A Comparison of Emotion Granularity in Managing Acute and Repeated Stress

By

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CHAPTER I

INTRODUCTION

Imagine you are driving to work. Traffic is moderate as expected, and you are thinking about the day ahead. You have the usual demands from your boss, meetings to attend, and reports due at the end of the day, but nothing that you cannot handle. Suddenly a deer jumps in front of your car causing you to swerve and almost hit oncoming traffic. Now at work, sitting at your desk, you are still revved up from the startling events from your commute. This prolonged response to the acute stressor you encountered earlier that morning may not be all that adaptive. In the moment, your heightened response helps you respond quickly to the danger ahead; yet after you are safe, the stress response should extinguish. Additionally, if you encounter stressors every single day on your way to work, these can accumulate and become chronic stressors, taxing your stress response systems more and more over time. My intention in presenting this example is to emphasize the need to explore the relationship between stress and emotion mechanisms or constructs that may lead to better management of this stress.

Whether it is one distinct instance or a repetitious event, we all encounter stressors. How is it that some people seem to deal effectively with stress and are able to cope with many of life's trials, whereas other people face stress with much more tribulation? Although individual stressors differ, could other factors within a person also lead to the difference in recovery from stress?

Although it has not been studied as deeply as other emotion constructs, emotion differentiation is a particularly interesting topic because it helps explain individual differences in emotional experience through the capacity to express and identify emotional experiences as a function of emotions' discrete properties rather than as general, overlapping feeling states. Emotion granularity is "the tendency to represent experiences of [positive] emotion with precision and specificity", describing the verbal and experiential components of emotion differentiation (Tugade, Fredrickson, & Barrett, 2004, p.1). Referring to the above example, you as the driver may feel fear at the sight of the deer on the road, determination as you react quickly to avoid hitting it, and finally relief that you have avoided a catastrophe. Conversely, someone else in the same situation might describe it simply as "a bad morning". Emotion differentiation could be a key mechanism in understanding how people experience emotions and the depth to which they engage with the world around them. Rather than operating in absolutes, emotion differentiation efficacy falls on a spectrum, with certain people tending to differentiate their emotional experiences to a greater or lesser degree than other people (Tugade, Fredrickson, & Barrett, 2004). Stress, although receiving considerably more attention in research than emotion differentiation, is another vital aspect of human life to study because it describes the inevitable process in which we must manage and adapt to external demands, such as a deer in the road or a growing pile of work with a strict deadline (Monroe, 2008). The following sections will explore chronic and acute stress as well as the current literature on its relationship to emotion differentiation.

Stress

College students face a wide variety of stressors, some of which they may be experiencing for the first time, such as significant financial burden, lack of proximal family support, and academic standards that challenge their abilities. Stress in this study is defined as perceptions of stress rather than as an evaluation of specific stressors. Although the term "stress" is commonly used colloquially as an emotion, it has not been typically been considered a discrete emotion in research, but rather as strongly linked to a variety of emotions (Lazarus, 1999). Emotions function as a signaling system, noting when an important event is occurring that requires a response, or at least attentional focus (Smith, Tong, & Ellsworth, 2014). Stressors often comprise these attention-grabbing events. Under predictable or controllable conditions, a person can proactively become aware of future stressors, and manage emotions accordingly by blunting negative affect associated with the stressor (Aspinwall & Taylor, 1997). This ability is especially important with regards to academic and social stress, as they tend to be highly relevant to college-aged students. Hughes (2005) examined blood pressure reactivity to stress in a similar sample to the current study, undergraduate college students, and found decreased systolic blood pressure in response to a laboratory-induced stressor in students who more greatly feared failure. Students may be able to employ regulation strategies as they enter potentially threatening situations by better discerning what they are feeling as an event or situation is unfolding. In addition to the actual stressor faced, psychological and contextual factors also matter in determining the course and degree of stress response (Weiss, 1970). Beyond simply a one-time event, repeatedly or simultaneously experienced events may build up and accumulate over time in the form of chronic stress.

Chronic stressors are often a part of life; thus being able to preemptively manage them is important, although very difficult (Aspinwall & Taylor, 1997). People who differentiate positive emotions, rather than negative emotions, more effectively engage in proactive or preventative coping, which becomes increasingly important as stressors accumulate and repeat over time (Tugade et al., 2004). Despite the attentional focus and enhanced information negative-emotion differentiation provides, negative affect may initially hinder proactive coping (Aspinwall & Taylor, 1997). Chronic stress is important to study, especially in college samples, because it is a very real concern for students and ways students manage it can have very broad implications. With regards to health, Hilmert, Ode, Zielke, & Robinson (2010) have shown that researchers are able to generalize blood pressure stress reactivity in a controlled experimental setting to life stressors. Cardiovascular reactivity to acute stress is associated with cognitive evaluation rather than simply an innate emotional response (Hilmert & Kvasnicka, 2010). Therefore, it is not the emotion or stress that is directly influencing changes in blood pressure, but rather the participants' appraisal of a particular task and their performance in relation to peers. Furthermore the specificity of appraisal also matters, with different appraisals causing discrete emotions (Scherer, 2001). For example, threat tends to increase blood pressure compared to challenge (Hilmert & Kvasnicka, 2010). Depending on the specific emotion and perceived coping potential, participants could be reappraising the stressor to reframe thoughts to attenuate the negative and enhance the positive aspects of stress, such as preparedness and motivation (Jamieson, Mendes, & Nock, 2013). Reappraisal is a form of emotion regulation that targets the coping potential aspect of appraisal and involves a cognitive change to reframe emotional information from surroundings (Gross, 2013). For

instance, when approaching a test, reinterpreting the increased heart rate and sweating you experience as the test is being passed out as readying you for the cognitive demand ahead rather than as impending doom will likely result in better performance (Jamieson, Nock, & Mendes, 2012). People with a better understanding of the nuances between emotional states, or greater emotion differentiation, may be better able to use reappraisal in a rapid and effective fashion to reduce the negative feelings they may have following a stressor (Jamieson et al., 2013).

Emotion Differentiation & Regulation

Emotions help us understand our environment and motivate behaviors to improve or preserve that environment (Kirby, Tugade, Morrow, Ahrens, & Smith, 2014). Therefore, understanding our emotions more deeply seems likely to be related to understanding our environment more deeply. The idea of "affect-as-information", which describes the informative potential of emotions, favors discrete emotions as providing more information than general positive or negative valence (Barrett, Gross, Christensen, & Benvenuto, 2001; Schwarz, 2010). Consider what feeling anxious tells you about your environment - that you expect an adverse event in the near future. Operating from a discrete-emotions perspective, understanding that this is anxiety, rather than just feeling "bad" or negatively, would help you to know how to manage and reduce the stress by motivating you to prepare. Other negative emotions, such as sadness and anger, would likely motivate different action tendencies like grieving and seeking revenge, respectively. Relating back to the opening example, your body's sudden heightened sympathetic activity when the deer jumps in front of your car tells you there is an immediate danger in your environment and

prepares you to confront or avoid it. Thus, a more specific emotional response to the threat, such as fear rather than a general feeling of negative affect, may be more beneficial in forming an appropriate response to the situation.

Emotion regulation describes how the magnitude or duration of emotional responses are dampened or elevated, either consciously or automatically, with regards to a particular goal (Gross, 2013). Gross's process model of emotion regulation describes various points at which regulation can occur: when we opt in or out of certain situations; when we adjust to circumstances around us; when we alter which aspects of a situation we attend to; when we change our appraisal of and the meaning we derive from the situation; and finally, during various aspects of our response (Gross, 1998; Gross, 2013). Regulation has to do with the type, timing, degree, and expression of emotional experience (positive or negative), whereas coping is employed intentionally with negative emotions (Gross, 1998). Going back to the opening example, after the deer has cleared the road, you may down regulate fear and anxiety now that the situation is resolved and you are not hurt.

Tying emotion differentiation and regulation together, differentiation of emotions may provide affective information that one is able to use during regulation - understanding your emotional experience more deeply may tell you which aspects of a situation to alter, how and to what extent to modify appraisals, and so on – thereby providing more specificity to regulation. In one study relating emotion differentiation and regulation, investigators found that differentiation of negative emotions, but not positive emotions, was related to increased regulation of negative emotions (Barrett et al., 2001). This result could be because although both positive and negative emotions can be differentiated into discrete states, negative emotions tend to be more differentiated than positive emotions

(Smith et al., 2014). Different emotions cause us to do different things, or generate different action tendencies (Kirby et al., 2014). Greater differentiation among negative emotions is linked to using more strategies to regulate those negative emotions, spanning the various time points where regulation can occur (Kirby et al., 2014; Barrett et al., 2001). It has also been shown that some clinical populations, specifically people with Major Depressive Disorder, differentiate negative emotions to a lesser degree even when controlling for intensity of emotions, but this pattern does not necessarily carry over to positive emotions (Demiralp et al., 2012). This finding has interesting implications for coping because, as described above, negative differentiation aids in negative emotions' regulation, which is very important especially in depression.

Positive emotions tend to broaden our perspective on a situation and therefore, may lead to more creativity in generating options for regulation (Fredrickson, 2001; Barrett et al., 2001). For example, Tugade, Fredrickson, & Barrett (2004) found that positive emotion differentiation can lead to greater cognitive processing in a more focused, mindful way and less reliability on rigid mental shortcuts in response to stress, which imply broadening the scope of one's options for regulation. In this way, positive emotion differentiation is related to overall well-being and positively correlated with use of robust emotion management strategies (Kirby et al., 2014). Regulation, specifically of positive emotions, is important in extending a positive emotional experience for a longer amount of time as well as enhancing the intensity of or reframing a situation to create a new positive emotional experience (Tugade & Fredrickson, 2007). A key difference is that negative-emotion differentiation may function more adaptively in terms of regulation with intense emotional experience, whereas positive-emotion differentiation may become more important under

low intensity experiences (Tugade et al., 2004; Barrett et al., 2001). Other studies have also supported this claim; for example, in a study of social drinking, even under intense negative affect, higher emotion differentiators drank less alcohol (Kashdan, Ferssizidis, Collins, & Muraven, 2010). Although positive and negative emotions and their relationship differentiation and regulation function differently, I do not take these findings to mean that it is unimportant to understand and use affective information from positive emotional experiences. In fact, Quoidbach and colleagues (in press) found both positive and negative differentiation, which they call "emodiversity", to be positively related to clinical health outcomes, such as doctor visits and health costs, cross-sectionally. Because discrete emotions are more specific and have different informational value, they give us enhanced information beyond just general positive or negative affect, allowing a person to generate a specific rather than general response (Schwarz, 2010; Tugade et al., 2004). Appraisal theory, which outlines how cognitive evaluations differentiate emotions from one another, is neither a one size fits all nor a one and done process; emotions are continually further differentiated as we gather more information and consider more contextual clues surrounding them, meaning as we are continually appraising and reappraising a situation (Smith et al., 2014).

Furthermore, personal tendencies, such as dispositional outlook on life and subjective happiness are inherently linked to emotion differentiation because the specific emotion you experience is based on meaning *you* derive from *your* surroundings. This could be based on your interactions with others and social feedback, as well as personal beliefs and expectations for how you will be able to cope and what you expect to be the consequences of the situation (Smith & Lazarus, 1990). People differ in their tendency to

differentiate emotions (Tugade et al., 2004). Because appraisals occur cognitively, but also have social and cultural components as evidenced by the way we make evaluations along appraisal dimensions, a high differentiator would be different from a low differentiator in that he or she is able to process emotional information in a more nuanced and socially relevant manner (Smith & Lazarus, 1990). My study aims to add to the emotion differentiation literature by describing how differentiation ability, like dispositional tendencies, also individually differs across people, which may contribute an avenue of explanation for individual differences in management of acute and chronic stress, measured by perceived stress as well as affective and physiological reaction to a stress manipulation task.

Summary

The main research question under investigation was: Does ability to differentiate emotions predict less intense negative emotions in response to acute and repeated stress? This paper will focus on the psychological affective aspects as well as touch on the relationship between stress and health in terms of blood pressure changes in response to an acute stress manipulation.

