reliability (mother: first grade  $\alpha = .960$ , sixth grade  $\alpha = .973$ , ninth grade  $\alpha = .975$ ; father: first grade  $\alpha = .975$ , sixth grade  $\alpha = .978$ , ninth grade  $\alpha = .979$ ).

*PANAS.* The PANAS was used to assess participants' current affect/mood with a 10-item positive affect scale and a 10-item negative affect scale (Watson et al., 1988). Both scales had a high internal reliability (positive affect  $\alpha = .895$ ; negative affect  $\alpha = .932$ ). The two subscales were not significantly correlated ( $p = .172$ ).

### *Procedure*

The procedure of Experiment 2 was similar to Experiment 1. Participants were recruited online and took the study at a convenient place, time, and a computer of their choosing. After completing an electronic consent form, participants reported

demographic questions about themselves and background questions about their parents. Then, participants were administered the baseline scale of locus of control and attribution of success subscales. Following this, participants were randomly placed into the Success Appraisal Up condition or the Null condition. In the Appraisal Success Up condition, participants wrote 3-4 four sentences for all three writing prompts. In the Null condition, participants were not administered writing prompts and were told to skip to the next screen. Afterwards, the current appraisal of success scale (manipulation check) was administered for participants to self-report their current appraisal of life success. Then, the MLPQ 4-item short form was filled out. The MLPQ was counterbalanced— participants either filled out the MLPQ for father first, then the MLPQ for mothers, or vice versa. Participants next reported their current mood on the PANAS scale. After completing the study, participants were debriefed and given a uniquely generated code to enter on Amazon Mechanical Turk and were automatically paid. The median time to complete the experiment was 13 minutes.



## CHAPTER VI –EXPERIMENT 2 RESULTS

### *Manipulation Check: Current Appraisal of Success*

We conducted an independent sample *t*-test between the Success Appraisal Up condition and the Null condition on the dependent variable Current Appraisal of Success to test whether our manipulation was effective. There was a significant difference between the Success Appraisal Up condition and the Null condition on Current Appraisal of Success;  $t(379) = -4.41, p < .001$ . The Success Appraisal Up condition reported higher Current Appraisal of Success scores, compared to the Null condition (see Table 4 for means and standard deviations). The significant difference between Conditions confirmed that the attempted manipulation of the independent variable appeared to change our post-experiment measure of the independent variable.

Table 5

### *Means and Standard Deviations of Conditions on Current Appraisal of Success*

#### *(Manipulation Check on the Measure of the Independent Variable)*

Condition	<i>M</i>	<i>SD</i>	<i>n</i>
Success Appraisal Up	4.91	1.44	176
Null	4.27	1.38	205

*Note.* There was significant difference between the two conditions:  $t(379) = -4.41, p < .001$ .

### *Research Question 1*

For our main research question, we conducted two, 2 (Condition: Success Appraisal Up, Null) x 3 (Time Period: first, sixth, ninth grade) mixed factorial ANOVA on Memory of Love towards Parents (mother and father separately) as the dependent variable.

*Memory of Love towards Mothers.* There was a significant main effect for Time Period on Memory of Love towards Mothers;  $F(2, 742) = 121.1, p < .001, \eta_p^2 = .246$  (see Table 5 for means and standard deviations); indicating that Memories of Love towards Mother declined over time. There was no significant interaction between Time Period and Condition;  $F(2, 742) = 1.07, p = .342, \eta_p^2 = .003$ . There was a significant main effect for Condition on Memory of Love towards Mothers;  $F(1, 371) = 7.14, p = .008, \eta_p^2 = .019$ . Participants in the Success Appraisal Up condition recalled more memories of love towards mothers, compared to participants in the Null condition.

*Memory of Love towards Fathers.* There was a significant main effect of Time Period on Memory of Love towards Father;  $F(2, 714) = 88.2, p < .001, \eta_p^2 = .198$ ; suggesting that memories of love towards father declined from first to sixth grade, and sixth to ninth grade (see Table 5). There was no significant interaction between Time Period and Condition;  $F(2, 714) = .340, p = .712, \eta_p^2 = .001$ . Condition was not a significant main effect on memory of love towards fathers;  $F(1, 357) = 2.69, p = .102, \eta_p^2 = .007$ .

