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## The Effect of a Positive and Negative Mindset on Affect, Happiness, and Heart Rate Variability

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The Effect of a Positive and Negative Mindset on Affect, Happiness, and Heart Rate Variability

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The Effect a Positive and Negative Mindset on Affect, Happiness, and Heart Rate Variability

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### Abstract

The present study investigates the influence of a positive or negative mindset on affect, happiness, and heart rate variability (HRV) among undergraduate students at a small, liberal arts college in Minnesota. Forty participants were randomly assigned into the positive or negative mindset conditions by completing two short writing exercises. Participants reported their affect and happiness before and after the mindset manipulation. Additionally, participants' HRV was recorded before, during, and after the mindset manipulation. The results of the present study showed that adopting a positive mindset increases positive affect whereas adopting a negative mindset increases negative affect and decreases happiness. The results found no relationship between mindset and HRV. Lastly, the current study examined the interaction of emotional regulation and mindset on affect, happiness, and HRV, but found no interaction between these variables. Overall, the findings of the present study indicate that adopting a positive mindset in the present moment increases positive affect, while adopting a negative mindset in the present moment significantly detracts from happiness and increases negative affect.

*Keywords:* mindset, affect, happiness, heart rate variability, HRV

### The Effect a Positive and Negative Mindset on Affect, Happiness, and Heart Rate Variability

The journey to find or achieve happiness has been a popular topic for the past couple decades. In fact, there has been a 227% increase in the number of journal articles that have included factors related to happiness and positive psychology from 1996-2005 (Sinnott, 2013). Previous research placed an emphasis on how happiness and other positive emotions are associated with success across multiple life domains. In a meta-analysis, Lyubomirsky (2005) found that happiness is positively correlated with superior mental and physical health and that happy people are more successful than less happy people in important areas of life including work, relationships, and health.

This previous literature suggests that living happier is important for success in life, but how do we achieve happiness? There is research that examines specific steps to achieve a happier life. Lyubomirsky (2008) targeted some of those steps when she focused on intentional activities that should positively influence people's happiness. Each of these activities focuses on incorporating a specific behavior or mindset about a topic to help achieve greater happiness. Some examples of these activities include learning to express gratitude, envisioning your best possible selves, cultivating optimism, learning to forgive, and paying attention to life's joys (Lyubomirsky, 2008).

These techniques that Lyubomirsky (2008) targeted tend to focus on reflecting on the future (e.g. envisioning best possible selves) or adjusting your mindset about the past (e.g. learning to forgive) to achieve happiness. While each of those activities focus on incorporating a different element into your daily life, the goal of the current study was to examine another practical step that can be taken to achieve happiness. This is through incorporating a positive or negative mindset about the present moment.

The present study defines mindset as interpreting and viewing the present moment in a positive or negative way. By viewing the present moment with a positive mindset, this means that one is choosing to view this moment with a glass-half-full mentality. A glass-half-full mentality means choosing to reflect on a current situation, whether good or bad, with the mindset that there can be positives. By viewing the present moment with a negative mindset, this means that one is choosing to interpret the present moment with a glass-half-empty mentality. A glass-half-empty mentality means choosing to reflect on the current situation, whether good or bad, with the mindset that only negatives can be seen.

In the current study, I examined the impact of adopting either a positive or negative mindset on affect, happiness, and heart rate variability (HRV). HRV can be defined as the variation in the time intervals between consecutive heartbeats (Shaffer & Ginsberg, 2017). This measurement is important because research indicates that a higher HRV has been associated with greater wellbeing (Thayer, Ahs, Fredrickson, Sollers, & Wager, 2012). The physiological measurement of HRV was a vital addition to this study because it gave data that directly showed how the mindset conditions altered the autonomic nervous system. The subjective measurements of affect and happiness gave participants the ability to state exactly how they were feeling in the present moment. The ability to have both subjective and physiological measurements helped to paint a clearer picture of the influence that mindset can have on affect, happiness, and HRV.

### **The Relationship of Mindset on Affect, Happiness, and HRV**

Most of the mindset research has examined the impact of having a growth versus fixed mindset on satisfaction and success (Dweck, 2006). A growth mindset is the belief that you can change and grow through your experiences whereas a fixed mindset is the belief that you cannot change. Dweck (2006) examined the role of these mindsets on school achievement, sports,

business, and relationships. In regards to school achievement, Dweck (2006) measured first-year pre-med students' mindset and school achievement throughout the duration of a chemistry class and found that students with a growth mindset earned higher scores in the class compared to students with a fixed mindset. These results about other dimensions in life, such as sports, business, and relationships, showed that having a growth mindset is associated with greater success in all those areas (Dweck, 2006).

The original research of Carol Dweck (2006) showed convincing evidence that the way you think and view the world around you can impact psychological processes. Crum, Salovey, and Achor (2013) explored the relationship between mindset and stress. This study presented videos to participants about either the enhancing or debilitating effects of stress. They found that those that watched the positive videos of stress showed a “stress-is-enhancing” mindset which lead to improved psychological symptoms and better work performance compared to those in the debilitating condition. Another study examined implicit theories of intelligence, or how people think about the malleability of intelligence, and its relationship with subjective well-being. The results of this study found that those who detach themselves from tasks due to previous failure are positively associated with negative affect and negatively associated with life satisfaction (King, 2017). This means that those who view their intelligence as fixed will show greater negative emotions and less life satisfaction. These examples show that implementing a certain mindset can influence various emotional states and behavioral aspects of life.

The previous research done on growth and fixed mindsets show that adopting a certain mindset can influence aspects of wellbeing. The current study wanted to expand research done on mindset by examining the role of a positive or negative mindset about the present moment on affect, happiness, and HRV. The emotional states being explored in the current study are affect

and happiness as well as the physiological measurement of HRV. The measure of affect is often viewed on two dimensions, positive and negative affect (Watson, Clark, & Tellegen, 1988).

Positive affect is defined as the experience of feeling a positive emotion such as joy, happiness, and energy. Negative affect is defined as the experience of feeling a negative emotion such as sad or nervous (Grafton & MacLeod, 2016; Schwerdtfeger & Gerteis, 2014). The definition of happiness for the current study can be defined as “the experience of joy, contentment, or positive well-being, combined with a sense that one’s life is good, meaningful, and worthwhile” (Lyubomirsky, 2008, p. 32). The final component of the study is HRV. HRV is defined as the fluctuation in the “sequence of time intervals between heart beats” in which higher HRV is linked to better health and lower HRV indicates poorer health (Thayer, Ahs, Fredrickson, Sollers, & Wager, 2012, p. 748).

Positive affect and happiness have often been used interchangeably, but they are not the same. Positive affect can be used as an umbrella term to broadly describe positive emotions. Since happiness is the experience of feeling positive emotions, such as joy and contentment, it is a type of positive affect. However, positive affect is too broad to be a type of happiness because it can mean many different positive emotions such as being interested or alert. This means that the elements that encompass what positive affect is would not fit under the description of happiness because being happy does not necessarily mean being “alert” or “interested”. This means that happiness is a type of positive affect, but positive affect is not a type of happiness.

There are many benefits of experiencing positive affect. Haager, Kuhbandner, and Pekrun (2014) examined the role that affect has on problem solving. They found that experiencing positive affect increased the ability to overcome a difficult problem by using a different problem solving strategy, whereas experiencing negative affect decreased the likelihood

of overcoming a difficult problem by using a different method which resulted in taking a longer time to solve the problem. Another benefit of positive affect is found in the links between positive affect and health. In a meta-analysis, Pressman and Cohen (2005) found that having higher levels of positive affect was associated with lower mortality rates and that patients with serious illnesses such as Lyme disease, spinal cord injuries, and arthritis had higher positive affect scores compared to healthy patients. A recent review suggests that well-being constructs, including positive affect, were positively correlated with decreased severity and an increase in survival rates of patients experiencing cardiovascular disease (Pressman, Jenkins, & Moskowitz, 2019).