To get a holistic picture of the role emotion granularity may have in stress management, the current project was separated into two studies. The first study was conducted in a laboratory setting and consisted of participants undergoing a mild stressor, similar to one they might experience in everyday university life. Stressor tasks, like the one used in the present study, which are uncontrollable, moderately difficult, and involve social evaluation, tend to elicit the greatest stress response (Dickerson & Kemeny, 2004; Hilmert

& Kvasnicka, 2010). The study's stressor had both a social and performance component to mirror the stressors faced by college-aged students. Study 1 was conducted in this way to capture the acute aspects of stress and was meant to focus differentiation's correlates and prediction of affective and physiological response to an induced stressor. The second study was a within-subjects study completed over the course of three weeks. Study 2 was meant to constitute the repeated stress component of the investigation, to examine differentiation over time and how it relates to dispositional tendencies and emotional expression in the form of writing. The theoretical assumption is that the enhanced information from differentiated, highly granular emotions will lead to more informed emotion regulation and therefore more effective management of stress in the form of decreased negative affect. Specifically, for Study 1, I hypothesized that greater differentiation would lead to lower negative affect and blood pressure reactivity in response to the acute stressor. For Study 2, the hypothesis was the same as in Study 1, with the addition that differentiation would be stable over time and predict greater word count, use of social references, and greater use of emotion words in a writing sample.

CHAPTER II

METHODS

Study 1

Participants & Design

Participants were 129 undergraduate students (average age= 19, 64.3% White/Caucasian) at Vanderbilt University, recruited via Vanderbilt Psychology Department's web-based participation pool, SONA. The participants were primarily female (60.5%). One participant's data was excluded from the analyses due to failure to complete the stressor task and post-task measures.

Study 1 took place in a single laboratory session at Vanderbilt University.

Measures & Materials

Instruments included in Part 1 of the study included:

Discrete Emotions Adjective List (*DEAL*) asks the participant to rate the extent to which they are currently feeling a set of listed emotions (Kirby, Yih, & Smith, in preparation). It was used in this study to assess emotional state at baseline and after the experimental stressor. Individual discrete emotion items were combined to create positive affect (Study 1 α=0.86) and negative affect (Study 1 α=0.82) subscales.

The Perceived Stress Scale (*PSS*) is a measure of personal appraisal of stress (Study 1 α=0.85) (Cohen, Kamarck, & Mermelstein, 1983). It contains 14 items based on the tenets of predictability, control, and overwhelmedness (Cohen et al., 1983)

Differentiation of Positive Emotional Experience Scale (*DOPES*) uses 8 situational vignettes to assess tendencies towards differentiation of specifically positive emotions (Study 1 α=0.94) (Kirby et al., 2014).

Differentiation of Negative Emotional Experience Scale (*DONES*) similarly to the *DOPES*, uses 8 imagery vignettes to assess differentiation of negative emotions (Study 1 α=0.93). It was developed for this study, based on the DOPES, but adapted to evoke negative emotions rather than positive emotions.

The Range and Differentiation of Emotional Experience Scale (*RDEES*) consists of 2 subscales: Range (Study 1 α=0.77) and Differentiation (Study 1 α=0.84) (Kang & Shaver, 2004). The *RDEES* was developed by Kang and Shaver and meant to assess emotional complexity (2004). Range refers to the number and expanse of emotions experienced and differentiation refers to degree of effective discrimination between emotions (Kang & Shaver, 2004). The *RDEES* was included in addition to the *DOPES* and *DONES* to capture a more global measure of differentiation in addition to measuring differentiation of specifically positive or specifically negative emotions (Kirby et al., 2014).

Patient Reported Outcomes Measurement Information System Global (*PROMIS Global)* was used to make a global assessment of Physical (Study 1 α=0.55) and Mental (Study 1 α=0.80) health (NIH; Hays, Bjorner, Revicki, Spritzer, & Cella, 2009).

Patient Reported Outcomes Measurement Information System-29 (*PROMIS 29*) is a questionnaire assessing physical health, anxiety, depression, fatigue, sleep disturbances,

satisfaction with social roles, and pain inference over the past week (NIH; Cella et al., in press).

Withings Blood Pressure Monitor and Mobile Application (Model: BP-801 Withings) uses a battery-operated wireless cuff (9-17 inches in circumference) to transmit reading via Bluetooth to the mobile application. The cuff uses an oscillometric method (measurement range= 0-285 mmHg) and operates at an accuracy level of +/- 3 mmHg or 2% reading pressure. The cuff automatically inflates at a rate of 15 mmHg per second. Systolic and diastolic blood pressure were recorded as physiological indicators of stress.

A mental math task, adapted from the Trier Social Stress Test, was chosen as an acute stressor because it includes both performance-based and social stress (Kirschbaum, Pirke, & Hellhammer, 1993). Participants were told that their performance was being assessed. Furthermore, they were lead to believe that they were being compared to their peers, and were given an overestimation of others' performances.

See *Appendix A* to view copies of the surveys.

Procedure

Participants scheduled their individual study session where, upon arrival, they received a general description of the study and provided informed consent. Experimenters then measured and recorded the participant's blood pressure. Next we assessed participants' mood using the DEAL. Participants then completed the Baseline survey, which included the PSS, RDEES, DOPES, DONES, PROMIS Global, PROMIS 29, and demographics questions. They then completed the acutely stressful mental math task and experimenters measured and recorded another blood pressure reading immediately

following the stressor. Finally, the participants completed the DEAL to assess follow-up mood and were then debriefed and granted SONA credits. See *Appendix B* for a full script of the study.

Study 2

Participants & Design

Vanderbilt undergraduate students were recruited in the same manner as Study 1, although Study 2 participants were not the same participants from Study 1; 4 males (12.5%) and 28 females (87.5%) were enrolled in Study 2 (average age= 19.16, 56.3% White/Caucasian). The study consisted of a positive writing condition, in which participants were asked to write about the best thing that happened to them over the past week and a negative writing condition, in which they wrote about the worst thing that had happened during the past week. There were 15 participants in the positive writing condition and 17 participants in the negative writing condition. The positive and negative conditions were meant to map onto the distinction made between positive and negative emotion differentiation. Negative differentiation may predict reflecting on negative events, whereas positive-emotion differentiation may be more strongly related to positive experiences than negative experiences.

Part 2 of the study was designed as a within-subjects longitudinal study in order to capture stress, differentiation tendencies, and health over time. Because the stress being captured by the surveys would likely be repeating stressors, we assumed that they are more chronic, repeated forms of stress.

Measures & Materials

The instruments in Part 2 included:

A *writing task*, where participants were asked to write about either the best or worst event from the week, which depended on whether they were randomly assigned to the positive or negative condition.

The Perceived Stress Scale: *PSS* (Study 2 α=0.87) (same as Study 1, see description above).

Range and Differentiation of Emotional Experience Scale (*RDEES*): Range (Study 2 α=0.86), Differentiation (Study 2 α=0.80) (same as Study 1, see description above).

Satisfaction with Life Scale (*SWLS*) is 5 items designed to measure life satisfaction in general (Study 2 α=0.85) (Diener, Emmons, Larsen, & Griffin, 1985).

Discrete Emotions Adjective List (*DEAL*): Positive Affect (Study 2 α=0.92), Negative Affect (Study 2 α=0.83) (see description above).

Subjective Happiness Scale (*SHS*) measures general feelings of happiness (Study 2 α=0.73) (Lyubomirsky & Lepper, 1999). It does so in a way different from the DEAL, which measures discrete happiness in the moment rather than generally. This makes it a more trait-like conceptualization.

Obligatory Exercise Questionnaire contains 20 items assessing exercise patterns and behaviors, especially a feeling of obligation towards exercise (Study 2 α=0.90) (Pasman & Thompson, 1988).

Differentiation of Positive Emotions Scale: *DOPES* (Study 2 α=0.96) (same as Study 1, see description above).

Differentiation of Negative Emotions Scale: *DONES* (Study 2 α=0.93) (same as Study 1, see description above).

Patient Reported Outcomes Measurement Information System Global (*PROMIS Global*): Physical Health (Study 2 α=0.37), Mental Health (Study 2 α=0.70) (same as Study 1, see description above).

Patient Reported Outcomes Measurement Information System-29 (*PROMIS 29*) (same as Study 1, see description above).

Withings Blood Pressure Monitor and Mobile Application (same as Study 1, see description above).

The mental math task stressor adapted from the Trier Social Stress Test was also used in Study 2; however, this task substituted a different starting number to avoid memory of the task from the baseline session in Study 2 confounding the results in the follow-up session in Study 2.

See *Appendix C* to view Study 2 surveys.

Procedure

Participants enrolled in the study using SONA. Participants completed an initial laboratory visit, which followed the same procedure as Study 1. They were then sent a link to the weekly survey by e-mail, once a week (on Sundays) for the next 3 weeks following the initial session, until all 3 repeating surveys had been administered to the participant. Participants completed the surveys using their own computers on their own time. They were asked to complete the survey within 48 hours of receiving it. Participants were granted 1 SONA credit for each of the weekly surveys (3 total). Depending on whether they

were assigned to the positive or negative condition, they were sent a survey containing either a writing task asking about the best event from the week paired with the above measures or a writing task asking them to write about the worst event from the past week, again paired with the above mentioned measures. Following the completion of the 3rd survey, participants returned to the lab for a follow-up session, which followed the same procedure as the initial session, including the survey containing health, perceived stress, and differentiation measures, the stressor task, and blood pressure readings and mood assessments before and after the stressor task. The debriefing in the follow-up visit was more thorough than the debriefing in the initial session. For supplemental study materials, please refer to *Appendix D*).

Study 1 & 2 Data Acquisition & Analyses

Software

Research Electronic Data Capture (REDcap) was used for survey development and data collection (Harris et al., 2009; Vanderbilt Institute for Clinical and Translational Research grant support UL1 TR000445 from NCATS/NIH). Demographic data was pulled from REDcap reports (See *Appendix E*). Differentiation scores were calculated using SPSS, and other analyses were conducted in R and Microsoft Excel (IBM Corp, 2013; R Core Team, 2013; Microsoft, 2008). The writing samples were analyzed using Linguistic Inquiry and Word Count (LIWC 2007), which is a program that quantifies text samples based on certain dimensions such as length, positive emotions, negative emotions, self-focused words, and social words (Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007).

Coding

The RDEES scale was recoded to produce a composite Range and Differentiation score for each participant in Study 1 and in both the initial and follow-up sessions in Study 2. Tendency to differentiate emotions situationally was scored as a normalized interclass correlation, which was an average of the correlations among all emotion ratings within each subject for the positive and negative vignettes. This number was then subtracted from 2 in order to reverse the scores so that a higher score would indicate greater differentiation and a lower score would indicate less differentiation (Kirby et al., 2014). This resulted in a positive differentiation score and negative differentiation score for each subject. Overall differentiation (DIFF) was calculated as the average of the Positive differentiation and Negative differentiation scores.

An overall Positive Affect (PA) score was computed for each participant based on an average of their individual relief, calm, determined, gratitude, interest, hope, proud, amused, happy, curious, eager, and satisfaction scores from the Discrete Emotions Adjective List (DEAL). A Negative Affect (NA) score was coded based on a composite of participant's defeat, frustration, anger, boredom, anxiety, overwhelmed, fear, annoyed, embarrassed, and disappointment scores from the DEAL. Because surprise can be either a positive or negative emotion depending on context, it was excluded from the analyses.

Positive Affect and Negative Affect scores were further coded to Positive Affect Change and Negative Affect Change scores for each participant, which were calculated by subtracting baseline affect from post-task affect. Thus, a positive change score would indicate increased levels of affect after the stressor task and a negative change score would indicate decreasing levels of affect from before to after the task. Diastolic Blood Pressure

Change and Systolic Blood Pressure Change were also computed the same way, by subtracting baseline from post-task scores.

Other data reduction procedures included eliminating participants who did not complete post-task measures (*n*=1 in Study 1 and *n*=2 in Study 2), as well as reverse coding appropriate variables and calculating subscale scores on the various measures included.

CHAPTER III

RESULTS

Study 1

Study 1 was meant to examine the role that emotional differentiation tendency plays in management of acute stress, where management was defined as either buffering stress up front, or rapidly recovering from stress. The main hypothesis was that greater emotion differentiation would predict lower negative affect and blood pressure reactivity following a stressor, suggesting more effective stress management.

Stress Manipulation Check

Due to machine malfunctions during the blood pressure reading, baseline and post-task DEAL data was only included for participants for whom we had both baseline and post-task DEAL ratings and Blood Pressure readings. Because the missing data occurred in a random fashion rather than as a function of the design or constructs being studied, participants with missing data were deleted from this section's subsequent analyses (n=15).

Paired t-tests confirmed that the stressor task was successful in significantly decreasing Positive Affect ($t_{(110)}$=4.10; p<0.001; d=0.39) and increasing Negative Affect ($t_{(110)}$=-6.92; p<0.001; d=0.66).