Table 6

*Means and Standard Deviations of Memory of Love towards Parents at Grade Levels 1, 6, and 9: By Condition and Gender of Parent*

Time Period	Condition	Gender of Parent					
		Mothers			Fathers		
		<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Grade 1{	Success Appraisal Up	4.99	1.35	172	4.21	1.69	166
	Null	4.69	1.34	201	3.90	1.71	193
Grade 6{	Success Appraisal Up	4.48	1.58	172	3.79	1.77	166
	Null	4.10	1.58	201	3.46	1.77	193

Table 6 (continued)

Grade 9{	Success Appraisal Up	4.22	1.58	172	3.43	1.84	166
	Null	3.76	1.61	201	3.19	1.86	193
Grand Means{	Success Appraisal Up	4.56	1.39	172	3.18	1.66	166
	Null	4.18	1.39	201	3.52	1.68	193

*Note.* Grade 1 for most participants corresponded to the first year of elementary school (ages 6-7), Grade 6 to the first year of middle school (ages 11-12), and Grade 9 to the first year of high school (ages 14-15). Likert scale on frequency and strength items ranged from 0 to 6, with 6 representing remembering feeling love “all the time,” (0 = never); or remembering the strength of the love as being “extremely strong” (0 = not at all).

### *Moderation Analyses on the Effects of Current Appraisal of Success on MLPQ*

For each potential moderation variable (e.g., Attribution of Success towards Mother, Father, Self or Childhood Environment, Locus of Control, and PANAS/Mood) we conducted a 2 (Condition: Success Appraisal Up, Null; between-subjects variable) x 3 (Time Period: first, sixth, ninth grade; within subjects variable) mixed custom ANCOVA. The potential moderation variable was kept as a continuous covariate to allow for the custom creation of an interaction term between both independent variables, and to avoid Type II error (McClelland et al., 2015; see Table 7 for the descriptive statistics). If a significant interaction was found between the Conditions and the potential moderation variable, a regression analysis was conducted to estimate the levels of the moderation. A floodlight analysis was then conducted to test the effect of Condition and the moderator at low (-1 *SD* below the mean) and high (+1 *SD* above the mean) scores on Memory of Love towards Parents.

Table 7

### *Descriptive Statistics of Potential Moderators on the Effect of Current Appraisal of Success by Condition in General U.S. Sample (AMT)*

		Condition	
		Success Appraisal Up	Null

Table 7 (continued)

Potential Moderators	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>n</i>
Attribution of Success towards Mother	3.47	1.11	-.565	173	3.25	1.17	-.471	205
Attribution of Success towards Father	2.89	1.12	-.021	171	2.80	1.26	.018	201
Attribution of Success towards Childhood Environment	3.26	.996	-.226	173	3.21	1.01	-.273	205
Attribution of Success towards Self	3.90	.764	-.496	173	3.99	.805	-.810	205
Locus of Control	4.71	.2.74	-.074	176	3.25	1.17	-.471	205
Positive Affect (PANAS)	29.8	8.89	.227	176	28.8	8.42	.148	205
Negative Affect (PANAS)	15.4	7.57	1.66	176	15.6	7.65	1.58	205

*Note.* The PANAS was administered after the experimental manipulation and separated into two subscale Positive Affect and Negative Affect. All other potential moderators were administered as baseline measurements.

### *Research Question 2*

*Attribution of Success towards Mother.* There was no significant interaction between Condition and Attribution of Success towards Mother on Memory of Love towards Mother; therefore, Attribution of Success towards Mother was not a moderator;  $F(1, 366) = 1.50, p = .221, \eta_p^2 = .004$ .

*Attribution of Success towards Father.* There was no significant interaction between Condition and Attribution of Success towards Father on Memory of Love towards Father;  $F(1, 349) = .482, p = .488, \eta_p^2 = .001$ ; indicating Attribution of Success towards Father was not a moderator.