While the benefits of positive affect are well-known, the concrete factors that can lead to positive affect are less clear. One factor, however, which seems to promote positive affect is mindfulness. Blanke, Riediger, and Brose (2018) investigated the influence of mindfulness on positive affect and negative affect by having participants answer questions about their attention, awareness, and nonjudgmental acceptance of the present moment. The results showed that participants who were more attentive to the present moment and accepting of current situations experienced more positive affect and less negative affect (Blanke et al., 2018). This study shows that attending to the present moment can impact affect in a positive or negative way.

More specifically related to mindset and happiness, Lyubomirskiy (2008) highlights specific activities that have been shown to influence happiness by having individuals engage in activities that help create a particular mindset. Some of these activities include cultivating optimism, expressing gratitude, practicing acts of kindness, learning to forgive, savoring life's joys, and practicing religion and spirituality. Each of these techniques examines how incorporating a mindset about the past or future can influence happiness levels. This previous

research done on specific techniques used to achieve happiness allow me to make the assumption that incorporating a mindset about the present moment should impact affect and happiness. The results of previous studies on mindset across life domains, such as academics, stress, and intelligence, show evidence that adopting a positive or negative mindset could influence indices of emotionality such as affect, happiness, and HRV.

HRV has been known to be a physiological measurement of emotional regulation and an indication of health. There are a variety of physiological factors that govern HRV, but the most prominent factor is the autonomic nervous system. The autonomic nervous system has two main divisions which include the parasympathetic (vagal) and sympathetic systems. Since the heart is interwoven with the autonomic nervous system, the parasympathetic nervous system is responsible for decreasing heart rate at times of rest and the sympathetic nervous system is responsible for increasing heart rate at times of action (Thayer et al., 2012). Even though these two systems perform opposite functions, their purposes are performed at the same time on the heart. Specifically, HRV measures the balance between these two systems working together. Therefore, if the systems are efficiently working together this leads to higher HRV, or the variation in the time intervals between heart beats will be larger which indicates a healthier heart. On the contrary, an off-balance between these two systems due to one system controlling more of the heart than the other will result in lower HRV (Thayer et al., 2012).

The literature suggests that there are links between HRV and domains of health and well-being. In a meta-analysis, Thayer et al. (2012) found that a low HRV is associated with risk of poor health and increase mortality rates, whereas high HRV was related to good health. Thayer and Lane (2017) found that decreases in parasympathetic function is a common factor in cardiovascular disease, inflammation, and negative affect. Geisler, Vennwald, Kubiak, and

Weber (2010) investigated whether HRV was associated with subjective well-being (indicated by measurements of mood and satisfaction with life) and found that higher HRV was linked with cheerfulness and calmness. Therefore, a higher HRV is a clear indication of a healthier heart which should align with incorporating a positive mindset instead of a negative mindset.

Specifically related to the role mindset can have on affect and HRV, Ronayne (2018) examined the relationship between seeing current circumstances in either a positive or negative light and affect by placing undergraduate students into mindset conditions and measuring their self-reported experience of affect in the present moment. Ronayne (2018) found that there may be a relationship between mindset and affect since the results of her study approached significance. This suggests that adopting a positive mindset could be associated with increased positive affect and decreased negative affect and that a negative mindset could be associated with decreased positive affect and increased negative affect. Additionally, Ronayne (2018) found that a positive mindset is linked to having higher HRV. These results follow previous research suggesting that higher HRV can be a sign of good health due to the parasympathetic activity and indicate that there is a connection between HRV, well-being, and emotions (Thayer and Lane, 2017; Geisler et al., 2010).

The final additional component of the study was the role emotional regulation plays in the impact of mindset on affect, happiness, and HRV. Emotional regulation refers to the processes that are used to increase, maintain, or decrease emotional states (Koval, Ogrinz, Kuppens, Bergh, Tuerlinckx, & Sütterlin, 2013). It can be measured both subjectively and objectively. On a subjective level, it is measured using self-report questionnaires which ask people to report on factors such as how they regulate their emotions, accept their emotions, have emotional clarity or lack thereof, and have awareness of their emotions (Gratz & Roemer, 2004).

Many of these measures examine emotional self-regulation strategies such as reappraisal and suppression. Reappraisal is the re-evaluation of an emotional situation, whereas suppression inhibits the outward expression of emotions (Gross & John, 2003). Haga, Kraft, and Corby (2009) found that reappraisal was connected to experiencing higher levels of positive emotions, well-being, and an increase in social relationships. This shows that high emotional regulators may experience more positive affect and happiness since they are better able to use strategies to regulate their emotions.

On an objective level, there is evidence that HRV is a physiological measurement of emotional regulation. The reason for this is because the vagus nerve, associated with parasympathetic control of the heart, is connected to the network that is involved in emotional regulation (Koval et al., 2013). Williams et al. (2015) examined this relationship between resting HRV and emotional regulation by assessing 183 undergraduate students' resting HRV and their difficulties with emotional regulation by collecting a 5-minute baseline HRV measure and examining their responses to an emotional regulation questionnaire. The results of this study found a negative relationship between resting HRV and emotional regulation in which those with lower HRV had a more difficult time regulating emotions. Similarly, Koval et al. (2013) examined the relationship between HRV and affective instability, the frequent change of moods, and found that higher HRV was linked to lower levels of affective instability. This demonstrates a link between emotional regulation and HRV.

### **The Current Research**

The present research was a replication and extension of Ronayne's (2018) study examining the role of incorporating a positive or negative mindset about a current situation on affect and HRV. Ronayne (2018) is currently the only study that has examined mindset in terms

of the present moment which is a fundamental reason for this replication. Ronayne (2018) placed participants into either a positive or negative mindset condition by having them complete two writing exercises and measured participants affect and HRV. There is evidence to suggest that writing about positive experiences can lead to enhanced mood (Burton & King, 2004; Burton & King, 2009). This supports the idea of using writing as a condition for mindset. Ronayne (2018) found that a positive mindset is associated with higher HRV, a positive mindset may be linked to increased positive affect and decreased negative affect, and a negative mindset may be linked to decreased positive affect and increased negative affect.

Ronayne (2018) measured the impact of a positive and negative mindset on affect and HRV. I examined the influence of a positive or negative mindset on affect, happiness, and HRV. Affect is often measured using the positive and negative affect schedule (PANAS). This scale was developed so that positive and negative affect can be measured on two separate 10-item dimensions of the same scale (Watson., 1988). This scale measures more high energy and concentration elements of positive affect, such as being interested and alert, and it measures elements of distress for negative affect, such as hostile and irritable for negative affect. This scale leaves out many common adjectives of positive affect such as happy, calm, or content (Pressman & Cohen, 2005). Since this 20-item scale leaves out some important elements, specifically related to happiness, the PANAS cannot be the only measurement scale for the purpose of this study. The aim of this study was to examine the impact of adopting a positive or negative mindset on affect and happiness, so only using the PANAS scale would have potentially missed important information related to happiness. Since the PANAS does not explicitly include happiness, I decided to add additional happiness measures to ensure that I examined the relationship between mindset and happiness, not just affect.

These additional measurements include the Oxford Happiness Questionnaire and two subscales of the PANAS-X (Watson & Clark, 1999). These subscales consist of a serenity subscale and a joviality subscale. The happiness questionnaire measures an individual's happiness levels, and I asked each participant to fill it out with how they were feeling in the present moment, not just in general. The serenity and joviality subscales were added to the original PANAS questionnaire. These scales touch on elements related to happiness and calmness that the PANAS scale had originally left out. These additional measures helped ensure the validity of this study and that I measured what was supposed to be measured.