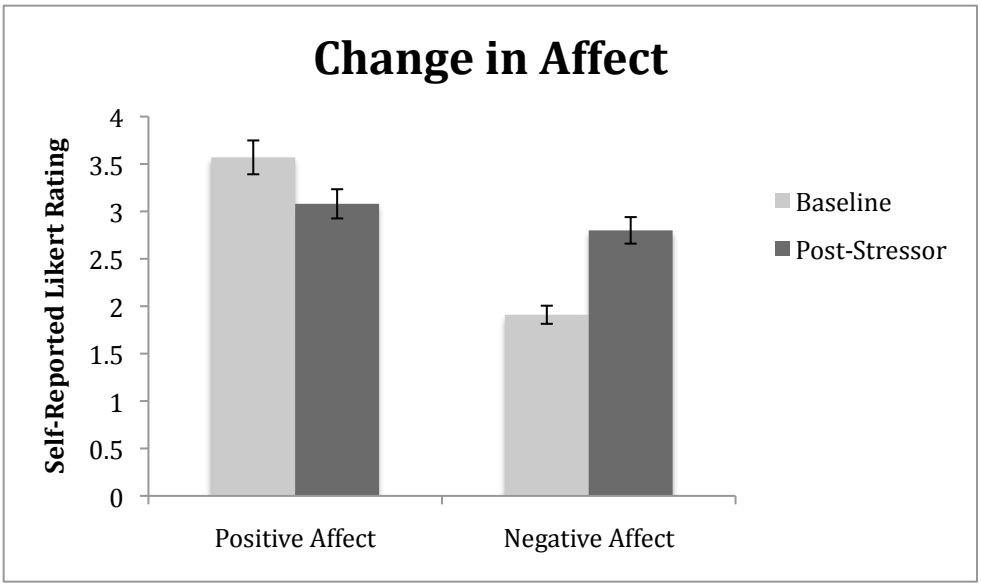

Figure 1: Study 1 Change in Affect from Before to after the Stressor Task

Paired t-tests also revealed a significant decrease in Systolic Blood Pressure from before to after the stressor ($t_{(110)}$=4.43; p<0.001; d=0.42). There was not a significant change in Diastolic Blood Pressure (p=0.07, *ns*). See *Appendix F* for more information on stress manipulation analyses and a table of graph means. Together, these results indicate that the stressor task was successful in manipulating stress in the intended direction.

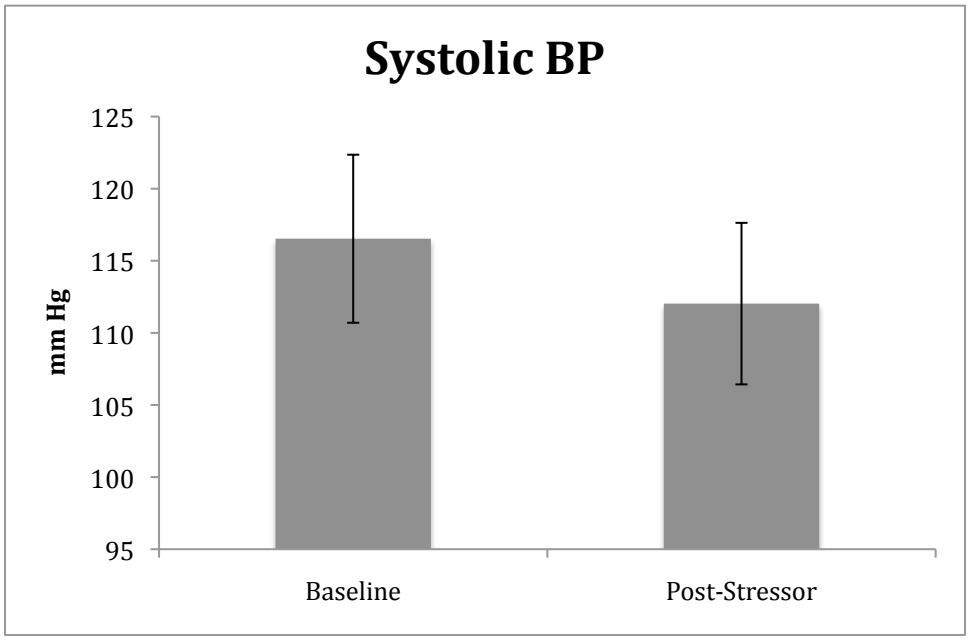

Figure 2: Study 1 Change in Systolic Blood Pressure from Before to After the Stressor Task

Combining Baseline for Study 1 & 2

The Baseline data from Study 1 and 2 were combined for the correlational analyses in order in increase the sample size for analyses (total *n*=160). Participants from Study 1 and 2 did not greatly differ among the measured variables or outcomes. Furthermore, the initial session in Study 2 was identical to Study 1's procedure. To view the mean, median, and range for the variables and outcomes, please see *Appendix G*.

Main Hypothesis Testing: Stress & Differentiation

Regression analyses revealed that Positive Affect Post-Stressor was significantly negatively predicted by negative differentiation score independently, when controlling for Positive Affect before the stressor task, and when controlling for both Positive Affect and

Negative Affect before the stressor task ($F_{(1,156)}$=13.09, $R^2_{(Adj)}$=0.07, p<0.001; $F_{(2,155)}$=6.67, $R^2_{(Adj)}$=0.07, p<0.002; $F_{(3,154)}$=5.24, $R^2_{(Adj)}$=0.08, p<0.002, respectively). Removing the outlier, the effect remained significant ($F_{(1,155)}$=10.03, $R^2_{(Adj)}$=0.05, p<0.002; $F_{(2,154)}$=5.15, $R^2_{(Adj)}$=0.05, p<0.007; $F_{(3,153)}$=4.24, $R^2_{(Adj)}$=0.06, p<0.007, respectively). Negative differentiation was not associated with changes in systolic or diastolic blood pressure. Positive differentiation was not predictive of affective (change in positive or negative affect) or physiological (systolic or diastolic blood pressure) stress outcomes. Additionally, emotion differentiation scores did not significantly predict Negative Affect Post-Stressor.

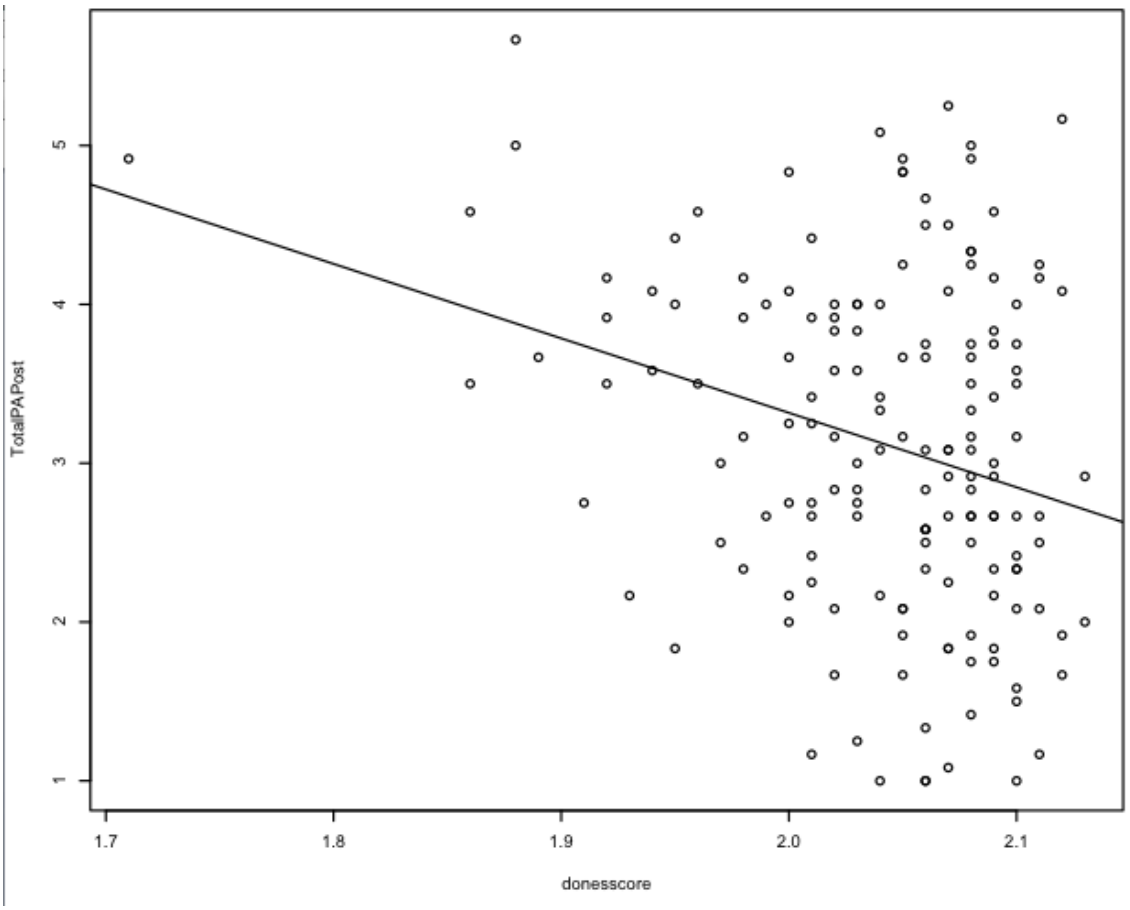

Figure 3: Regression Showing Negative Differentiation Score Negatively Predicting Positive Affect After the Stressor

Interestingly, Range of emotional experience and Perceived Stress were significantly positively correlated ($r_{(158)}$=0.17, p<0.05, d=0.35), but perceived stress was not significantly correlated with RDESS Differentiation.

Additional Analyses: Emotion Differentiation & Health Outcomes

Participants rated each of the 8 positive emotion vignettes and 8 negative emotion vignettes based on how they would feel in the imagined situation. These vignettes revealed that participants tended to differentiate the negative vignettes to a greater degree than the positive emotion vignettes (Positive differentiation mean=1.86; Negative differentiation mean=2.04; $t_{(157)}$=-13.77; p<0.001; Cohen's d=1.09). The positive emotion situations lead to greater blended emotional experiences whereas the negative situations elicited evidence for more discrete emotional experiences. For graphs of reported emotions for each of the vignettes, please see *Appendix I*.

In addition to management of the stressor (measured by change in positive and negative affect and systolic and diastolic blood pressure), Study 1 also aimed to explore correlates of negative and positive emotion differentiation. We expected negative and positive differentiation to be correlated with one another as well as the RDEES Differentiation subscale and mental health (PROMIS Global Mental subscale). When correlating positive differentiation, negative differentiation, and overall differentiation score from the positive and negative situational vignettes, with the personality and health measures (range of emotional experience, global differentiation, perceived stress, physical health, mental health, change in positive affect from before to after the stressor, change in negative affect, change in systolic blood pressure, and change in diastolic blood pressure)

the only significant correlation that emerged was between differentiation of positive emotions and differentiation of negative emotions ($r_{(156)}$=0.28, p<0.001, d=0.58).

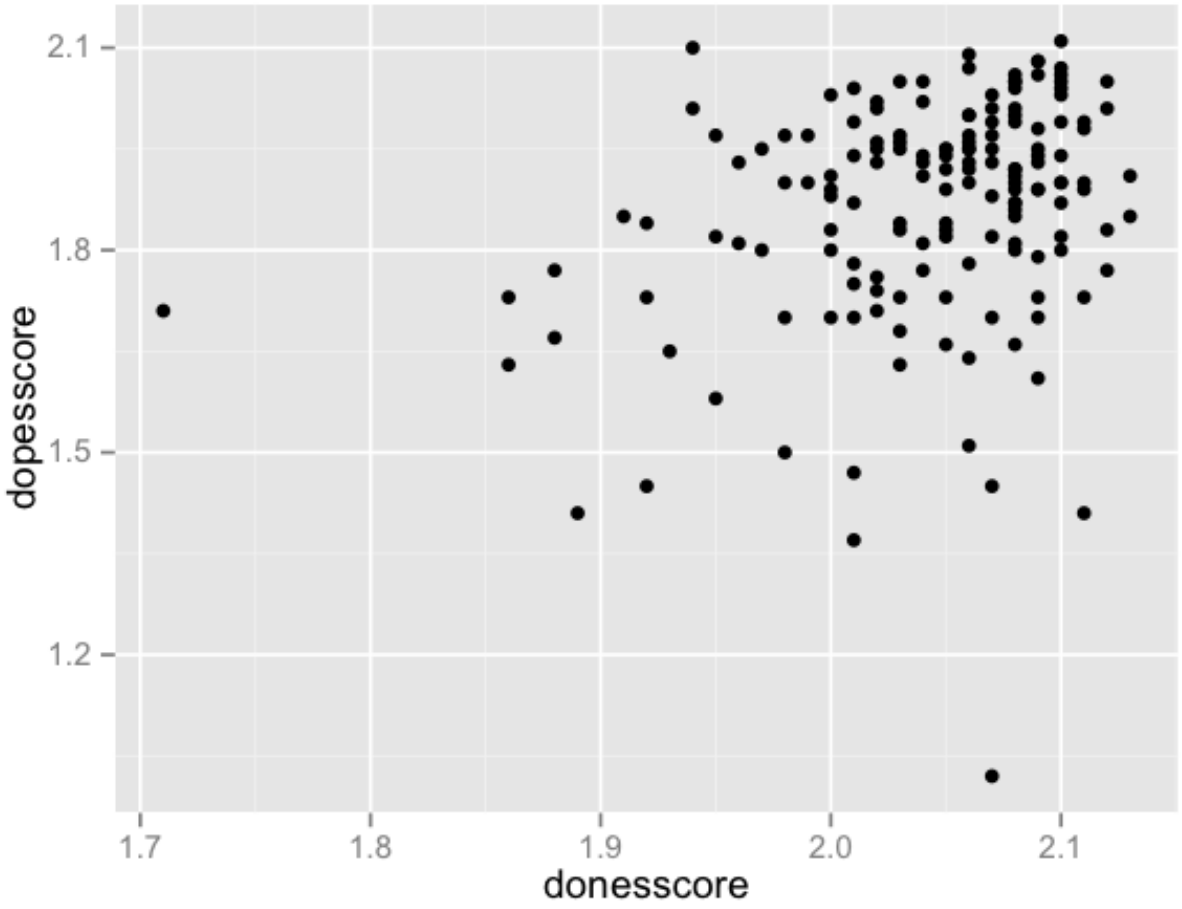

Figure 4: Scatterplot of Positive Correlation Between Positive and Negative Differentiation Scores

The correlation between Range and Differentiation scores from the RDEES was also significant ($r_{(158)}$=0.39, p<0.001, d=0.85). Please see *Appendix H* for additional analyses.