*Attribution of Success towards Childhood Environment.* There was a significant interaction between Condition and Attribution of Success towards Childhood on Memory of Love towards Mother;  $F(1, 366) = 4.40, p = .036, \eta_p^2 = .012$ . An initial model was then regressed on Memory of Love towards Mother (grand mean of first, sixth, and ninth grade), Condition (dummy-code: 0 = Null, 1 = Success Appraisal Up), and interaction between Attribution of Success towards Childhood Environment and Condition. In the model, we found a significant interaction ( $b = -.300, SE = .143, \beta = -.142, t(369) = -2.10, p = .036$ ); as well a main effect for Attribution of Success towards Childhood Environment ( $b = .369, SE = .095, \beta = .264, t(369) = 3.90, p < .001$ ), and a main effect for Condition ( $b = .379, SE = .142, \beta = .135, t(369) = -2.67, p = .008$ ).

To probe this interaction, we conducted a floodlight analysis to test the effect of condition and low ( $-1 SD$ ) and high ( $+1 SD$ ) Attribution of Success scores on Memory of Love towards Mother. As illustrated by Figure 5, at lower ( $-1 SD$ ) Attribution of Success towards Childhood Environment scores, we found that those in the Success Appraisal Up condition reported significantly greater Memory of Love towards Mother, compared to those in the Null condition ( $b = .681, SE = .201, \beta = .243, t(369) = 3.381, p = .001$ ). At higher ( $+1 SD$ ) Attribution of Success towards Childhood Environment Scores, we found no difference between the Null and Success Appraisal Up condition ( $b = .077, SE = .203, \beta = .028, t(369) = .382, p = .703$ ).

In the Null condition, we found that at higher Attribution of Success towards Childhood Environment scores predicted higher Memory of Love towards Mother;  $b = .369$ ,  $SE = .094$ ,  $\beta = .269$ ,  $t(369) = 3.94$ ,  $p < .001$ . In contrast, we found that the effect was eliminated in the Success Appraisal Up condition;  $b = .069$ ,  $SE = .109$ ,  $\beta = .049$ ,  $t(369) = .633$ ,  $p = .527$ .

There was no significant interaction between Condition and Attribution of Success towards Childhood Environment on Memory of Love towards Father; therefore, Attribution of Success towards Childhood Environment was not a moderator;  $F(1, 352) = .091$ ,  $p = .917$ ,  $\eta_p^2 < .001$ .

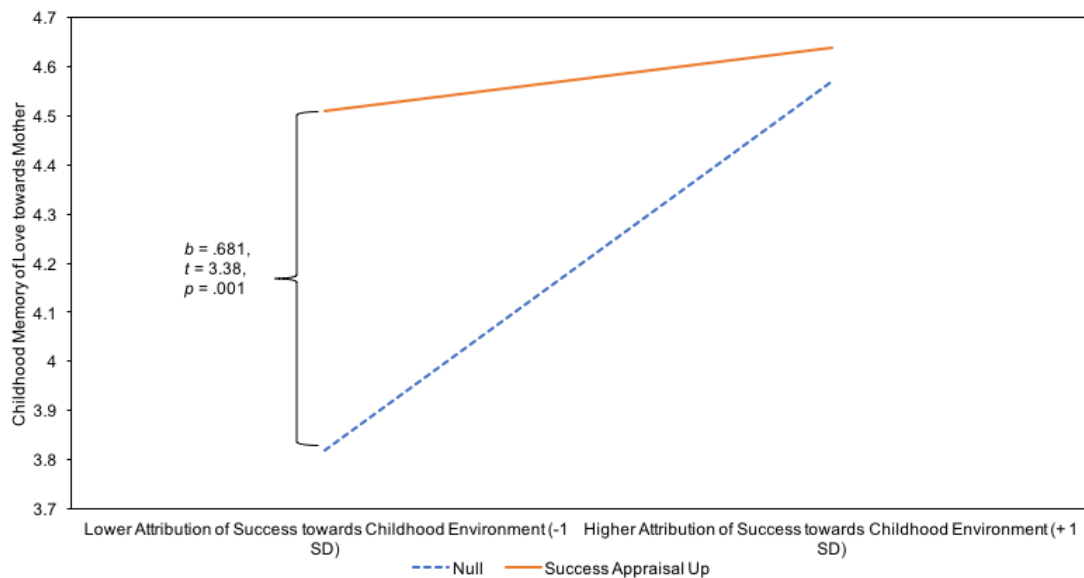


Figure 5. An illustration of the interaction between Attribution of Success towards Childhood Environment and Condition.