For the present study, I hypothesized that adopting a positive mindset will increase positive affect, happiness, and HRV and decrease negative affect. As well, I hypothesized that adopting a negative mindset will decrease positive affect, happiness, and HRV and increase negative affect. Additionally, I examined the relationship between high and low emotional regulators on affect, happiness, and HRV. I hypothesized that low emotional regulators would be more susceptible and influenced by both the positive or negative mindset condition because they would not have the same emotional control or strategies available to them as high emotional regulators which will lead to larger effects on affect, happiness, and HRV. This component of the study is a new addition, and it is important to consider because how people regulate their emotions could impact the results of the study by how well you are able to regulate your emotions. This means that emotional regulation served as a buffer between the mindset condition and the results of affect, happiness, and HRV. In sum, low emotional regulators are more influenced from the mindset condition than compared to high emotional regulators. I examined emotional regulation in participants using a self-report measure.

This study is important because it could show how interpreting a current situation in a positive or negative way could significantly impact your happiness and well-being for better or worse. Individuals are constantly striving for ways to live healthier and happier lives. If by shifting your mindset in a positive or negative way can help, then this would be beneficial change for all people to make. Simply, the power of mindset could influence the overall wellbeing of our lives by allowing us to experience more positive emotions and live happier and healthier.

For the present study, I pre-screened the participants by having them complete an emotional regulation questionnaire and then I randomly assigned half of the high and low emotional regulators to the positive mindset condition and the other half of the high and low emotional regulators to the negative mindset condition. Once I assigned the participants to these groups, they completed two writing exercises. I measured HRV before, during, and after the manipulation, and I measured affect and happiness before and after the manipulation by having participants complete the same questionnaires. My hypotheses are listed below:

**Affect Hypotheses:**

**Hypothesis 1:** Adopting a positive mindset increases positive affect, whereas, adopting a negative mindset decreases positive affect.

**Hypothesis 2:** Adopting a positive mindset decreases negative affect, whereas, adopting a negative mindset increases negative affect.

**Happiness/Serenity/Joviality Hypothesis:**

**Hypothesis 3:** Adopting a positive mindset increases happiness, serenity, and joviality and adopting a negative mindset decreases happiness, serenity, joviality.

**Heart Rate Variability Hypotheses:**

**Hypothesis 4:** Adopting a positive mindset increases HRV and adopting a negative mindset decreases HRV.

**Emotional Regulation Hypothesis:**

**Hypothesis 5:** All of the above effects are larger for low emotional regulators than for high emotional regulators.

**Hypothesis 6:** High emotional regulators have higher resting HRV than low emotional regulators.

## Method

### Participants

The participants were a convenience sample of 40 college students (26 women and 14 men) that attend a small, liberal arts college in Minnesota. All 40 participants' data were used for the affect and happiness measures, but only 39 participants' data were used for the HRV measures. One participant's HRV data had to be thrown out due to equipment issues. The participants were enrolled in an introduction to psychology course in which they volunteered for this study and received course credit for their participation. The participants were randomly assigned to either the positive ( $n = 21$ ) or negative mindset condition ( $n = 19$ ).

### Design

The study was a 2 (Mindset: Positive vs. Negative Mindset) x 2 (Time: Pre- Post Mindset Manipulation) x 2 (Emotional Regulation: Low vs. High Emotional Regulation) mixed factorial design. I prescreened each participant by having them complete a self-report measure of emotional regulation, and then I placed them into either the high or low emotional regulation condition. Next, I randomly assigned them to either the positive or negative mindset condition. During this random assignment to the mindset condition, I made sure that the low and high

emotional regulation groups were kept equal among the mindset conditions, as well. Finally, each participant completed two questionnaires before and after the mindset manipulation to examine how the mindset conditions altered their affect and happiness. The dependent variables of this study included affect, happiness, two additional variables related to happiness (serenity and joviality), and one physiological measure of HRV. Affect, happiness, serenity, and joviality were all measured before and after exposure to the mindset condition. HRV was measured before, during, and after exposure to the mindset condition.

### **Measures**

**Affect.** The Positive and Negative Affect Schedule (PANAS) is a questionnaire that contains two 10-item lists that measures both positive affect and negative affect (Watson, Clark, & Tellegen, 1988). The typical Cronbach's alpha for positive affect is .83 - .90. In this study, for positive affect, the Cronbach alpha for pre-manipulation was .88 and for post-manipulation was .87. The typical Cronbach's alpha for negative affect is .85 - .90. In this study, for negative affect, the Cronbach alpha for pre-manipulation was .77 and for post-manipulation was .85. For the purpose of this experiment, the scales related to joviality and serenity were added to the PANAS. The joviality scale is composed of 8 items (Watson & Clark, 1999). The typical Cronbach's alpha for joviality is .88 - .94. In this study, for joviality, the Cronbach alpha for pre-manipulation was .94 and for post-manipulation was .95. The serenity scale is composed of three items. The typical Cronbach's alpha for serenity is .78 (Watson & Clark, 1999). In this study, for serenity, the Cronbach alpha for pre-manipulation was .70 and for post-manipulation was .81. These items were added to the original PANAS questionnaire to ensure the study touched on elements of calmness and happiness. This will alter the PANAS scale to 29 items instead of 20. The questionnaire is rated on a 5-point scale that ranges from 1-very slightly or not

at all to 5-extremely. The participants were asked to complete this scale before and after the manipulation by indicating how they feel in the present moment. The full questionnaire is found in Appendix A.

**Happiness.** The Oxford Happiness Questionnaire is a questionnaire that consists of 29 statements about happiness. The questionnaire is rated on a 6-point scale that ranges from 1-strongly agree to 6-strongly agree. The typical Cronbach's alpha for happiness is .91 (Hills & Argyle, 2002). In this study, for happiness, the Cronbach alpha for pre-manipulation was .92 and for post-manipulation was .93. The purpose of this measurement scale is to fully examine whether a positive or negative mindset can impact explicitly happiness. The full measure is found in Appendix B.

**Emotional regulation.** The Difficulties in Emotion Regulation Scale (DERS) is a 36-item scale that measures how participants regulate their emotions in terms of six subscales (Gratz & Roemer, 2004). These subscales include: nonacceptance of emotional responses, difficulty engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. The participants were asked to answer each statement on a 5-point Likert scale that ranges from 1-almost never to 7-almost always. This questionnaire was a pre-screen measurement that was used to place participants into two groups: high emotional regulators and low emotional regulators. The full measure is found in Appendix C.

**Apparatus for heart rate variability.** The BioPac MP150 was used to collect data for HRV. HRV was calculated by using the AcqKnowledge 4 software. There were three electrodes applied under the left and right collarbones and under the left ribcage of each participant.

## Procedure

Each participant was pre-screened using a measurement of emotional regulation. Only the participants that scored in the top or bottom third on emotional regulation were able to volunteer for this study. These two groups consisted of high emotional regulators ( $n = 20$ ) and low emotional regulators ( $n = 20$ ). Half of each of these groups were assigned to the positive mindset condition and the other half to the negative mindset condition using random assignment.

Upon arrival to the study, each participant read the consent form and was given time to make themselves comfortable to the room. The participants were informed that the study would be about decision making, so they were not focused on the mindset conditions. I then gave participants instructions on how to properly apply the electrodes to their collarbones and ribcage. I applied the gel to the electrodes, but then each participant applied the electrodes themselves. Once the electrodes were attached, the participants were asked to sit in a chair and relax while I recorded a 5-minute baseline measurement of HRV. The participants completed both the PANAS scale and the happiness questionnaire once the 5-minute baseline measurement was complete. These were the pre-manipulation measurements of affect, happiness, serenity, and joviality.