Study 2

Due to the small sample size in Study 2, please consider these results to be preliminary. A-priori power analyses revealed that in order to achieve power of 0.80, Cohen's f=0.30, with 2 groups at a significance level of 0.05, we would need 45 participants in each group. Additional data is currently being collected in order to reach that goal. Study 2 was meant to complement Study 1 to examine the role that emotional differentiation tendency plays in management of repeated stress, which may be more ecologically representative of the stress that college students face on a daily basis. Stress management was once again defined as either buffering stress up front, or rapidly recovering from stress and was quantified by changes in positive and negative affect and systolic and diastolic blood pressure. The main hypothesis of Study 2, as in Study 1, was that greater emotion differentiation would predict lower negative affect (in the form of a lower change score) and blood pressure reactivity (lower change score) following a stressor. Further hypotheses were that, like dispositions, differentiation would remain consistent over time and predict greater length, use of social references, and greater use of emotion words in a writing sample (more positive emotion words in the positive group and more negative emotion words in the negative condition). The rationale for these hypotheses was that differentiation, either positive or negative, would broaden one's perspective and creativity to produce more detailed, social, and emotionally-driven writing.

Stress Manipulation Check for Initial & Follow-Up Sessions

In this limited sample, the stressor task did not yield a significant change in Positive Affect (p=0.11, *ns*), however the stressor did significantly increase Negative Affect from

before to after the stressor in the initial session ($t_{(30)}$=-4.72; p<0.001; d=0.85). Change in Systolic (p=0.90, *ns*) and Diastolic (p=0.21, *ns*) Blood Pressure from before to after the task was not significant.

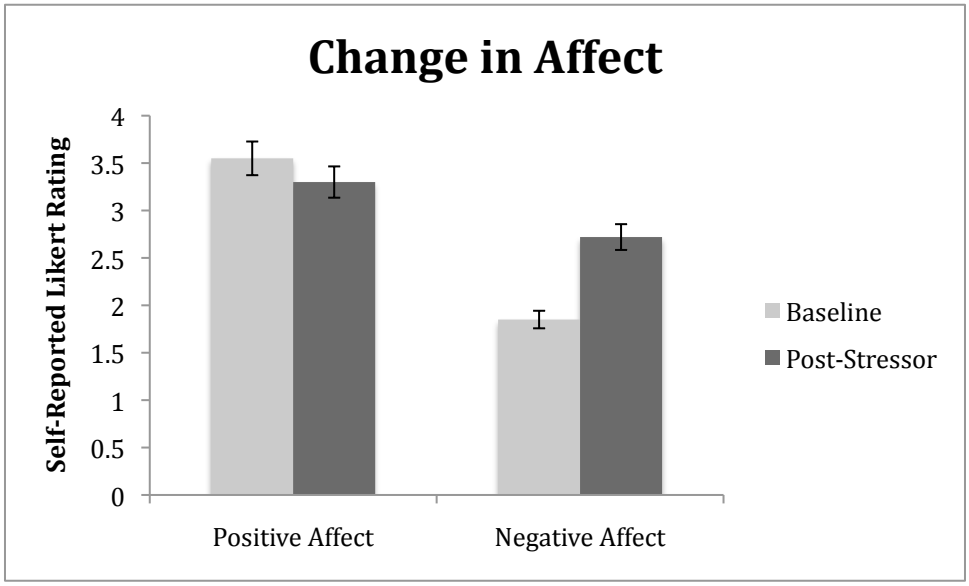

Figure 5: Study 2 Initial Session Change in Affect from Before to After Stressor

In the follow-up session, there was not a significant change in Positive Affect (p=0.69, *ns*) or Negative Affect (p=0.87, *ns*). There was, however, a significant decrease in Systolic BP ($t_{(24)}$=3.36; p<0.003, d=0.67), but no significant change in Diastolic BP (p=0.63, *ns*) from before to after the stressor task in the follow-up session. See *Appendix F* for analyses.

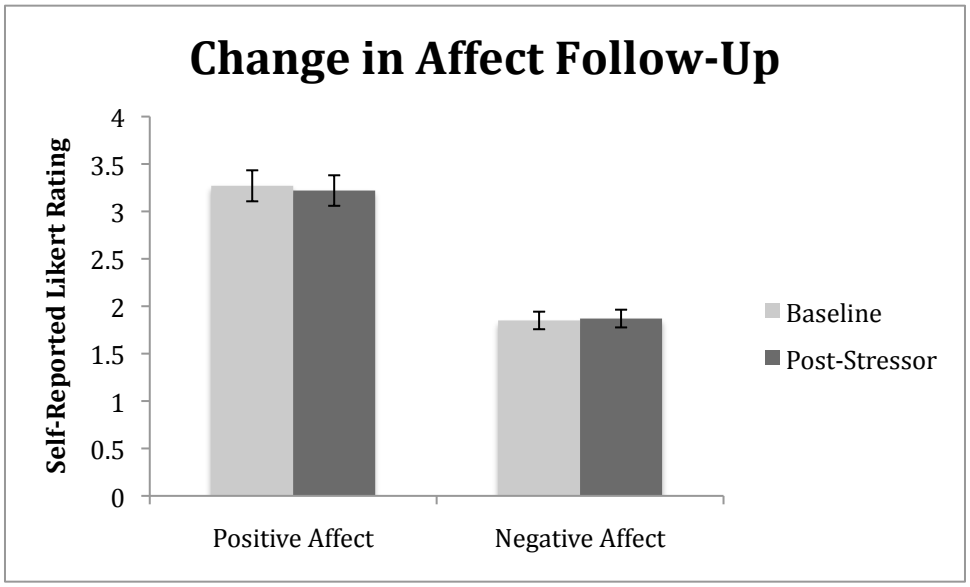

Figure 6: Study 2 Follow-Up Session Change in Affect from Before to After the Stressor Task

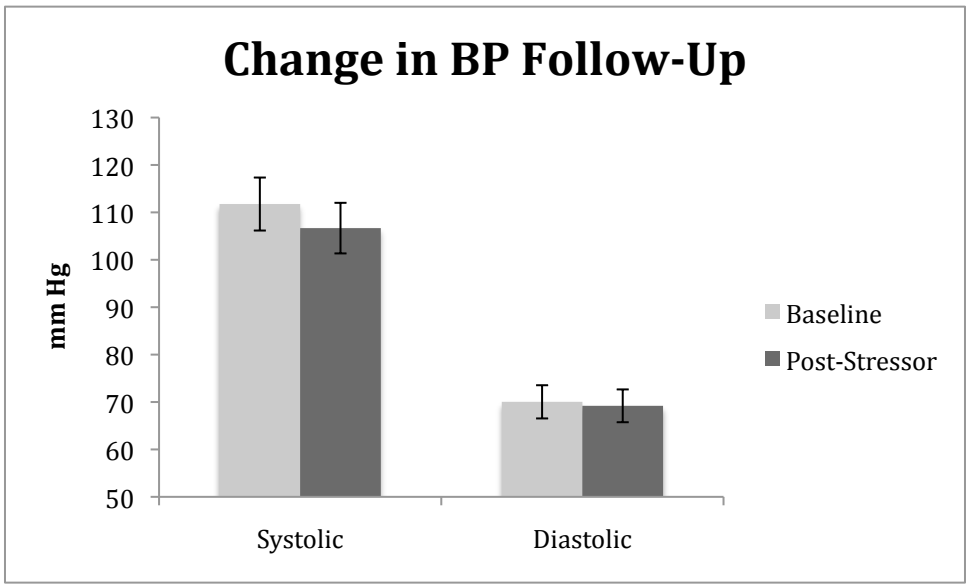

Figure 7: Study 2 Follow-Up Session Change in Systolic and Diastolic Blood Pressure from Before to After the Stressor

Comparison Between Groups & Across Weeks

All means between the positive and negative writing conditions were not significantly different with the exception of Week 3, where the negative group had significantly higher Negative Affect ($t_{(26)}$=-2.51; p<0.02, d=0.97) and the positive group has significantly higher Satisfaction with Life ($t_{(27)}$=2.63; p<0.02, d=1.02). There were no significant differences within condition from Week 1 to 2. Perceived Stress significantly decreased from Week 2 to Week 3 in the positive group ($t_{(11)}$=2.26; p<0.05, d=0.65) and Negative differentiation significantly decreased from Week 2 to Week 3 in the negative group ($t_{(14)}$=2.61; p<0.03, d=0.25). The decrease from Week 1 to Week 3 in Negative differentiation was also significant ($t_{(14)}$=3.38; p<0.005, d=0.32). Besides the above-mentioned differences, lack of numerous significant differences across the weekly surveys was actually not unexpected because theoretically these personality dimensions and differentiation tendencies would be fairly stable. Our results confirmed this over the 3-week period. For more details on these comparisons please see *Appendix J*.

Correlations & Regression

Differentiation during Week 1 in the negative condition was positively correlated with Subjective Happiness for that group during Week 1 ($r_{(14)}$=0.48, p=0.060, marginally significant). The negative correlation between Week 1 Differentiation in the positive group and the degree to which the participants used social references in their writing sample also approached significance ($r_{(12)}$=-0.52, p=0.054). The same was true for the negative group in Week 2; Differentiation approached significance in its negative correlation to use of social references in the writing sample ($r_{(13)}$=-0.50, p=0.060). Differentiation in Week 2 in

the positive group was significantly negatively correlated with negative emotion words in the writing sample ($r_{(11)}$=-0.72, p<0.006, d=1.17) as well as length of the writing sample ($r_{(11)}$=-0.59, p<0.05, d=1.02). Finally, Differentiation in the positive group in Week 3 was also negatively correlated with length of Week 3's writing sample ($r_{(12)}$=-0.57, p<0.05, d=0.99). See *Appendix K*.