Overall, participants with a higher Attribution of Success towards Childhood environment remembered more love towards their mothers, compared to those with a lower score. However, there was no significant difference between the Null and Success Appraisal Up conditions with participants with a higher Attribution of Success on Memory of Love towards Mother;  $t(369) = .382$ ,  $p = .703$ . There was a significant difference between conditions with participants with a lower Attribution of Success towards Childhood Environment score;  $t(369) = 3.38$ ,  $p = .001$ . Participants with a lower score and in the Success Appraisal Up condition remembered more child memory of love towards their mother, compared to the Null condition.

*Attribution of Success towards Self.* There was no significant interaction between Attribution of Success towards Self and Condition on Memory of Love towards Mother; indicating that Attribution of Success towards Self was not a moderator;  $F(1, 366) = .175$ ,  $p = .676$ ,  $\eta_p^2 < .000$ .

There was no significant interaction between Condition and Attribution of Success towards Childhood on Memory of Love towards Father;  $F(1, 352) = .007$ ,  $p = .936$ ,  $\eta_p^2 < .001$ .

### *Research Question 3*

*Locus of Control.* There was no significant interaction between Locus of Control and Condition on Memory of Love towards Mother;  $F(1, 368) = .057$ ,  $p = .811$ ,  $\eta_p^2 < .000$ . There was also no significant interaction between Condition and Locus of Control on Memory of Love towards Father;  $F(1, 354) = .010$ ,  $p = .921$ ,  $\eta_p^2 < .001$ .

### *Research Question 4*

*PANAS.* There was no significant interaction between Positive Mood and Condition on Memory of Love towards Mother;  $F(1, 369) = .047$ ,  $p = .829$ ,  $\eta_p^2 < .001$ . There was also no significant interaction between Negative Mood and Condition on Memory of Love towards Mother;  $F(1, 369) = .580$ ,  $p = .447$ ,  $\eta_p^2 = .002$ .

There was no significant interaction between Positive Mood and Condition on Memory of Love towards Father;  $F(1, 355) = .245$ ,  $p = .621$ ,  $\eta_p^2 = .001$ . There was also no significant interaction between Negative Mood and Condition on Memory of Love towards Father;  $F(1, 355) = .680$ ,  $p = .410$ ,  $\eta_p^2 = .002$ .

## CHAPTER VII –EXPERIMENT 2 DISCUSSION

In Experiment 2, we used a similar methodology to Experiment 1 in a different sample—adults in the United States (participating via Amazon Mechanical Turk). We investigated whether changes in current appraisal of success would bias childhood memories of love towards parents, and whether there were individual differences on the effect of current appraisal of success on memory of love towards parents. In contrast to Experiment 1, we found that participants in the success appraisal up condition reported higher memories of love towards mothers, (overall, regardless of potential moderators). We also found that participants with lower attributions of success towards their childhood environment were most susceptible to our experimental manipulation, and its effect on memory of love towards mothers.

The main findings of Experiment 2 supported our first research question and confirmed our prediction that changes in current appraisal of success would bias childhood memories of love towards mothers. This finding supports and extends past research that found a relationship between experiencing a recent success on an exam and memory for emotions distortion (e.g., Keuler & Safer, 1998; Levine et al., 2012; Safer et al., 2002). In the current study, we experimentally manipulated the appraisal of success in positive direction which led to a positive memory of emotion distortion.

In the current study, we found that participants with a lower attribution of success towards their childhood environment were most susceptible to success manipulations' effect on memory of love towards their mother (research question 2). This suggests that those who do not attribute their success to their childhood are more susceptible to distorting their childhood memories of love towards their mother. The lesser effect within



those with higher attributions of success towards their childhood could be explained by ceiling effects: these participants reported higher memories of love than those that do not attribute their life success to their childhood environment.

Participants' attribution of their success towards themselves and their parents did not make them more or less susceptible to distort their childhood memories of love towards their parents (research question 2). Similarly, Locus of control did not significantly moderate the impact of current appraisal of success on memories of love towards parents (research question 3). Likewise, positive and negative mood did not moderate the current appraisal of success on memory of love towards parents supporting previous research (Levine, 1997; Patihis et al., 2018a).