Once the participants completed the questionnaires, I randomly assigned them into either the positive mindset condition ( $n = 21$ ) or the negative mindset condition ( $n = 19$ ). Next, I showed participants seven paintings which were the exact images used in Ronayne's (2018) study. The paintings were different enough for the participants to choose from, but not different enough that it would alter their affect in different ways. I asked the participants to rank the paintings in regard to which they liked most to least. I took away all the paintings except the middle painting which was the one that they would feel impartial about. Participants in both the

positive and negative condition were asked to write and answer questions about the painting for five minutes straight and the Biopac MP150 measured their HRV for the duration of the manipulation. The questions for the first mindset manipulation scenarios included:

**“Positive Mindset Manipulation Scenario 1:**

*Describe your favorite aspects of this print, and explain why.*

*If you had a friend that was interested in going to an art museum, what would you say about this painting to convince him or her to go see this specific one?*

*If your parents were planning to hang this print in your family home, what are some reasons why it could be a good addition to your home?*

**Negative Mindset Manipulation Scenario 1:**

*Describe your least favorite aspects of this print, and explain why.*

*If you had a friend that was interested in going to an art museum, what would you say about this painting to convince him or her to go see a different painting instead of this one?*

*If your parents were planning to hang this print in your family home, what are some reasons why it would NOT be a good addition to your home?”*

After this five-minute writing exercise, the participants were asked to complete another five-minute writing exercise about their experience at college. The participants were asked to answer each question and write for the full five minutes. The BioPac150 recorded their HRV for the full five minutes. Participants stayed in the same mindset condition as the first mindset manipulation they were randomly assigned to. The questions for the second mindset manipulation scenarios included:

**“Positive Mindset Manipulation Scenario 2:**

*Describe your favorite aspects of attending CSB/SJU, and explain why.*

*If you had a friend who was thinking about attending CSB/SJU, what would you say to convince him or her to choose this school?*

*What are some reasons why CSB/SJU is a good fit for you?*

### **Negative Mindset Manipulation Scenario 2:**

*Describe your least favorite aspects of attending CSB/SJU, and explain why.*

*If you had a friend who was thinking about attending CSB/SJU, what would you say to convince him or her to choose a different school?*

*What are some reasons why CSB/SJU might not be the best fit for you?"*

After the completion of the final writing exercise, participants completed the PANAS and the happiness questionnaire again. This measured whether the mindset condition had an impact on their emotions and happiness. Next, I had them do a final baseline measurement of their heart rate using the BioPac. Participants then received instructions on how to remove the electrodes. Once the electrodes were removed, I debriefed them about the true nature of the study.

## **Results**

### **Affect**

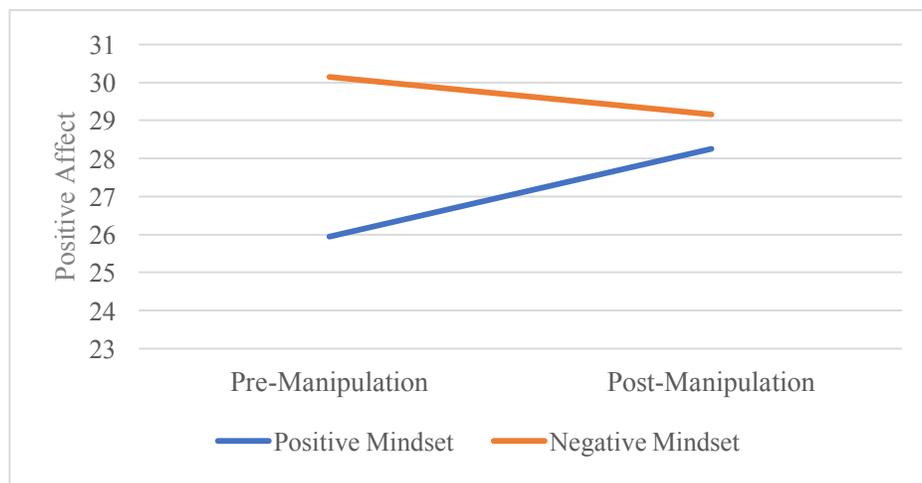
To analyze whether a positive or negative mindset could alter positive affect, I ran a 2 (Mindset: Positive vs. Negative) x 2 (Time: Pre- vs. Post-Manipulation of Mindset) mixed factorial ANOVA. The dependent variable was positive affect which was measured before and after exposure to the mindset manipulation. There was a significant interaction between mindset and time,  $F(1, 38) = 5.88, p < .05, MSE = 9.27, \eta^2 = .13$ . This interaction partially aligned with the hypothesis in the predicted direction. As hypothesized, adopting a positive mindset significantly increased positive affect after exposure to the mindset activity,  $F(1, 19) = 5.23, p <$

.05,  $MSE = 10.11$ ,  $\eta^2 = .22$ . However, contrary to the hypothesis, adopting a negative mindset did not significantly decrease positive affect,  $F(1, 19) = 1.19$ ,  $p > .05$ ,  $MSE = 8.42$ ,  $\eta^2 = .06$ .

Overall, these results indicate that adopting a positive mindset increases positive affect, but adopting a negative mindset does not alter positive affect. See Figure 1 below.

Figure 1

*The Influence of a Positive or Negative Mindset on Positive Affect determined by Pre-and Post-Manipulation.*

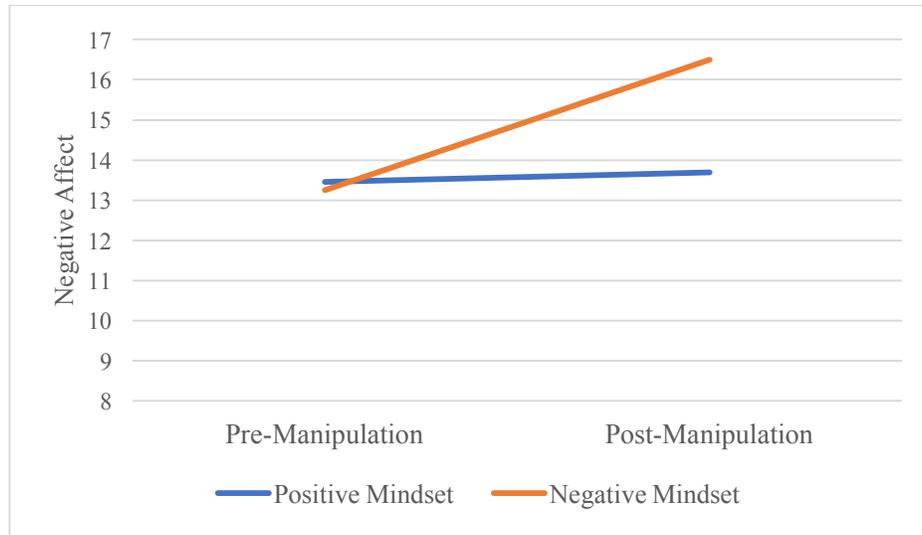


To test whether a positive or negative mindset could alter negative affect, I ran a 2 (Mindset: Positive vs. Negative) x 2 (Time: Pre- vs. Post-Manipulation of Mindset) mixed factorial ANOVA. The dependent variable was negative affect which was measured before and after exposure to the mindset manipulation. There was a significant interaction between mindset and time,  $F(1, 38) = 5.74$ ,  $p < .05$ ,  $MSE = 7.84$ ,  $\eta^2 = .13$ . This interaction only partially supported my hypothesis. Contrary to my hypothesis, adopting a positive mindset did not decrease negative affect after exposure to the positive mindset activity,  $F(1, 19) = .17$ ,  $p > .05$ ,  $MSE = 3.73$ ,  $\eta^2 = .01$ . However, as predicted, adopting a negative mindset significantly increased negative affect after exposure to the negative mindset activity,  $F(1, 19) = 8.85$ ,  $p < .05$ ,  $MSE = 11.94$ ,  $\eta^2 = .32$ . These findings reveal that adopting a positive mindset does not

alter negative affect, but adopting a negative mindset significantly increases negative affect. See Figure 2 below.