To get a better idea for how this might play out with a larger sample, I collapsed the data by week so it was only divided into 2 groups (positive and negative writing groups), then collapsed the groups into one sample, which contained repeating data points for each participant. Because there were not great differences between groups or within groups over time, combining the data was meant to bolster the sample size to see what trends may emerge when the study is conducted with adequate power. After collapsing the separation of the weeks within the positive and negative groups, greater Differentiation predicted shorter length of writing in the positive group ($F_{(1,39)}$=12.72, $R^2_{(Adj)}$=0.23, p<0.001) and after further collapsing the positive and negative groups into one sample, Differentiation negatively predicted length of writing ($F_{(1,85)}$=6.55, $R^2_{(Adj)}$=0.06, p<0.02) and use of negative emotion words ($F_{(1,85)}$=3.98, $R^2_{(Adj)}$=0.03, p<0.05), contrary to the hypotheses. Differentiation in the follow-up session also positively predicted Change in Negative Affect when controlling for Change in Positive Affect ($F_{(2,27)}$=8.25, $R^2_{(Adj)}$=0.33, p<0.002) and negatively predicted Change in Positive Affect when controlling for Change in Negative Affect ($F_{(2,27)}$=9.33, $R^2_{(Adj)}$=0.36, p<0.001). *See Appendix L.*

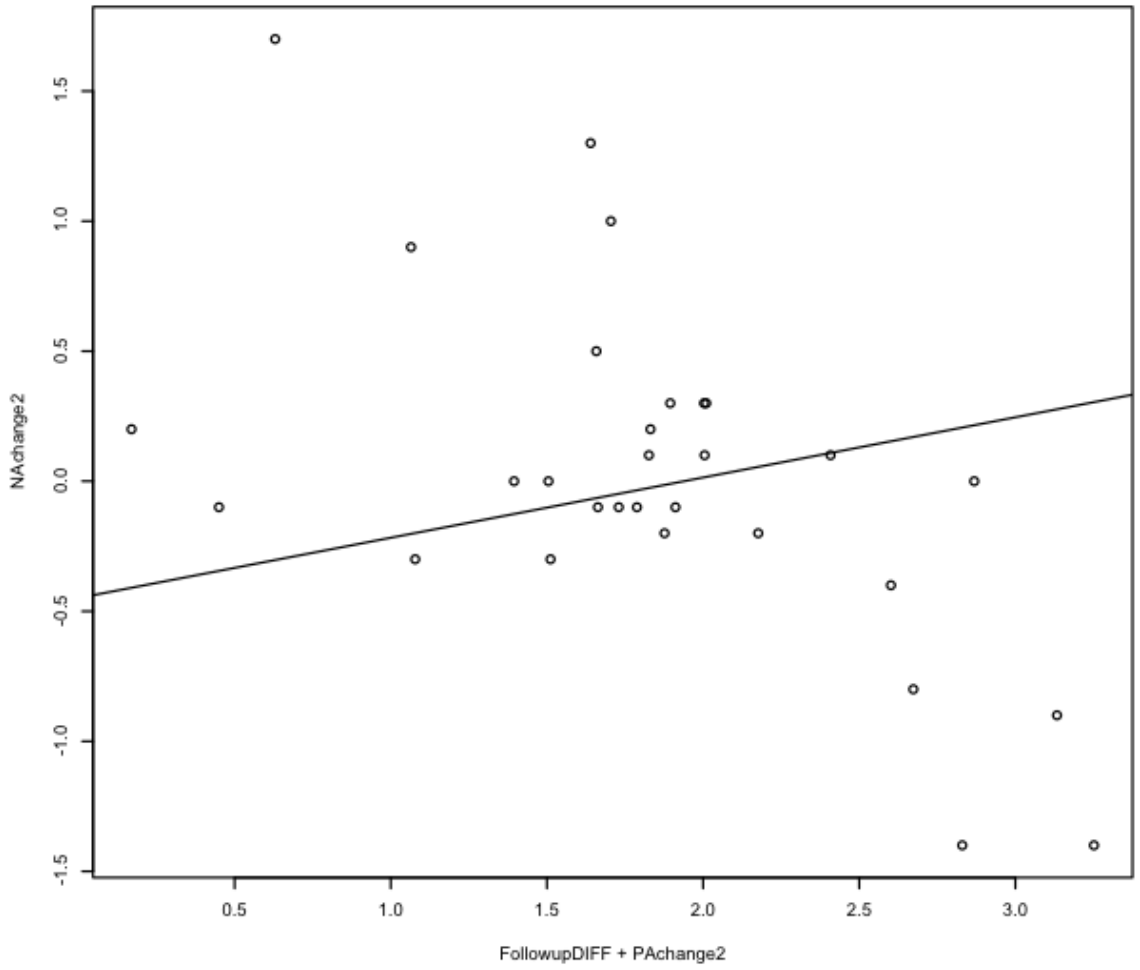

Figure 8: Differentiation Score in the Follow-Up Session + Change in Positive Affect Predicting Change in Negative Affect from Before to After Stressor

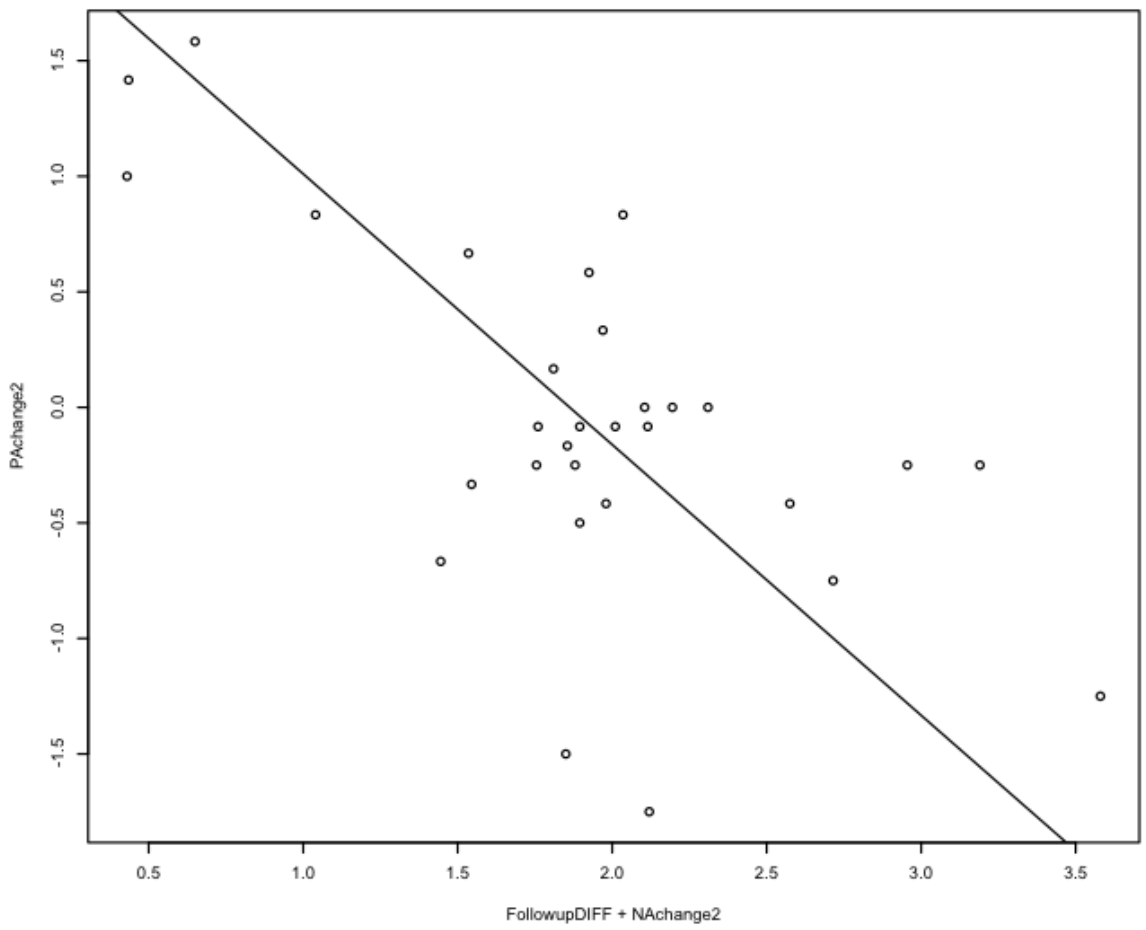

Figure 9: Differentiation Score in the Follow-Up Session + Change in Negative Affect Predicting Change in Positive Affect from Before to After Stressor

CHAPTER IV

DISCUSSION

Emotions relate humans to one another because they are nearly universally experienced to some degree or another (Gross, 1998). The aim of this study was to explore the relationship between emotion granularity and the management of acute and chronic stress. Overall, the data provide evidence that negative emotions tended to be more differentiated than positive emotions, as well as further evidence for the DOPES measure (Smith et al., 2014; Kirby et al., 2014). The results also introduce promising evidence for a negative version of the DOPES, here called the DONES, as a measure of differentiation of negative emotions. Further exploration and validation of this measure could be a possible path for future research. The finding that participants differentiated negative emotions to a greater degree than they differentiated positive emotions seems consistent with the hypothesis that differentiation provides enriched information because we would likely need and get more information from negative emotional experiences than positive ones, and thus it is more advantageous to differentiate among them because they may pose an immediate threat to our safety (Smith et al., 2014; Barrett et al., 2001). Although negative emotions were more differentiated than positive emotions, the data also show that the degree of differentiation was correlated, suggesting that there are individual differences in granularity and those who differentiate between negative emotions more greatly also differentiate more greatly between positive emotions. Differentiation of negative emotions was shown to be predictive of level of positive affect after a stressful task. We did not find

evidence that differentiation was predictive of negative affect after an acute stressor and therefore we failed to reject the null hypothesis on Study 1.

Study 2 provided preliminary evidence for the longitudinal study currently being continued. So far, it has shown that the personality and differentiation dimensions being studied are stable over time (more specifically, a 3-week period). Although the writing task was not meant to be an intervention, but rather mirror the positive and negative distinction in the differentiation measure, the differences within the positive and negative groups over time yielded intriguing findings for an intervention-based adaptation of the task. For example, the positive group showed increased satisfaction with life in Week 3 while the negative group showed increased negative affect in Week 3. Perceived stress also significantly decreased in the positive group from Week 2 to Week 3 and tendency to differentiate negative emotions decreased from Week 1 to Week 3, suggesting that we may be more prone to differentiate when we are in a positive mood. Pennebaker's research has been influential in describing emotionally driven writing as an intervention treatment, providing a wide variety of benefits such as psychological well-being and even improved physical health (1997). Although the relationships discovered in the current study are not causal and cannot be attributed solely to the writing task, the results provided some interesting insight and supporting evidence that could help in the formation of future studies or emotion intervention programs. Many of the relationships did not emerge until Week 3, so perhaps a longer intervention period would be helpful in clarifying associations.

Other encouraging trends emerged from the data including differentiation's positive relationship to subjective happiness, use of fewer negative emotion words in writing, and change in negative affect. However, the picture the data takes of emotions differentiation

remains complicated by the fact that greater differentiation was also related to less social referencing in writing and shorter writing samples. This presents a possible challenge to the broadening capabilities of increased differentiation. Another challenging aspect of the results was that differentiation during the follow-up session positively predicted change in negative affect when controlling for change in positive affect. This effect stands in contrast to the original hypothesis, because a positive change score indicates an increase in negative affect from before to after the stressor. Possible explanations could be that the sample size may have been too small to determine a clear trend, or, that emotion differentiation may not lead to effective stress management in the hypothesized way (by either blunting negative affect or rapidly recovering from a stressor), but rather lead to a greater emotional reaction initially (as evidenced by increased negative affect and decreased positive affect from before to after the stressor task), with it being unclear, at least within the current study, about what the longer-term outcomes may be.

Moving forward, the emotion profile graphs were helpful in mapping out which vignettes were effective in differentially eliciting an emotion and which could use improvement. Our lab is working on modifying those vignettes for future studies. Possible limitations included the time specificity of the blood pressure measurement. Our findings were consistent in previous research in that systolic blood pressure was more reactive than diastolic blood pressure (Hilmert & Kvasnicka, 2010). However, because systolic blood pressure significantly decreased in both samples, it could be that we are targeting the recovery rather than the stress response itself or anticipation period (when the experimenter was giving the instructions for the task). Other studies have measured blood pressure before and during the Trier Social Stress Test (Hilmert & Kvasnicka, 2010). When

we are taking the measurement, the participant could be relieved that the task is over or they may have habituated from the initial stress towards hearing they will need to perform a mental math task on which they will be evaluated. The proximity of the participants' last error (and restart) to the end of the 3 minutes could have an effect on blood pressure and emotion ratings, which were collected at the conclusion of the 3 minutes because if they made errors in the beginning but towards the end have improved, they may feel not as badly as they would if they had just made an error and had to start over. Participants may be recovering over the course of the task and end on a positive note from saying the correct numbers. Although the blood pressure findings were significant, they may not be an accurate indication of stress management (Hilmert & Kvasnicka, 2010).

Other limitations include a possible learning effect on the math task. There was a significant change in affect as a result of the stress manipulation in Study 1 and the initial session of Study 2, but not the follow-up session. Although we tried to reduce learning effects by having a different starting number to avoid remembering the numbers from participants' initial session, there may have been learning effects in terms of the strategy used during the math task (such as subtracting 10 and then 3), which could have carried over to the follow-up session making the task less stressful. In order to explore the idea that they may have been a learning effect, I compared the number of errors (restarts) participants made during the task in the initial and follow-up sessions. Participants made significantly more errors in the initial than in the follow-up session when looking at the baselines from Study 1 and 2 combined, compared to the follow-up in Study 2 ($t_{(45)}$=2.09; p<0.05). The difference became even more significant when looking specifically at the paired number of restarts in participants completing the task twice - in both the initial and

follow-up session in Study 2 ($t_{(29)}$=3.44; p<0.002; See *Appendix M* for full analyses). Participants could have been expecting the task due to the similar structure of the initial and follow-up sessions, making the task not as novel as the first time they encountered it. Anecdotally, in observing participants performing the mental math task, there were notable instances of challenge or threat; some participants started the task right away, moving quickly throughout and others immediately gave a disclaimer that they were bad at math and did not think they could do it. This is interesting in terms of regulation because reappraisal is often used in the moment of the stressor, in this case during the task or even as instructions were being read (Jamieson et al., 2013). Future studies may benefit from taking note of and quantifying these observations if a similar task is used.