## CHAPTER VIII – GENERAL DISCUSSION

In both experiments, we investigated the effect of the current appraisal of life success on childhood memories of love towards parents. We also investigated whether there were individual differences that may moderate this effect. In Experiment 1, we found that participants with a lower self-esteem, an external locus of control, or lower attribution of success towards themselves, were more susceptible to our experimental manipulation, and its effect on memory of love towards mothers. There was no overall difference between conditions in Experiment 1; (the experimental effect only held for specific subsamples within moderator variables). Nevertheless, in Experiment 2, we found that participants in the success appraisal up condition recalled higher memories of love towards their mother, compared to the null condition (overall: regardless of moderators). When taking into consideration plausible moderators, participants with a lower attribution of success towards their childhood environment were more susceptible to our manipulation in the success appraisal up condition. We also found in both experiments that memories of love towards father were relatively not as malleable as memory of love towards mothers.

This is the first set of experiments, to our knowledge, to provide some initial evidence on a causal relationship between current appraisal of life successes and distortions of childhood memories in general. More specifically, it appears to be the first research program to suggest that changes in successes in life may distort memories of love towards mothers. Although past researchers found evidence that feedback on successful grades were related to biases within memory of emotions (e.g., Keuler & Safer, 1998; Safer et al., 2002), we contribute something different here: we randomly

assigned participants to a success condition that raise appraisals of success independent of participant performance. Our study therefore provides additional evidence for a causal relationship, though more research is needed to support that.

The implications of the current study are potentially important to the general public. If individuals are understanding that their childhood memories of emotions may change towards parents, this might be helpful in preventing memory distortions. If a person experiences a positive current appraisal of their life success this may potentially lead to positive memory distortion of love felt towards a parent in childhood. Although this is positive, there are potential disadvantages to any memory distortions, whether negative or positive. For example, if a person has an unloving childhood, and later becomes a successful individual, having rose tinted glasses of their childhood emotions may result in continuance of the same bad parenting.

The current findings are also potentially important to educators. We found that undergraduate students with a lower self-esteem were susceptible to our manipulation—leading to positive memory distortions of childhood memories of love. If an educator encounters students with low self-esteem they could encourage positive appraisal of their life success. This could possibly improve parental relationships. This might in turn lead to other positive outcomes. For example, Cutrona, Cole, Colangelo, Assouline, and Russell (1994) found that participants who perceived positive parental support had a higher grade point average in college.

The current findings may also be important information for therapists. On the one hand, this knowledge might be used to help prevent memory distortions in therapy. In other situations, therapists might attempt to raise current appraisals of success to help

correct memory errors of a patient who may blame their parents for their failures. In other work, we have shown that higher recall of memory of love was towards mothers associated with planned future behavioral consequences towards mothers (Patihis et al., 2018a). During therapy, if the therapist encourages positive appraisal of success this could lead to an increase of positive memories of emotion and possibly decrease tensions that may arise between the patient and their parents. However, we still caution that memory distortion, whether it is positive or negative, may have negative consequences. For this reason, the findings might be a guide for therapists with regards to changing memory of emotion. For example, the therapist and client might work together, whether there is a previous distortion of memory for emotions that might be corrected in therapy. If no such distortions have occurred, therapists and clients might consider trying to sustain accurate memories of emotions felt in childhood. Such accuracy may help parental relationships and help decision making when rearing the next generation.

There were several limitations in the current two studies. Both experiments measured participants' memory of love towards their parents and did not measure the baseline measurements of their love felt towards their parents in respective to the specific time periods (i.e. current measures of love at the time of first, sixth, and ninth grade). Future studies could conduct longitudinal studies and investigate peoples' recent successes in life. This could clarify whether successes lead to more memory of love felt towards parents, as well as pre/post comparisons. Another limitation to both studies was that our failure condition in Experiment 1 did not successfully lower participants' current appraisal of success. Future research could design an effective failure manipulation to explore whether this leads to a lowering of memory of love.