Figure 2

*The Influence of a Positive or Negative Mindset on Negative Affect determined by Pre-and Post-Manipulation.*



## Happiness

To test whether a positive or negative mindset could alter happiness, serenity, and joviality, I ran a 2 (Mindset: Positive vs. Negative) x 2 (Time: Pre-Manipulation vs. Post-Manipulation) mixed factorial ANOVA. For each of these dependent variables, there was a significant interaction between mindset (positive vs. negative) and time (pre-manipulation vs. post-manipulation). See Table 1 below.

Table 1

*Interaction between Mindset (Positive vs. Negative) and Time (Pre- vs. Post-Manipulation)*

Dependent Variables	<i>df</i>	Mean Squared Error	F	p	Partial Eta-Squared
Happiness	(1, 38)	.04	6.18	< .05	.14
Joviality	(1, 38)	16.05	6.03	<.05	.14
Serenity	(1, 38)	3.22	6.52	< .05	.15

These interactions partially supported the predicted hypotheses. For all three dependent variables, the interaction followed the same pattern. Namely, a positive mindset did not alter happiness, joviality, or serenity, whereas, a negative mindset caused a decrease in each of these variables. See Table 2 below.

Table 2

*The Effects of a Positive or Negative Mindset on Happiness, Joviality, and Serenity.*

Dependent Variable	Mindset Condition	<i>df</i>	Mean Squared Error	F	p	Partial Eta-Squared
Happiness	Positive	(1, 19)	.022	1.14	> .05	.06
	Negative	(1, 19)	.06	5.11	< .05	.21
Joviality	Positive	(1, 19)	12.13	1.73	> .05	.08
	Negative	(1, 19)	19.97	4.36	< .05	.19
Serenity	Positive	(1, 19)	2.26	.00	> .05	.00
	Negative	(1, 19)	4.18	10.05	< .05	.35

Overall, these results show that adopting a positive mindset does not influence happiness, serenity, and joviality, but adopting a negative mindset significantly lowers happiness, joviality, and serenity. See Figure 3, 4, and 5 below.

Figure 3.

*The Influence of a Positive or Negative Mindset on Happiness determined by Pre- and Post-Manipulation.*

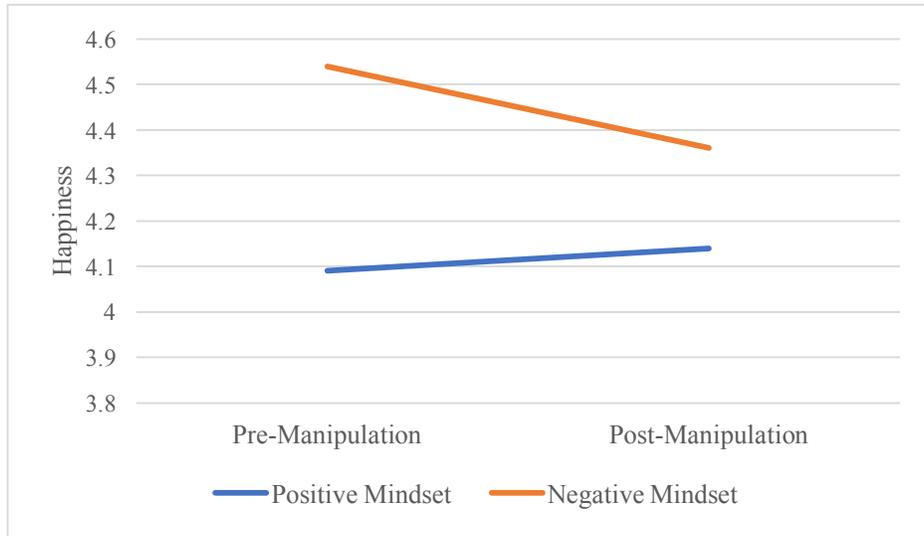


Figure 4.

*The Influence of a Positive or Negative Mindset on Joviality determined by Pre-and Post-Manipulation.*

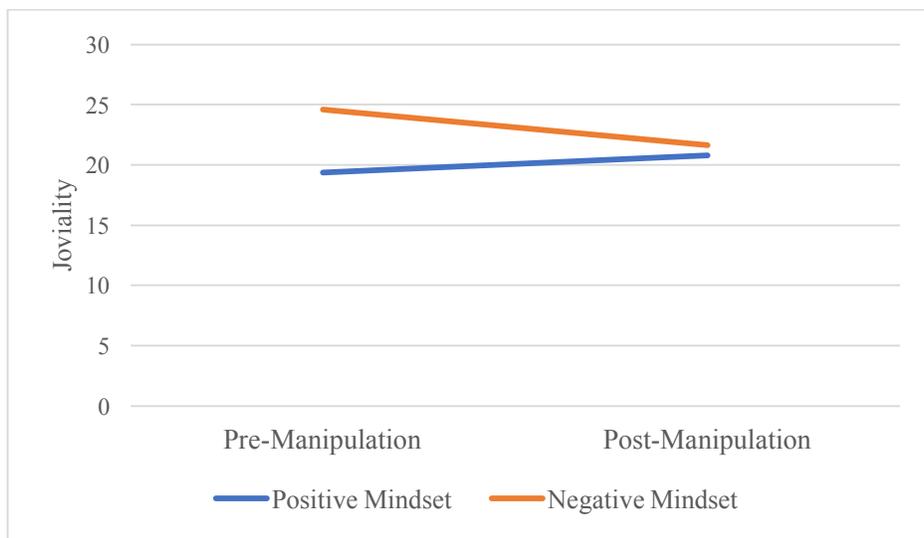
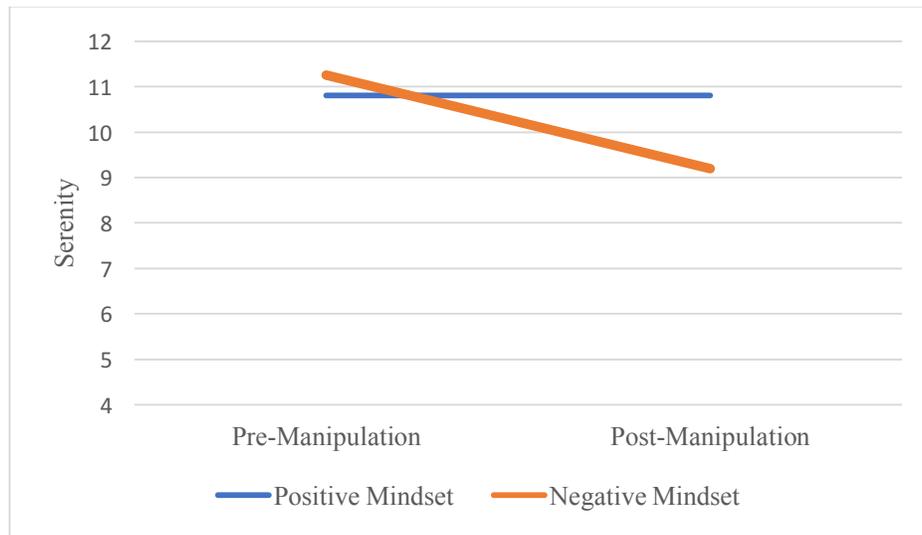


Figure 5.

*The Influence of a Positive or Negative Mindset on Serenity determined by Pre-and Post-Manipulation.*



### Heart Rate Variability

To test whether mindset altered HRV, I ran a 2 (type of mindset) x 2 (type of emotional regulator) x 4 (Time of HRV measurement) mixed factorial ANOVA. The within-group variable includes the four measurements of HRV (measured with RMSSD) and the between-group variables include the type of mindset and type of emotional regulator. The results showed no significant interaction between mindset and HRV,  $F(3, 105) = 1.12, p > .05, MSE = 174.95, \eta^2 = .031$ . Contrary to my hypothesis, adopting a positive mindset did not increase HRV adopting a negative mindset did not decrease HRV.