This work could be improved by enrolling more subjects in the longitudinal study, spanning the weekly surveys over a longer period of time, and supplementing blood pressure and self-reported affect with additional measures of stress reactivity, such as skin conductance or coping questionnaires. These suggestions would hopefully strengthen this work to help provide clearer implications. This research is an important step in further understanding emotion differentiation - a topic that has not been explored in emotion research until recently- including its ecologically valid measurements and correlates. The prevalence and impact of emotions in everyday life make them not only an important domain to understand in psychology, but also vital in shedding light on possible health outcomes and areas for intervention.

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Appendix

Appendix A: Study 1 Surveys

Attitudes, Health & Task Performance

Please complete the survey below.

Thank you!

Participant ID Number _____

Experimenter

- ◯ Kellie
- ◯ Katherine
- ◯ Gabi
- ◯ Maddy
- ◯ Grace

Baseline or Follow-Up session

- ◯ Baseline
- ◯ Follow-up

Condition

- ◯ P
- ◯ N

Vanderbilt University

INFORMATION PAGE AND CONSENT TO PARTICIPATE IN RESEARCH

Experience & Adjustment in College Life

You are asked to take part in a research study by Professor Leslie Kirby in the Department of Psychology. You are being asked to take part because you are an undergraduate student at Vanderbilt. You are free to decide whether you would like to take part in this study.

Why is this study being done?

The researchers are studying the types of experiences that students have and various measures of adjustment. About 200 people will participate in this study.

What will happen if I take part in this research study?

If you take part in this study, you will be complete an initial laboratory session, followed by three weekly surveys, and then a final laboratory session. The two laboratory sessions will take approximately one hour, and the three weekly surveys will take about 40 minutes. The surveys ask about your background, general attitudes, and the types of experiences you have as a college student.

You can do your surveys at home or any place with internet access. The weekly surveys will be completed online, and you do not need to come into the lab to complete them.

How long will I be in the research study?

Participation in the study will last 4 weeks.

Are there any potential risks or discomforts that I can expect from this study?

Some of the questions may make you feel uncomfortable. You are free to skip any question or to stop at any time.

Are there any potential benefits if I participate?

Other than helping you to apply your knowledge of psychology in a scientific setting, there are no direct benefits to you for participating in this research study.

Will I receive any payment if I participate in this study?

For your initial laboratory session today, you will receive two SONA credits. You will receive 1 SONA credit for each of the weekly surveys (3 total) and 2 SONA credits for the follow-up laboratory session. In addition, you will also receive 3 bonus credits at the follow-up session if you comple the entire study. Thus, participants who complete the initial session, weekly surveys, and follow-up session will receive 10 SONA credits total.

Will information about me be kept confidential?

All personal information that is obtained through this study will remain confidential. It will be disclosed only with your permission or as required by law. The only piece of data with the potential to link your writing and survey responses to you will be your email address. This is necessary so that we can link your responses to your previous responses and so that we can determine which components of the study you completed for the purposes of assigning credit. Please do not include any other information that identifies you in your survey responses or essays. REDCap is a secure website through which you will complete surveys and essays. The completed surveys and essays will be kept secure; only the researchers will have access to completed surveys and essays. If the results of this study are shared, your email address and any other information that might identify you will first be removed.

Withdrawal of participation by the investigator

The investigator may withdraw you from the study if necessary. If for you are unable to complete your assigned writing, you may have to drop out. The investigator will let you know if it is not possible for you to continue. This may be either to protect you, or because you are not able to complete the assignments.

What are my rights if I take part in this study?

You may withdraw your consent at any time and drop out of the study without penalty.

You can choose whether or not you want to be in this study. If you volunteer to be in this study, you may leave the

study at any time. You are not waiving any of your legal rights if you choose to be in this research study. You may refuse to answer any questions that you do not want to answer and still stay in the study.

Who can answer questions I might have about this study?

In the event of a research related injury, please contact the researchers right away. You can reach the study coordinator, Kellie, at kellie.m.kuzmuk@vanderbilt.edu. If you have any questions or concerns, you can talk to the researcher. You may also contact the principal investigator for the study, Dr. Leslie Kirby. You can reach Dr. Kirby at (615) 322-0059.

If you want to talk to someone other than the researcher, please call a Research Subject Advocate at (615) 322-2918 or (866) 224-8273. You can also write to Vanderbilt Human Research Protection Program, 1313 21st Ave. South, 504 Oxford House, Nashville, TN 37232-4315.

CONSENT OF STUDY PARTICIPANT

◯ I have read and I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study.
◯ I do not agree to participate in this study.

This study has multiple parts that you will complete over the course of the semester. Please provide your email address in the space below. Your email address will only be used to link your surveys and will not be stored with your survey data.

_____

Please respond to the items below by indicating one response per statement. Thank you!

I don't experience many different feelings in everyday life.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you been upset because of something that happened unexpectedly?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I am aware of the different nuances or subtleties of a given emotion.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you felt that you were unable to control the important things in your life?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I have experienced a wide range of emotions throughout my life.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you felt nervous and "stressed"?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

Each emotion has a very distinct and unique meaning to me.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you dealt successfully with irritating life hassles?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I usually experience a limited range of emotions.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you felt that you were effectively coping with important changes that were occurring in your life?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I tend to draw fine distinctions between similar feelings (e.g., depressed and blue; annoyed and irritated).

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you felt confident about your ability to handle your personal problems?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I experience a wide range of emotions.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you felt that things were going your way?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

Please continue

I am aware that each emotion has a completely different meaning.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you found that you could not cope with all the things you had to do?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I don't experience a variety of feelings on an everyday basis.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you been able to control irritations in your life?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

If emotions are viewed as colors, I can notice even small variations within one kind of color (emotion).

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you felt that you were on top of things?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

Feeling good or bad --- those terms are sufficient to describe most of my feelings in everyday life.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you been angered because of things that happened that were outside of your control?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I am aware of the subtle differences between feelings I have.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you found yourself thinking about things that you have to accomplish?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I tend to experience a broad range of different feelings.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you been able to control the way you spend your time?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

I am good at distinguishing subtle differences in the meaning of closely related emotion words.

◯ strongly disagree ◯ somewhat disagree ◯ neither agree nor disagree ◯ somewhat agree ◯ strongly agree

In the last week, how often have you felt difficulties were piling up so high that you could not overcome them?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

For the next set of questions, you will see brief descriptions of 8 hypothetical situations. Each situation is followed by a series of questions.For each situation please try to imagine yourself in the situation as vividly as you can. If such a situation happened to you, how do you think you would be feeling while you were in this situation? When you are imagining yourself in the situation as vividly as you can, please answer the questions that follow the description to rate your feelings. When you have answered all the questions for one situation you should go on to the next situation, until you have imagined yourself in all 8 situations. There are no right or wrong answers. Please try to answer every question as best you can, and make it true for you.The First Situation:You are hiking up a hill through a thick woods. It was raining earlier, but the rain stopped a short time ago, and the sun is now shining. All of a sudden, you come to a clearing near the top of the hill, and enter a beautiful meadow filled with wildflowers and butterflies. A clear stream is running through the meadow, and there is a rainbow in the sky. Off in the distance you can see some snow-capped peaks from a nearby mountain range.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You have been spending a fair bit of time trying to solve a difficult problem that is part of an important project you have been working on. So far you have been unable to solve the problem, but you believe that a solution is possible and you know that if you keep at it, you will be able to solve the problem and make the project a success.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

After working very hard for several weeks, you are finally able to take some time off. Right now you are relaxing on the beach. There is a nice breeze, you have a drink, and you are relishing the knowledge that there's nothing at all you need to be doing right now.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You are walking around in a strange city, and suddenly realize that you are lost. As you are standing at a street corner, intensely studying your map to try to figure out where you are, someone comes up to you and asks you in a friendly way where you are trying to go. After you tell this person, s/he says that s/he is headed that way and suggests you go together. Within a few minutes this person has taken you to your destination, having pointed out some interesting sights along the way.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You're at a party on Saturday night in honor of your friend's wedding anniversary. You're with a group of close friends and family members, and the atmosphere is festive. You generally like special occasions like this when everyone comes together to have fun. Everyone, including you, is laughing and dancing, and having a great time.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Things in your life have been somewhat difficult lately, but you are optimistic about what lies ahead. You know that there are new opportunities available to help things get better, and they seem promising. You trust that things will be better soon. You are looking forward to good things to come and a bright future ahead. You are thinking about the positive change that can happen.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Motivated // Determined

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

A public figure that you admire has come to town, and you have the opportunity to hear this person speak. You are out for the evening to attend the talk. It is a topic you have wanted to know more about for a long time. You have settled into your chair. The speaker, who has just been introduced, is beginning the presentation.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You have been working very hard on a group project. The rest of your group members have been contributing, but you have gone the extra distance for the project. You know that the project wouldn't be nearly as good as it is had you not worked so hard. Your group has just presented the project and it is extremely well received. As your group is receiving praise for an excellent job, a member of your group speaks up and indicates that the group owes its success to you; that you had really pulled the project together. The other members of the group start spontaneously applauding you and your efforts.

Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Please respond to each item by selecting one button per row.

In general, would you say your health is:

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

In general, would you say your quality of life is:

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

In general, how would you rate your physical health?

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

In general, how would you rate your mental health, including your mood and your ability to think?

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

In general, how would you rate your satisfaction with your social activities and relationships?

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

In general, please rate how well you carry out your usual social activities and roles. (This includes activities at home, at work and in your community, and responsibilities as a parent, child, spouse, employee, friend, etc.)

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?

◯ 1 not at all ◯ 2 a little ◯ 3 moderately ◯ 4 mostly ◯ 5 completely

In the past 7 days...

How often have you been bothered by emotional problems such as feeling anxious, depressed or irritable?

◯ 1 never ◯ 2 rarely ◯ 3 sometimes ◯ 4 often ◯ 5 always

How would you rate your fatigue on average?

◯ 1 none ◯ 2 mild ◯ 3 moderate ◯ 4 severe ◯ 5 very severe

How would you rate your pain on average?

◯ 0 no pain ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 worst imaginable pain

Physical Function

	1 unable to do	2 with much difficulty	3 with some difficulty	4 with a little difficulty	5 without any difficulty
Are you able to do chores such as vacuuming or yard work?	◯	◯	◯	◯	◯
Are you able to go up and down stairs at a normal pace?	◯	◯	◯	◯	◯
Are you able to go for a walk of at least 15 minutes?	◯	◯	◯	◯	◯
Are you able to run errands and shop?	◯	◯	◯	◯	◯

AnxietyIn the past 7 days...

	1 never	2 rarely	3 sometimes	4 often	5 always
I felt fearful	◯	◯	◯	◯	◯
I found it hard to focus on anything other than my anxiety	◯	◯	◯	◯	◯
My worries overwhelmed me	◯	◯	◯	◯	◯
I felt uneasy	◯	◯	◯	◯	◯

DepressionIn the past 7 days...

	1 never	2 rarely	3 sometimes	4 often	5 always
I felt worthless	◯	◯	◯	◯	◯
I felt helpless	◯	◯	◯	◯	◯
I felt depressed	◯	◯	◯	◯	◯
I felt hopeless	◯	◯	◯	◯	◯

FatigueDuring/In the past 7 days...

	1 not at all	2 a little bit	3 somewhat	4 quite a bit	5 very much
I felt fatigued	◯	◯	◯	◯	◯
I have trouble starting things because I am tired	◯	◯	◯	◯	◯
How run-down did you feel on average?	◯	◯	◯	◯	◯
How fatigued were you on average?	◯	◯	◯	◯	◯

Sleep DisturbanceIn the past 7 days...

	1 not at all	2 a little bit	3 somewhat	4 quite a bit	very much
My sleep was refreshing	◯	◯	◯	◯	◯
I had a problem with my sleep	◯	◯	◯	◯	◯
I had difficulty falling asleep	◯	◯	◯	◯	◯

In the past 7 days...My sleep quality was:

◯ 1 very poor ◯ 2 poor ◯ 3 fair ◯ 4 good ◯ 5 very good

Satisfaction with Social RoleIn the past 7 days...