It is important to note that there was a lack of replication of some results between Experiment 1 and 2. In Experiment 2, our manipulation had the expected effect on memory of love, regardless of moderators. In contrast, in Experiment 1, we found the experimental effect within participants with a more external locus of control, lower self-esteem, or lower attribution of success towards self. When visually comparing the grand means of locus of control (from Table 7 to Table 3), we can see that overall, Experiment 2 resulted in participants reporting higher locus of control score, compared to participants in Experiment 1. This suggests that compared to our undergraduate student sample, our AMT sample reported a more external locus of control. Therefore, this might explain why we did not find an overall effect in Experiment 1; Experiment 1 contained more individuals with an internal locus of control (making them less susceptible to experiment conditions). Future research could further investigate the role of external locus of control and the current cognitive appraisal processes that may lead to distortion of memory of emotion. Another common theme in both Experiment 1 and Experiment 2 moderators is that the participants who were not as susceptible tended to have higher baseline memories of love (and thus are harder to manipulate in an upwards direction). Although there is some lack of replication within specific moderators from Experiment 1 to 2, we note that the ceiling effect explanation appears consistent in all significant moderator analyses across both experiments (see moderation graphs: Figures 2–5).

In summary, we found that undergraduate students with a lower self-esteem, a more external locus of control, or a lower attribution of success towards themselves were susceptible to memory distortions after a positive manipulation of current appraisal of life

success. Within the AMT sample, a positive manipulation of current appraisals of life success biased participants' memory of love towards their mother in a positive direction.

APPENDIX A - Rosenberg Self-Esteem Scale

Instructions: Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

		<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1.	On the whole, I am satisfied with myself.				
2.*	At times, I think I am no good at all.				
3.	I feel that I have a number of good qualities.				
4.	I am able to do things as well as most other people.				
5.*	I feel I do not have much to be proud of.				
6.*	I certainly feel useless at times.				
7.	I feel that I'm a person of worth, at least on an equal plane with others.				
8.*	I wish I could have more respect for myself.				
9.*	All in all, I am inclined to feel that I am a failure.				
10.	I take a positive attitude toward myself.				

*Note:* Scoring Strongly Agree = 3, Agree = 2, Disagree = 1, Strongly Disagree = 0. Items with an asterisk are reverse scored, that is, Strongly Agree = 0, Agree = 1, Disagree = 2, Strongly Disagree = 3. Sum the scores for the 10 items. The higher the score, the higher the self-esteem. A floodlight analysis placed participants' one standard deviation below mean (low self-esteem) or one standard deviation above the mean (high self-esteem).

APPENDIX B –Locus of Control Scale 10-item Short-form Scale

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered A or B. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be truer rather than the one you think you should choose, or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. In some instances, you may discover that you believe either statements, or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

Please select the option that best describes you from the two options below:

<b>LC11</b>	<b>A.</b> Becoming a success is a matter of hard work, luck has little to do with it. <b>B.</b> Getting a good job depends mainly on being in the right place at the right time.
<b>LC12</b>	<b>A.</b> The average citizen can have an influence in government decisions. <b>B.</b> This world is run by the few people in power, and there is not much the little guy can do about it.
<b>LC13</b>	<b>A.</b> When I make plans, I am almost certain that I can make them work. <b>B.</b> It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
<b>LC16</b>	<b>A.</b> Who gets to be the boss often depends on who was lucky enough to be in the right place first. <b>B.</b> Getting people to do the right thing depends upon ability. Luck has little or nothing to do with it.
<b>LC17</b>	<b>A.</b> As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control. <b>B.</b> By taking an active part in political and social affairs the people can control world events.
<b>LC18</b>	<b>A.</b> Most people don't realize the extent to which their lives are controlled by accidental happenings. <b>B.</b> There really is no such thing as "luck."
<b>LC22</b>	<b>A.</b> With enough effort we can wipe out political corruption. <b>B.</b> It is difficult for people to have much control over the things politicians do in office.
<b>LC25</b>	<b>A.</b> Many times I feel that I have little influence over the things that happen to me.



	<b>B.</b> It is impossible for me to believe that chance or luck plays an important role in my life.
<b>LC28</b>	<b>A.</b> What happens to me is my own doing. <b>B.</b> Sometimes I feel that I don't have enough control over the direction my life is taking.
<b>LC29</b>	<b>A.</b> Some things are just meant to be. <b>B.</b> We can change anything in our lives by hard work, persistence, and ability.