There was no significant difference between mindset and HRV, but there was a significant pattern of HRV and the time of HRV measurements across both mindset manipulations,  $F(3, 114) = 8.01, p < .05, MSE = 170.24, \eta^2 = .18$ . The pattern across both the positive and negative mindset manipulations showed that HRV decreased during both mindset

manipulations then increased again during the final baseline. This tells us that the manipulation did significantly alter participants HRV scores in a consistent pattern, but the specific mindset manipulations did not alter HRV in different ways. To test this, I ran multiple paired samples t-tests to further examine the relationship between the manipulation and HRV scores. See Table 4 and Figure 6 below.

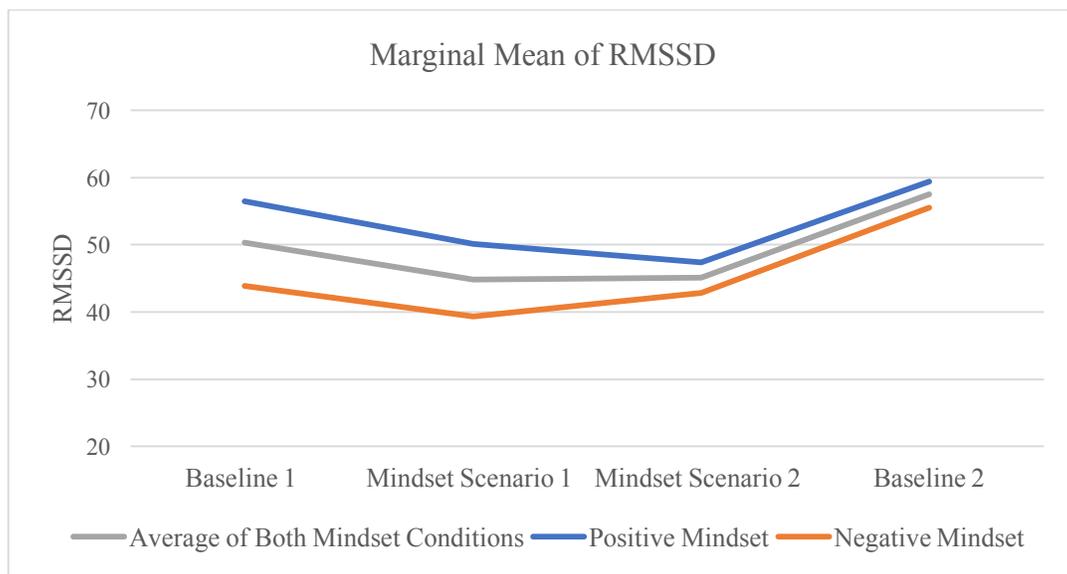
Table 4

*Relationship between Mindset Conditions (positive and negative) and Heart Rate Variability*

Pairs	t	p
Baseline 1 – Mindset 1: Painting	2.38	.02
Baseline 1 – Mindset 2: College	2.28	.03
Mindset 1: Painting – Mindset 2: College	-.19	.85
Baseline 2 – Mindset 1: Painting	3.18	.00
Mindset 2: College – Baseline 2	-3.67	.00
Baseline 1 – Baseline 2	-2.03	.05

Figure 6

*The Relationship between HRV (as Measured by Root Mean Square of Successive Differences) and Mindset.*



Note: Root Mean Square of Successive Differences (RMSSD) was the measure used to assess HRV among participants.

### Emotional Regulation

Additionally, I examined whether the influence of mindset on affect, happiness, joviality, and serenity would be larger for low emotional regulators than high emotional regulators. To test this, I ran a series of 2 (Emotional Regulation: High vs. Low) x 2 (Mindset: Positive vs. Negative) x 2 (Time: Pre-Manipulation vs. Post-Manipulation) mixed factorial ANOVAs. For each dependent variable, there was no significant 3-way interaction. As well, I hypothesized that the effects of mindset on HRV would be larger for low emotional regulators than high emotional regulators. To test this, I ran a 2 (Emotional Regulation: High vs. Low) x 2 (Mindset: Positive vs. Negative) x 4 (Time of HRV Measurement) mixed factorial ANOVA. There was no significant interaction between mindset, emotional regulation, and HRV (See Table 5 below).

Table 5

*Results for the 3-Way Interaction of Emotional Regulation x Mindset x Time*

Dependent Variable	<i>df</i>	Mean Squared Error	F	p	Partial Eta-Squared
Positive Affect	(1, 36)	9.77	.01	> .05	.00
Negative Affect	(1, 36)	6.56	.17	> .05	.01
Happiness	(1, 36)	.04	1.94	> .05	.05
Joviality	(1, 36)	16.74	.15	> .05	.00
Serenity	(1, 36)	3.40	.00	> .05	.00
Heart Rate Variability	(3, 105)	174.95	.17	> .05	.01

These results show that there is no difference in the time and mindset interactions between low and high emotional regulators for affect, happiness, and HRV.

To test whether high emotional regulators had a higher resting HRV than low emotional regulators, I ran a 2 (Emotional Regulation: High vs. Low) x 4 (Time of HRV Measurement)

between-groups ANOVA. This measurement of resting HRV was taken at the first baseline. I found that there was no significant relationship between emotional regulation and resting HRV,  $F(1, 37) = .132, p > .05$ . This result shows that across all measures of HRV there was not a relationship between Emotional Regulation and HRV.

### **Discussion**

The purpose of this experiment was to further explore and replicate Ronayne's (2018) study by examining the role of adopting a positive or negative mindset about the present moment on affect, happiness, and HRV. This is important to examine since most of the previous research exploring happiness has examined methods that focus on reflecting on the past or future, not the present moment (Lyubomirsky, 2008).

In the present study, I hypothesized that adopting a positive mindset would increase positive affect and adopting a negative mindset would decrease positive affect. My hypothesis was partially supported in which I found that adopting a positive mindset increased positive affect, but adopting a positive mindset did not decrease negative affect. To test the role of a negative mindset on affect, I hypothesized that adopting a negative mindset would decrease positive affect and adopting a negative mindset would increase negative affect. My hypothesis was partially supported. I found that adopting a negative mindset did not alter positive affect, but adopting a negative mindset increased negative affect. Next, I hypothesized that adopting a positive mindset would increase happiness, serenity, and joviality and adopting a negative mindset would decrease happiness serenity, and joviality. This hypothesis was partially supported since adopting a positive mindset did not alter any of the variables, but adopting a negative mindset did decrease happiness, joviality, and serenity.

Finally, I hypothesized that adopting a positive mindset would increase heart rate variability and adopting a negative mindset would decrease heart rate variability. This hypothesis was not supported. Additionally, I examined the role emotional regulation had on mindset and each dependent variable. I hypothesized that all of the previous effects would be larger for low emotional regulators than for high emotional regulators. The results of this hypothesis were not supported. Lastly, I hypothesized that high emotional regulators will have higher resting HRV than low emotional regulators. This hypothesis was not supported.

To summarize the mindset, affect and happiness results of the current study, I found that adopting a positive mindset increases positive affect and adopting a negative mindset increases negative affect and decreases happiness, serenity, and joviality. These results only partially supported my hypotheses, but the findings are important to examine for two main reasons. The first reason these results are important is because it helps paint a clearer picture of the relationship between affect and mindset that Ronayne (2018) had previously examined. In the previous research, Ronayne (2018) found trends between mindset and affect that approached significance, but the relationship could not be supported. Based off the current research, there is a clearer understanding that mindset does play a role in affect. This relationship tells us that adopting a positive mindset about the present moment could lead to experiencing more positive emotions, but only looking at the negatives in the present moment could lead to increased negative emotions and a decrease in happiness. People are constantly trying to make strides towards feeling less negative, so if by choosing to not be in a negative mindset will allow them to achieve that, then this could be a beneficial change to make.