	1 not al all	2 a little bit	3 somewhat	4 quite a bit	5 very much
I am satisfied with how much work I can do (include work at home)	○	○	○	○	○
I am satisfied with my ability to work (include work at home)	○	○	○	○	○
I am satisfied with my ability to do regular personal and household responsibilities	○	○	○	○	○
I am satisfied with my ability to perform my daily routines	○	○	○	○	○

Pain InferenceIn the past 7 days...

	1 not at all	2 a little bit	3 somewhat	4 quite a bit	5 very much
How much did pain interfere with your day to day activities?	◯	◯	◯	◯	◯
How much did pain interfere with work around the home?	◯	◯	◯	◯	◯
How much did pain interfere with your ability to participate in social activities?	◯	◯	◯	◯	◯
How much did pain interfere with your household chores?	◯	◯	◯	◯	◯

In the past 7 days...How would you rate your pain on average?

◯ 0 no pain ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 worst imaginable pain

For the next set of questions, you will see brief descriptions of 8 hypothetical situations. Each situation is followed by a series of questions.

For each situation please try to imagine yourself in the situation as vividly as you can. If such a situation happened to you, how do you think you would be feeling while you were in this situation? When you are imagining yourself in the situation as vividly as you can, please answer the questions that follow the description to rate your feelings. When you have answered all the questions for one situation you should go on to the next situation, until you have imagined yourself in all 8 situations. There are no right or wrong answers. Please try to answer every question as best you can, and make it true for you.

The First Situation:
After a long hard fight with cancer you grandmother has died in her sleep. She was your role model and friend, and you spent many of her last days together. The doctors warned you that these would be her last days and you did all you could to be there for her. You leave the funeral service knowing that you have lost a very important person in your life.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You are about to fulfill a once in a lifetime dream and embark on a long hike up one of the largest peaks in the world. You have been preparing for over a year for the journey and have taken off several weeks of work to make the climb. You've planned your hike carefully during what is supposed to be the optimal time of year to attempt an ascent. After your first day of climbing, however, you are informed that a freak storm has set in, and no summit attempt will be possible. Although your life is not in danger now, you must turn back and abandon the climb.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You have spent the past month working on a project with a colleague. You have put in a lot of extra hours because your partner has consistently gone home early leaving you with the bulk of the work. Come presentation day, your colleague seems to be getting all the praise for your work, ignoring your contributions. To top it off as you are leaving, you discover that he has received a promotion for doing such an excellent job, now becoming your supervisor.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

At your first day at a new job you are getting lunch during your break in the company cafeteria. You gather your food and on your way out, you see the other people in your department waving for you to join them. They are seated in the eating area down a flight of stairs and as you descend the first step you trip, sending your food and belongings into the air. Covered in salad dressing you see the entire cafeteria of your coworkers staring at you wide-eyed.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

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◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You open your eyes. It's dark, and although you feel disoriented, you can make out the interior of your car. Your head feels warm and you feel blood rushing out. Bubbles float by your window and you realize you're under water. You need to get out. Reaching for the door, you cannot open it due to the pressure from the water and your electric windows will not roll down. You hear a cracking sound. A torrent of water begins to surge through the opposite window as the car sinks further. You know you are running out of time, so desperate to get out, you begin to panic and find yourself running out of air.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

It is a Monday. You are sitting at work in your cubicle staring at the screen. No non-work related tasks are permitted by the computer, and your phone has lost all its charge. You have finished your tasks and are waiting for your superiors to delegate a new assignment, but they will not be out of a staff meeting for another two hours. All you can do is wait at your desk until their return.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Your friend has just purchased a new car. She is very proud of it and says she feels great when she drives it. With a reunion coming up, you ask your friend to borrow her car. Although hesitant, she decides to lend you the car for the evening because you promise to keep it safe. On your way out of the driveway, you back the car into a tree, ruining the rear bumper. You know that the damage caused is completely your fault. As you tell your friend what has happened, she says it is alright, but you can tell that she is upset.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You turn on the evening news and begin listening to a story about parents who have abandoned their newborn child in front of an unknown house. The child has sustained severe injuries from being exposed to cold weather overnight. The news reporter begins to interview the parents who were seen fleeing the scene. You need to change the channel as you can see that the parents feel no sense of remorse for what they have done.

Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

What is your current age?

◯ 17
◯ 18
◯ 19
◯ 20
◯ 21
◯ 22
◯ 23
◯ other

Please enter your age. _____

What is your gender?

◯ Male
◯ Female
◯ Prefer not to say

With which race or ethnicity do you most strongly identify?

◯ Hispanic or Latino
◯ American Indian or Alaska Native
◯ Asian
◯ Black or African American
◯ Native Hawaiian or Other Pacific Islander
◯ White
◯ Other

Please enter with which ethnicity or race you most strongly identify. _____

My First Instrument

Please complete the survey below.

Thank you!

1) Participant ID Number _____

2) Experimenter Name
- ◯ Kellie
- ◯ Katherine
- ◯ Gabi
- ◯ Maddy
- ◯ Grace

3) Baseline or Follow-up
- ◯ Baseline
- ◯ Follow-up

4) Condition
- ◯ P
- ◯ N

Below are a number of adjective clusters that describe different emotions or feelings. EACH group of adjectives is meant to convert to a SINGLE basic emotion or feeling.

Please indicate the extent to which you were feeling an emotion in the current moment.

5) surprised --- astonished

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

6) defeated --- resigned --- beaten

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

7) relieved --- unburdened

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

8) tranquil --- calm --- serene

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

9) frustrated --- thwarted --- exasperated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

10) determined --- motivated --- persistent

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

11) grateful --- appreciative --- thankful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

12) interested --- engaged

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

13) mad --- angry --- irate

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

14) hopeful --- optimistic

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

15) bored --- detached --- uninterested

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

16) nervous --- anxious --- apprehensive

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

17) overwhelmed --- overloaded --- rattled

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

18) proud --- triumphant

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

19) afraid --- frightened --- scared

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

20) irritated --- annoyed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

21) amused

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

22) curious --- inquisitive

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

23) happy --- glad --- joyful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

24) eager --- enthused --- excited

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

25) embarrassed --- humiliated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

26) disappointed --- let down

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

27) satisfied --- content

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Appendix B: Study 1 Script

Master's Thesis Study Script (Initial and Follow-Up Session)

Name of Study: "Attitudes, Health, and Task Performance"
Description of Study: Participants will be asked to complete an approximately 1 hour in laboratory session where they will reflect on their beliefs and health and complete a brief performance assessment task. They will then complete 3 weekly surveys assessing changes in health and stress, which will be sent via e-mail (1 survey per week for 3 weeks). Surveys will take approximately 30 minutes to complete. At the end of the study, participants will schedule another in-laboratory visit to complete follow–up surveys and a brief cognitive task. Participants will receive 2 SONA credits for the completion of the initial study session, 1 SONA credit for each of the weekly surveys (3 total) and 2 SONA credits for the follow-up laboratory session. Participants will also receive 3 bonus credits at the follow-up session for completing the entire study. Thus, participants who complete the initial session, weekly surveys, and follow-up session will receive 10 SONA credits total.
Location: Wilson 210D
Contact info: Kellie Kuzmuk (708) 308-8929 kellie.m.kuzmuk@vanderbilt.edu

Setting up:

1. Refer to the participant sheet for the appropriate participant number and condition.
2. Open Firebox on the computer and open the bookmarked survey links in separate tabs (1. *DEAL 1* 2*. Baseline* 3. *DEAL 2*) if it is the initial session OR (1. *DEAL 3* 2. *Follow-up* 3. *DEAL 4*) if it is the follow-up session.
   DEAL 1= Baseline DEAL Initial Session
   DEAL 2= Post-task DEAL Initial Session
   DEAL 3= Baseline DEAL Follow-up Session
   DEAL 4= Post-task DEAL Follow-up Session
3. Fill out the first page of the survey with your name, the participant number, and condition.
4. Put on lab coat and wait for participant to arrive.

When the participant arrives:

5. Confirm that the participant is here for the correct study.
6. Seat the participant in a chair in front of the desktop computer.
7. Welcome the participant saying:
   "We know as a college student, you face many challenges socially and academically. This study aims to explore the relationship between your opinions, health, and performance on tasks, concepts that are relevant to your college experience. We hope that you will answer the questions asked of you to the best of your ability, because we hope these results will be beneficial to college-aged students".
8. Ask the participant to read through the electronic consent form and let you know if they have any questions.
   "Please read through this consent form outlining the study that is about to take place and let me know of you have any questions. Although precautions have been taken to minimize risks, please be aware that you may drop out of the study at any time for any reason"
9. Give the participant a Participant Information Sheet, filling in the appropriate dates.

"This sheet outlines the following phases of the study. Please read through it and let me know if you have any questions. I have filled in the dates you will be sent the weekly survey by e-mail. I would also like to schedule a follow-up session. Does this same day and time work on (state day 4 weeks later)?"
If the day works, please record it on the sheet and manually enroll the participant on SONA. If they are unsure:
"Please e-mail me when you are able to check your schedule and find a time to schedule the follow-up"

Protocol:

10. Blood Pressure
    Wrap the blood pressure strap around the participant's non-dominant arm with silver tube facing up and inward. Make sure the green power button is on.
    "In order to gain a more complete picture of your overall health, we are going to take your blood pressure. Are you right or left handed?"
    Press start.
    Write down the numbers that you see on the participant sheet under the appropriate columns. Also, add the participant number to the comments tag.
    If monitor is not connecting:

1. Turn the green light on
2. Go to Settings--> Bluetooth and click connect to Withings BP 57
3. Open the Withings app from closed (if you were already had it open close out of it and reopen it)
4. Place the monitor on the participant's arm (with the green light oriented towards the participant's face and the silver tube oriented to the top inside of their arm (along where your veins run))
5. Remind the participant to remain seated and hold still.

    If the monitor is unable to get a reading, readjust the cuff and try again. If, after 2 tries you cannot get a reading, move on, making a note of it in the comments section of the participant sheet. Also remind the participant that the monitor is tricky, and it is probably just a glitch.
    If the participant asks for information regarding their blood pressure, please show them the number and say: *"This is what are equipment says your blood pressure is. Because I am not a trained medical professional, I cannot offer an interpretation of what that means as far as your health. Please consult student health if you are concerned about your blood pressure."*

11. DEAL
    "To begin, we would like to collect information about how you are perceiving things as you come into the lab. Please fill out this survey, with regards to the CURRENT moment and let me know when you are finished."
12. Baseline survey (~20-30 minutes)
    "Next, we would like to gather some information on your attitudes and general health. Please fill out this survey and let me know when you are finished. Please respond to the survey as honestly as possible, as there are no right or wrong answers."
13. Math task (acute stressor) (from TSST, http://iniastress.org/tssp)
    If this is the initial session say:

"Now we are going to assess your performance on a mental math task. I would like you to continue subtracting 13 from 6,233 until I tell you to stop. You should try to do this as fast, but more importantly, as accurately as possible. Each time you say a wrong number I will let you know, and you will need to start again from 6,233. Just so you know, the average Vanderbilt undergraduate can make around 30 subtractions. Do you have any questions?"

If this is the follow-up session say:

"Next we would like to see how you perform on a math task. It will work like the task you had in the initial session, however, this time I would like you to continue subtracting 13 from 1,683 until I tell you to stop. You should try to do this as fast and accurately as possible. Each time you say a wrong number I will let you know, and you will need to start again from 1,683. Just so you know, on this task the average Vanderbilt undergraduate can make around 30 subtractions. Do you have any questions?"

For both initial and follow-up sessions say:

If not:

"You may begin."

If an error occurs:

"That's incorrect. Please start again from (6,233 or 1,683)."

After **3** minutes say:

"Please stop, time is up."

Keep a neutral expression throughout the task.

If the subject asks for feedback, please reply:

"I am not allowed to tell you that. We will give you information in the debriefing at the conclusion of the experiment."

If at any time the subject appears to be having an adverse reaction, i.e. begins to cry or seems overly agitated, you should ask the subject

"Are you okay?" or "Are you okay to continue?"

If the participant wants to end the study, please make a note if it and report it to Dr. Kirby. Also, skip ahead to the final DEAL and BP readings and continue from there.

Numbers to record during the task:

1. Number of mistakes
2. How far the participants makes it in each attempt (the last correct number that they say)

14. Follow-up Blood Pressure

Wrap the blood pressure strap around the participant's non-dominant arm with silver tube facing up.

"I am going to take your blood pressure again just as a follow-up to see if there are any changes"

Press start.

Write down the numbers that you see on the participant sheet under the appropriate column. Also, add the participant number to the comments tag before saving the number.