*Note.* Participants received a score of 1 on each of the following items if they answered them accordingly: 11B, 12B, 13B, 16A, 17A, 18A, 22B, 25A, 28B, and 29A. A flood-light analysis was conducted to place participants' one standard deviation below the mean (more internal locus of control) or one standard deviation above the mean (more external locus of control).

## APPENDIX C – Attribution of Success

### **Attribution of Success towards childhood environment**

To what extent do you attribute your current success in life to your emotional experience in childhood?

To what extent do you attribute your current success in life to the environment that your parents provided for you in childhood?

To what extent do you attribute your current success in life to the things that happened during childhood?

### **Attribution of Success towards Self**

To what extent do you attribute your current success in life to yourself?

To what extent do you attribute your current success in life to your intelligence?

To what extent do you attribute your current success in life to your personality?

To what extent do you attribute your current success in life to your determination?

To what extent do you attribute your current success in life to your own ambition?

### **Attribution of Success towards Father**

To what extent do you attribute your current success in life to your father during childhood?

To what extent do you attribute your current success in life to your father's guidance during childhood?

To what extent do you attribute your current success in life to your father's parenting skills during your childhood?

To what extent do you attribute your current success in life to your father's work ethic your childhood?

To what extent do you attribute your current success in life to your father's support during childhood?

### **Attribution of Success towards mother**

To what extent do you attribute your current success in life to your mother during childhood?

To what extent do you attribute your current success in life to your mother's guidance during childhood?

To what extent do you attribute your current success in life to your mother's parenting skills during your childhood?

To what extent do you attribute your current success in life to your mother's work ethic your childhood?

To what extent do you attribute your current success in life to your mother's support during childhood?

### **Likert-type Scale**

- 1 = Not at all
- 2
- 3
- 4
- 5 = A lot
- Not applicable

## APPENDIX D – Writing Prompts

### **Success Experimental Group**

**Meaningful Writing** Think deeply about all the successes you have had in life. No matter how small those successes were, appreciate them and think about them for a moment. Think of all the things that you have done that have helped sustain you, kept you safe, moved you forward, and moved you up in the world.

**Recent Successes in the Past Year** In three or four sentences, please give examples of successes in your life that have meant the most to you that have happened in the last year. [Insert text]

**Successes in the Past Five Years:** In three or four sentences, please give additional examples of successes in your life that have meant the most to you that have happened in the past five years. [Insert text]

**Successes in your Lifetime** In three or four sentences, please give additional examples of successes in your life that have meant the most to you that have happened in your whole lifetime. [Insert text]

### **Failure Experimental Group (Only Experiment One)**

**Meaningful Writing** Think deeply about all the failures you have had in life. No matter how small those failures were think about them for a moment. Think of all the things that you have done that have helped sustain you, kept you safe, moved you forward, and moved you up in the world.

**Failures in the Past Five Years:** In three or four sentences, please give additional examples of failures in your life that have impacted you the most that have happened in the past five years. [Insert text]

**Recent Failures in the Past 5 Years** In three or four sentences, please give examples of failures in your life that have had the most impact on you that have happened in the last 5 years. [Insert text]

**Failures in your Lifetime** In three or four sentences, please give additional examples of failures in your life that have impacted you the most that have happened in your whole lifetime. [Insert text]

## APPENDIX E –Current Appraisal of Success

1. Rate how successful your life has been
2. To what extent do you feel successful right now?
3. To what extent do you feel you are a successful person overall?
4. How do you currently evaluate yourself at successfully reaching your goals?
5. How do you currently rate yourself at successfully overcoming obstacles or challenges?

### Likert Scale

Not at all Successful							Very successful
1	2	3	4	5	6	7	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX F – Memory of Love towards Parents Questionnaire 4-item short-form

**First Year of Elementary School**

Remember back to how you felt about your mother during the year in which you were in first grade (how you felt toward her at that time). First grade is typically experienced at ages 6–7 years in the United States, and is the first year of Elementary School.

**First Grade towards Mother**

1. During the whole year when you were **in first grade**, *how often on average* did you feel **love** toward your **mother**?

2. During the whole year when you were **in first grade**, *how strong on average* was your **love** toward your **mother**?