The results of this study show evidence that if we choose to look at the negatives in the present moment we will feel more negative, so how can we choose to shift our mindset from

seeing the negatives? These results tell us that there needs to be some practical steps or activities that can help make that shift from no longer thinking negatively. As previously mentioned Lyubomirsky (2008) addressed intentional activities that help increase happiness, but these activities commonly focus on shifting your mindset about past or future events. I speculate that some of those same activities could be used as practical steps to change a negative mindset about the present moment.

Lyubomirsky (2008) had addressed 12 different activities that help to increase happiness. Of those twelve activities, I believe expressing gratitude, cultivating optimism, savoring life's joys, and practicing religion and spirituality are some activities that could be used as steps to help change a negative mindset in the present moment. For example, Lyubomirsky (2008) found that expressing gratitude towards others fostered more happiness, so I speculate that a similar activity could be done about the present moment. If we were to take a few moments to look around and express thanks for some elements of the present moment, this would allow us to shift or change our mindset from a negative one. Another way we could change is through cultivating optimism. Once again, Lyubomirsky (2008) had defined this activity in terms of future, but I believe this activity can be adapted towards the present moment. This could be done through journaling about all the positives and how there can be positives that come from any current situation. By partaking in an activity that will allow each person to make the change from thinking negatively about the present moment, I believe it will allow them to feel less negative as well.

The second reason these findings matter is because there is minimal literature that has examined the relationship between positive or negative mindset on affect and happiness. As previously mentioned, most of the mindset literature has examined the influence of a growth

versus fixed mindset on life satisfaction and success and most of the happiness research had focused on reflecting on the past or future (Dweck, 2006; Lyubomirsky, 2008). Precisely, the current study helps address a practical step that can be taken to experience an increase in positive emotions. This step is through choosing to not think about the negatives in the present moment. This study is important because it helps bridge the gap in both the mindset and happiness literature. As previously mentioned, Lyubomirsky (2008) addressed intentional activities that has individuals reflect on the past or present circumstances in order to help achieve lasting happiness. This literature bridges that gap from the past or present, and it shows how reflecting on the present moment can impact mood and happiness as well.

These findings are important to consider because experiencing high levels of positive affect and happiness have been linked to many health benefits. Specifically, high levels of positive affect are linked to experiencing reduced pain after being hospitalized, fewer symptoms during illness, and lower risks of mortality for those over the age of 55 and happier people have been found to live longer lives and are more successful in their work and relationships than those who are less happy (Pressman et al., 2019; Lyubomirsky et al., 2005; Lawrence, Rogers, & Wadsworth, 2015). By keeping this in mind, this study solidifies that there is power behind how people interpret the present moment and if we choose to view it negatively we will feel less happy, but if we can consciously choose to not be in a negative mindset this could allow us to continue living happy.

The results of the study showed a clear pattern that adopting a negative mindset makes you feel more negative across all variables, but adopting a positive mindset does not make you more positive. This asymmetrical trend suggests that replication must occur in order to fully understand the relationship between a positive and negative mindset on affect and happiness.

This trend could have occurred for a variety of reasons. The first reason for this trend could be the participants used in the study. The majority of the participants in the study were first-year students who were pre-assigned to the class, so the participants could have felt negative about having to participate in a study for a class they did not want to be in. This means by having participants undergo the negative mindset could have only elevated those negative feelings, whereas, the positive condition could have just made them feel the same state as coming into the study.

The length of the study could be another reason for the trend (adopting a negative mindset makes you feel more negative, but adopting a positive mindset does not make you more positive) that was found. The study took each participant about an hour to complete, so if they were placed in the negative mindset condition it could have caused them to feel even more negative and fatigued after participating. The final reason the study could have resulted in this trend is the overall power behind only thinking about the negatives. It clearly showed that thinking negatively will detract from happiness and make you feel more negative. It would be interesting to see another study done that had even more powerful mindset conditions because I believe that would allow us to examine if the trend found is due to experimental conditions (length or participants) or due to the impact of negative mindset.

The results of this study did not show a relationship between mindset and HRV. The current study found that during the mindset manipulation, across both the positive and negative mindset conditions, HRV was significantly lower than at both the initial and final baseline measurement. This could be due to a variety of reasons. The primary reason is that the two branches of the autonomic nervous system were most likely off balance (Thayer et al., 2012). At the time of the mindset manipulation, each participant completed two writing exercises; one

about a painting and one about their college experience. The mindset manipulation caused a decrease in HRV among participants which means the sympathetic nervous system was overpowering the parasympathetic nervous system which likely triggered the “flight or fight” response during the manipulation (Thayer et al., 2012).

The imbalance between the two branches of the autonomic nervous system could have occurred because of a variety of reasons. The first reason is that participants were nervous that I would read their responses. I did not give them instructions that I would not actually read their responses to the questions, so this could have triggered more of a stress reaction than actually placing them into a specific mindset. Another reason that the mindset manipulation caused lower HRV and a potential off-balance in the autonomic nervous system is because of the layout of the room. I had participants complete the writing exercise while I was sitting right next to them. This could have made them feel like I was watching them write their responses which could have made them more nervous and anxious about the experiment.

During the final baseline reading, HRV was significantly higher than during the mindset manipulation. This could be because the parasympathetic nervous system was activated again, and participants were once again feeling calmer because they knew that this was the final piece of the experiment (Thayer et al., 2012). One step that could be taken to avoid this pattern would be to try to decrease experimental fatigue. The final baseline indicates that participants were relieved to be done with the experiment since their HRV was significantly higher than at any other measurement times. Experimental fatigue could be eliminated through using a different physiological measurement or condensing the questionnaires administered. For example, instead of measuring joviality and serenity, just administer the PANAS and the Oxford Questionnaire. Another way this could be avoided is through using a different physiological measurement. The

process of hooking oneself up to electrodes and monitoring HRV could be draining, so I believe using a less invasive way of monitoring HRV could help eliminate these trends. Overall, these results on HRV did not show how mindset influences HRV, but instead, I believe it showed how the nature of the experiment impacted HRV.

Lastly, I examined whether low emotional regulators in terms of affect, happiness, and HRV would be more influenced by the mindset condition than high emotional regulators. I found no interaction between emotional regulation and mindset across all of the dependent variables. These findings could have occurred because of how I split up the participants into high and low emotional regulators. I used the top and bottom third scores on emotional regulation to place them into either the low or high emotional regulation group. The scores on the Difficulties in Emotional Regulation Scale can range from 36-180 (Gratz & Roemer, 2004). Most of the participants' scores fell towards the bottom half of the actual scale, so this means that many of the "high" emotional regulators were not actually that high on the scale. This could have influenced the results of the study because the groups were not separated that significantly between high and low. In a future study, it may be beneficial to examine emotional regulation scores as a whole instead of splitting participants up in to low or high emotional regulators because this could paint a clearer picture of how emotional regulation may relate to mindset.

### **Limitations and Future Directions**

One of the limitations of the study was the length which could have led to experimental fatigue. The study lasted approximately 45-60 minutes to complete, but the participants were asked to do many tasks, for example, being hooked up to equipment and fill out multiple questionnaires. By the time the study was done, there was an apparent difference in the mood of the participants in which they appeared relieved to finally be done. One way to solve this could

be through administering a different physiological measurement. It could be beneficial to have participants use a less invasive measure of HRV like a tracking device on their wrist. This would eliminate the amount of time it took to explain directions about the electrodes, answer any questions about them, and then the process of removing the electrodes after the experiment.

Another limitation of the study was the physiological measurement equipment that was used. Before analyzing the data, I ensured that each heart rate peak of every participant was accounted for by labeling any missed peaks. This labeling ensured that the HRV of every participant was actually the time interval between successive heart beats. It would be beneficial to see this study done again, but with a different physiological measurement that would be less finicky and possibly measure emotionality clearer. This could be done through having participants wear an HRV tracking device on their wrist. I believe this non-invasive way of tracking HRV could yield different results because it would ensure ecological validity since people in real life are more likely to wear a watch than electrodes to monitor HRV. It would be interesting to see if there are any other physiological measures that would align with measuring emotions, such as a stress response. This could result in different findings and better support measuring affect and happiness.

Lastly, it would be worth noting that this study should be expanded into real life. This could be done by making the study a week-long experiment. One approach to this would be to still assign participants to either the positive or negative mindset condition, but then throughout the day give them a prompt that would have them reflect and interpret the present moment in either a positive or negative way. Each participant could be measured on affect and happiness scores at the beginning of the day, directly after the mindset manipulation, and at the end of the

day. This would paint a clearer picture on how mindset can influence affect and happiness in daily life.

Overall, the findings of this study emphasize that looking at the positives in the present moment can increase aspects of positive affect, and that focusing and reflecting on the negatives in the present moment can reduce your happiness. Simply, a negative mindset has the power to detract from happiness and heighten negative emotions. This is worth noting because if you choose to only think about the negatives, then you will feel negatively as well. But, if you choose to interpret and view the present situation with a positive mindset, you have the power to experience more positive affect.

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## Appendix A

### The Positive and Negative Affect Scale (PANAS).

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

1 – very slightly or not at all

2 – a little

3 – moderately

4 – quite a bit

5 – extremely

\_\_\_ interested

\_\_\_ irritable

\_\_\_ distressed

\_\_\_ alert

\_\_\_ excited

\_\_\_ ashamed

\_\_\_ upset

\_\_\_ inspired

\_\_\_ strong

\_\_\_ nervous

\_\_\_ guilty

\_\_\_ determined

\_\_\_ scared

\_\_\_ attentive

\_\_\_ hostile

\_\_\_ jittery

\_\_\_ enthusiastic

\_\_\_ active

\_\_\_ proud

\_\_\_ afraid

\_\_\_ happy

\_\_\_ delighted

\_\_\_ calm

\_\_\_ joyful

\_\_\_ cheerful

\_\_\_ relaxed

\_\_\_ lively

\_\_\_ energetic

\_\_\_ at ease

## Appendix B

### Oxford Happiness Questionnaire.

Below are a number of statements about happiness. Please indicate how much you agree or disagree with each by entering a number in the blank after each statement, according to the following scale:

- 1 = strongly disagree
- 2 = moderately disagree
- 3 = slightly disagree
- 4 = slightly agree
- 5 = moderately agree
- 6 = strongly agree

Please read the statements carefully, some of the questions are phrased positively and others negatively. Don't take too long over individual questions; there are no "right" or "wrong" answers (and no trick questions). The first answer that comes into your head is probably the right one for you. If you find some of the questions difficult, please give the answer that is true for you in general or for most of the time.

#### The Questionnaire

1. \_\_\_\_ I don't feel particularly pleased with the way I am.
2. \_\_\_\_ I am intensely interested in other people.
3. \_\_\_\_ I feel that life is very rewarding.
4. \_\_\_\_ I have very warm feelings towards almost everyone.
5. \_\_\_\_ I rarely wake up feeling rested.
6. \_\_\_\_ I am not particularly optimistic about the future.
7. \_\_\_\_ I find most things amusing.
8. \_\_\_\_ I am always committed and involved.
9. \_\_\_\_ Life is good.
10. \_\_\_\_ I do not think that the world is a good place.
11. \_\_\_\_ I laugh a lot.
12. \_\_\_\_ I am well satisfied about everything in my life.
13. \_\_\_\_ I don't think I look attractive.
14. \_\_\_\_ There is a gap between what I would like to do and what I have done.
15. \_\_\_\_ I am very happy.
16. \_\_\_\_ I find beauty in some things.
17. \_\_\_\_ I always have a cheerful effect on others.
18. \_\_\_\_ I can fit in (find time for) everything I want to.
19. \_\_\_\_ I feel that I am not especially in control of my life.
20. \_\_\_\_ I feel able to take anything on.
21. \_\_\_\_ I feel fully mentally alert.

22. \_\_\_\_ I often experience joy and elation.
23. \_\_\_\_ I don't find it easy to make decisions.
24. \_\_\_\_ I don't have a particular sense of meaning and purpose in my life.
25. \_\_\_\_ I feel I have a great deal of energy.
26. \_\_\_\_ I usually have a good influence on events.
27. \_\_\_\_ I don't have fun with other people.
28. \_\_\_\_ I don't feel particularly healthy.
29. \_\_\_\_ I don't have particularly happy memories of the past.

## Appendix C

### Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

1-----2-----3-----4-----5  
 almost never      sometimes      about half the time      most of the time      almost always  
 (0-10%)      (11-35%)      (36-65%)      (66-90%)      (91-100%)

- \_\_\_\_\_ 1) I am clear about my feelings.
- \_\_\_\_\_ 2) I pay attention to how I feel.
- \_\_\_\_\_ 3) I experience my emotions as overwhelming and out of control.
- \_\_\_\_\_ 4) I have no idea how I am feeling.
- \_\_\_\_\_ 5) I have difficulty making sense out of my feelings.
- \_\_\_\_\_ 6) I am attentive to my feelings.
- \_\_\_\_\_ 7) I know exactly how I am feeling.
- \_\_\_\_\_ 8) I care about what I am feeling.
- \_\_\_\_\_ 9) I am confused about how I feel.
- \_\_\_\_\_ 10) When I'm upset, I acknowledge my emotions.
- \_\_\_\_\_ 11) When I'm upset, I become angry with myself for feeling that way.
- \_\_\_\_\_ 12) When I'm upset, I become embarrassed for feeling that way.
- \_\_\_\_\_ 13) When I'm upset, I have difficulty getting work done.
- \_\_\_\_\_ 14) When I'm upset, I become out of control.
- \_\_\_\_\_ 15) When I'm upset, I believe that I will remain that way for a long time.
- \_\_\_\_\_ 16) When I'm upset, I believe that I will end up feeling very depressed.
- \_\_\_\_\_ 17) When I'm upset, I believe that my feelings are valid and important.
- \_\_\_\_\_ 18) When I'm upset, I have difficulty focusing on other things.
- \_\_\_\_\_ 19) When I'm upset, I feel out of control.
- \_\_\_\_\_ 20) When I'm upset, I can still get things done.
- \_\_\_\_\_ 21) When I'm upset, I feel ashamed at myself for feeling that way.
- \_\_\_\_\_ 22) When I'm upset, I know that I can find a way to eventually feel better.
- \_\_\_\_\_ 23) When I'm upset, I feel like I am weak.
- \_\_\_\_\_ 24) When I'm upset, I feel like I can remain in control of my behaviors.
- \_\_\_\_\_ 25) When I'm upset, I feel guilty for feeling that way.
- \_\_\_\_\_ 26) When I'm upset, I have difficulty concentrating.
- \_\_\_\_\_ 27) When I'm upset, I have difficulty controlling my behaviors.
- \_\_\_\_\_ 28) When I'm upset, I believe there is nothing I can do to make myself feel better.
- \_\_\_\_\_ 29) When I'm upset, I become irritated at myself for feeling that way.
- \_\_\_\_\_ 30) When I'm upset, I start to feel very bad about myself.
- \_\_\_\_\_ 31) When I'm upset, I believe that wallowing in it is all I can do.
- \_\_\_\_\_ 32) When I'm upset, I lose control over my behavior.
- \_\_\_\_\_ 33) When I'm upset, I have difficulty thinking about anything else.
- \_\_\_\_\_ 34) When I'm upset I take time to figure out what I'm really feeling.
- \_\_\_\_\_ 35) When I'm upset, it takes me a long time to feel better.
- \_\_\_\_\_ 36) When I'm upset, my emotions feel overwhelming.