3. During the whole year when you were **in first grade**, *how often on average* did you feel **affection** toward your **mother**?

4. During the whole year when you were **in first grade**, *how strong on average* was your **affection** toward your **mother**?

**First Grade towards Father**

1. During the whole year when you were **in first grade**, *how often on average* did you feel **love** toward your **father**?

2. During the whole year when you were **in first grade**, *how strong on average* was your **love** toward your **father**?

3. During the whole year when you were **in first grade**, *how often on average* did you feel **affection** toward your **father**?

4. During the whole year when you were **in first grade**, *how strong on average* was your **affection** toward your **father**?

**First Year of Middle School**

Remember back to how you felt about your mother during the year in which you were in sixth grade (how you felt toward her at that time). Sixth grade is typically experienced at ages 11–12 years in the United States, and is the first year of Middle School.

**Sixth Grade towards Mother**

1. During the whole year when you were **in sixth grade**, *how often on average* did you feel **love** toward your **mother**?

2. During the whole year when you were **in sixth grade**, *how strong on average* was your **love** toward your **mother**?

3. During the whole year when you were **in sixth grade**, *how often on average* did you feel **affection** toward your **mother**?

4. During the whole year when you were **in sixth grade**, *how strong on average* was your **affection** toward your **mother**?

**Sixth Grade towards Father**

1. During the whole year when you were **in sixth grade**, *how often on average* did you feel **love** toward your **father**?

2. During the whole year when you were **in sixth grade**, *how strong on average* was your **love** toward your **father**?

3. During the whole year when you were **in sixth grade**, *how often on average* did you feel **affection** toward your **father**?

4. During the whole year when you were **in sixth grade**, *how strong on average* was your **affection** toward your **father**?

### First Year of High School

Remember back to how you felt about your mother during the year in which you were in ninth grade (how you felt toward her at that time). Ninth grade is typically experienced at ages 14–15 years in the United States, and is the first year of High school.

### Ninth Grade towards Mother

1. During the whole year when you were **in ninth grade**, *how often on average* did you feel **love** toward your **mother**?

2. During the whole year when you were **in ninth grade**, *how strong on average* was your **love** toward your **mother**?

3. During the whole year when you were **in ninth grade**, *how often on average* did you feel **affection** toward your **mother**?

4. During the whole year when you were **in ninth grade**, *how strong on average* was your **affection** toward your **mother**?

### Ninth Grade towards Father

1. During the whole year when you were **in ninth grade**, *how often on average* did you feel **love** toward your **father**?

2. During the whole year when you were **in ninth grade**, *how strong on average* was your **love** toward your **father**?

3. During the whole year when you were **in ninth grade**, *how often on average* did you feel **affection** toward your **father**?

4. During the whole year when you were **in ninth grade**, *how strong on average* was your **affection** toward your **father**?

### Likert-type Scales

**Frequency** (for odd numbered questions above)



**Strength** (for even numbered questions above)



## APPENDIX G – Positive and Negative Affect Schedule

This scale consists of a number of words that describe different feelings and emotions. Read each item and then select the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

	<b>Very slightly or not at all</b>	<b>A little</b>	<b>Moderately</b>	<b>Quite a bit</b>	<b>Extremely</b>
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

*Note:* Positive affect = questions 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19. Negative affect = questions 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20.

## APPENDIX H – IRB Approval Letter



**INSTITUTIONAL REVIEW BOARD**  
118 College Drive 45147 | Hattiesburg, MS 39406-0001  
Phone: 601.266.5997 | Fax: 601.266.4377 | [www.usm.edu/research/institutional.review.board](http://www.usm.edu/research/institutional.review.board)

### NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: CH16092905  
PROJECT TITLE: Recent Success Effects on Memory for Parents  
PROJECT TYPE: Change to a Previously Approved Project  
RESEARCHER(S): Lawrence Patihis and Mario Herrera  
COLLEGE/DIVISION: College of Education and Psychology  
DEPARTMENT: Psychology  
FUNDING AGENCY/SPONSOR: N/A  
IRB COMMITTEE ACTION: Expedited Review Approval  
PERIOD OF APPROVAL: 10/11/2017 to 10/10/2018  
**Lawrence A. Hosman, Ph.D.**  
**Institutional Review Board**



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