If monitor is not connecting:

1. Turn the green light on

2. Go to Settings--> Bluetooth and click connect to Withings BP 57
3. Open the Withings app from closed (if you were already had it open close out of it and reopen it)
4. Place the monitor on the participant's arm (with the green light oriented towards the participant's face and the silver tube oriented to the top inside of their arm (along where your veins run))
5. Remind the participant to remain seated and hold still.

If the monitor is unable to get a reading, readjust the cuff and try again. If, after 2 tries you cannot get a reading, move on, making a note of it in the comments section of the participant sheet. Also remind the participant that the monitor is tricky, and it is probably just a glitch.

If the participant asks for information regarding their blood pressure, please show them the number and say: *"This is what are equipment says your blood pressure is. Because I am not a trained medical professional, I cannot offer an interpretation of what that means as far as your health. Please consult student health if you are concerned about your blood pressure."*

15. End DEAL

"Please fill out this survey again, regarding your perceptions about the CURRENT moment."

16. *If it is the initial session follow *"Debrief INITIAL"*

****If it is the follow-up session, follow *"Debrief FOLLOW-UP"*

Debrief INITIAL:

17. End experiment/Debrief

"**That is all for the initial session today. Your performance on the task will be assessed after your follow-up session in 4 weeks. Please remember to complete the weekly surveys that you will receive via e-mail for the next 3 weeks. Each should take around 30 minutes and after it is sent, you will have 48 hours to complete it. Also don't forget to schedule a time for your follow-up session. Do you have any questions?"**

If not:

"Thank you for your participation, you should receive an e-mail shortly that you have received your SONA credits. Have a great day!"

Debrief FOLLOW-UP:

17. End experiment/Debrief

"That is all we have for you today. The purpose of the experiment is to compare emotion differentiation ability in managing acute and chronic stress. This was meant to be the acute stress part of the study and the surveys you have been taking over the past 3 weeks will be used to examine chronic stress. The counting backwards math task was meant to be an acute stressor and your performance was not being assessed, only your change in mood from before and after the task. Do you have any questions?"

If not:

"Thank you for your participation, you should receive an e-mail shortly that you have received your SONA credits. Have a great day!"

** For both initial and follow-up sessions:

18. Grant SONA credits
    Log into SONA and change the radio button under the participant name and time slot from “No Action” to “Participated”

Close Lab:

19. If no participant is scheduled immediately following your time slot, be sure to shut down the computer, turn off the lights, and lock both the computer and lab room doors.

Please feel free to call, text, or email me if anything comes up during the experiment or if you have any questions!

Appendix C: Study 2 Surveys

Master's Thesis Survey

Please complete the survey below.

Thank you!

1) Please enter your Vanderbilt e-mail address (@vanderbilt.edu) _____

2) Reflecting back on this past week, please write a short paragraph of at least 7 sentences about the BEST thing that happened to you this week. _____

3) Over the past week, how many times have you been to student health?

◯ 0 ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ more than 4

4) Over the past week, about how many hours have you slept per night? (Please provide your best estimate.)

◯ 0 ◯ 1-3 ◯ 4-6 ◯ 7-9 ◯ 9-11 ◯ Over 11

5) Over the past week, how many times have you felt ill or not quite right?

◯ 0 ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ more than 4

Please respond to the following survey by considering each of the statements that follow and using the rating scale to indicate your response. Please select one answer for each question. Thank you!

6) In the last week, how often have you been upset because of something that happened unexpectedly?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

7) In the last week, how often have you felt that you were unable to control the important things in your life?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

8) In the last week, how often have you felt nervous and "stressed"?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

9) In the last week, how often have you dealt successfully with irritating life hassles?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

10) In the last week, how often have you felt that you were effectively coping with important changes that were occurring in your life?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

11) In the last week, how often have you felt confident about your ability to handle your personal problems?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

12) In the last week, how often have you felt that things were going your way?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

13) In the last week, how often have you found that you could not cope with all the things you had to do?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

14) In the last week, how often have you been able to control irritations in your life?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

15) In the last week, how often have you felt that you were on top of things?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

16) In the last week, how often have you been angered because of things that happened that were outside of your control?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

17) In the last week, how often have you found yourself thinking about things that you have to accomplish?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

18) In the last week, how often have you been able to control the way you spend your time?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

19) In the last week, how often have you felt difficulties were piling up so high that you could not overcome them?

◯ never ◯ almost never ◯ sometimes ◯ fairly often ◯ very often

Please respond to the following items, indicating the degree to which you agree or disagree with the statements.

20) In most ways my life is close to ideal.

◯ strongly disagree ◯ disagree ◯ somewhat disagree ◯ neither agree nor disagree
◯ somewhat agree ◯ agree ◯ strongly agree

21) The conditions of my life are excellent.

◯ strongly disagree ◯ disagree ◯ somewhat disagree ◯ neither agree nor disagree
◯ somewhat agree ◯ agree ◯ strongly agree

22) I am satisfied with my life.

◯ strongly disagree ◯ disagree ◯ somewhat disagree ◯ neither agree nor disagree
◯ somewhat agree ◯ agree ◯ strongly agree

23) So far I have gotten the important things I want in life.

◯ strongly disagree ◯ disagree ◯ somewhat disagree ◯ neither agree nor disagree
◯ somewhat agree ◯ agree ◯ strongly agree

24) If I could live my life over, I would change almost nothing.

◯ strongly disagree ◯ disagree ◯ somewhat disagree ◯ neither agree nor disagree
◯ somewhat agree ◯ agree ◯ strongly agree

Below are a number of adjective clusters that describe different emotions or feelings. EACH group of adjectives is meant to convert to a SINGLE basic emotion or feeling.

Please indicate the extent to which you were feeling an emotion in the current moment.

25) surprised --- astonished

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

26) defeated --- resigned --- beaten

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

27) relieved --- unburdened

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

28) tranquil --- calm --- serene

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

29) frustrated --- thwarted --- exasperated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

30) determined --- motivated --- persistent

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

31) grateful --- appreciative --- thankful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

32) interested --- engaged

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

33) mad --- angry --- irate

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

34) hopeful --- optimistic

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

35) bored --- detached --- uninterested

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

36) nervous --- anxious --- apprehensive

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

37) overwhelmed --- overloaded --- rattled

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

38) proud --- triumphant

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

39) afraid --- frightened --- scared

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

40) irritated --- annoyed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

41) amused

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

42) curious --- inquisitive

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

43) happy --- glad --- joyful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

44) eager --- enthused --- excited

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

45) embarrassed --- humiliated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

46) disappointed --- let down

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

47) satisfied --- content

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

For each of the following statements and/or questions, please select the point on the scale that you feel is most appropriate in describing you.

48) In general, I consider myself:

◯ 1 not a very happy person ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 a very happy person

49) Compared with most of my peers, I consider myself:

◯ 1 less happy ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 more happy

50) Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 a great deal

51) Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 a great deal

Please respond by considering each of the statements that follow and using the rating scale to indicate your response. Please select one answer for each question. Thank you!

52) I engage in physical exercise on a daily basis.

◯ never ◯ sometimes ◯ usually ◯ always

53) I engage in one/more of the following forms of exercise: walking, jogging/running or weightlifting.

◯ never ◯ sometimes ◯ usually ◯ always

54) I exercise more than three days per week.

◯ never ◯ sometimes ◯ usually ◯ always

55) When I don't exercise I feel guilty.

◯ never ◯ sometimes ◯ usually ◯ always

56) I sometimes feel like I don't want to exercise, but go ahead and push myself anyways.

◯ never ◯ sometimes ◯ usually ◯ always

57) My best friend likes to exercise.

◯ never ◯ sometimes ◯ usually ◯ always

58) When I miss an exercise session, I feel concerned about my body possibly getting out of shape.

◯ never ◯ sometimes ◯ usually ◯ always

59) If I have planned to exercise at a particular time and something unexpected comes up (like an old friend comes to visit or I have some work to do that needs immediate attention) I will usually skip my exercise for that day.

◯ never ◯ sometimes ◯ usually ◯ always

60) If I miss a planned workout, I attempt to make up for it the next day.

◯ never ◯ sometimes ◯ usually ◯ always

61) I may miss a day of exercise for no good reason.

◯ never ◯ sometimes ◯ usually ◯ always

62) Sometimes, I feel a need to exercise twice in one day, even though I may feel a little tired.

◯ never ◯ sometimes ◯ usually ◯ always

63) If I have overeaten, I will try to make up for it by increasing the amount I exercise.

◯ never ◯ sometimes ◯ usually ◯ always

64) When I miss a scheduled exercise session, I may feel tense, irritable, or depressed.

◯ never ◯ sometimes ◯ usually ◯ always

65) Sometimes, I find that my mind wanders to thoughts about exercising.

◯ never ◯ sometimes ◯ usually ◯ always

66) I have had daydreams about exercising.

◯ never ◯ sometimes ◯ usually ◯ always

67) I keep a record of my exercise performance, such as how long I work out, or how far or fast I run.

◯ never ◯ sometimes ◯ usually ◯ always

68) I have experienced a feeling of euphoria or a "high" during or after an exercise session.

◯ never ◯ sometimes ◯ usually ◯ always

69) I frequently "push myself to the limits."

◯ never ◯ sometimes ◯ usually ◯ always

70) I have exercised when advised against such activity (i.e. by a doctor, friend, ect.)

◯ never ◯ sometimes ◯ usually ◯ always

71) I will engage in other forms of exercise if I am unable to engage in my usual form of exercise.

◯ never ◯ sometimes ◯ usually ◯ always

For the next set of questions, you will see brief descriptions of 8 hypothetical situations. Each situation is followed by a series of questions.

For each situation, please try to imagine yourself in the situation as vividly as you can. If such a situation happened to you, how do you think you would be feeling while you were in this situation? When you are imagining yourself in the situation as vividly as you can, please answer the questions that follow the description to rate your feelings. When you have answered all the questions for one situation you should go on to the next situation, until you have imagined yourself in all 8 situations. There are no right or wrong answers. Please try to answer every question as best you can, and make it true for you.

The First Situation: You are hiking up a hill through a thick woods. It was raining earlier, but the rain stopped a short time ago, and the sun is now shining. All of a sudden, you come to a clearing near the top of the hill, and enter a beautiful meadow filled with wildflowers and butterflies. A clear stream is running through the meadow, and there is a rainbow in the sky. Off in the distance you can see some snow-capped peaks from a nearby mountain range.

72) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

73) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

74) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

75) Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

76) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

77) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

78) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

79) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You have been spending a fair bit of time trying to solve a difficult problem that is part of an important project you have been working on. So far you have been unable to solve the problem, but you believe that a solution is possible and you know that if you keep at it, you will be able to solve the problem and make the project a success.

80) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

81) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

82) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

83) Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

84) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

85) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

86) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

87) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

After working very hard for several weeks, you are finally able to take some time off. Right now you are relaxing on the beach. There is a nice breeze, you have a drink, and you are relishing the knowledge that there's nothing at all you need to be doing right now.

88) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

89) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

90) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

91) Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

92) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

93) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

94) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

95) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You are walking around in a strange city, and suddenly realize that you are lost. As you are standing at a street corner, intensely studying your map to try to figure out where you are, someone comes up to you and asks you in a friendly way where you are trying to go. After you tell this person, s/he says that sh/he is headed that way and suggests you go together. Within a few minutes this person has taken you to your destination, having pointed out some interesting sights along the way.

96) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

97) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

98) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

99) Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

100) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

101) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

102) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

103) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You're at a party on Saturday night in honor of your friend's wedding anniversary. You're with a group of close friends and family members, and the atmosphere is festive. You generally like special occasions like this when everyone comes together to have fun. Everyone, including you, is laughing and dancing, and having a great time.

104) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

105) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

106) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

107) Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

108) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

109) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

110) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

111) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Things in your life have been somewhat difficult lately, but you are optimistic about what lies ahead. You know that there are new opportunities available to help things get better, and they seem promising. You trust that things will be better soon. You are looking forward to good things to come and a bright future ahead. You are thinking about the positive change that can happen.

112) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

113) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

114) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

115) Challenged // Motivated // Determined

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

116) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

117) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

118) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

119) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

A public figure that you admire has come to town, and you have the opportunity to hear this person speak. You are out for the evening to attend the talk. It is a topic you have wanted to know more about for a long time. You have settled into your chair. The speaker, who has just been introduced, is beginning the presentation.

120) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

121) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

122) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

123) Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

124) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

125) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

126) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

127) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You have been working very hard on a group project. The rest of your group members have been contributing, but you have gone the extra distance for the project. You know that the project wouldn't be nearly as good as it is had you not worked so hard. Your group has just presented the project and it is extremely well received. As your group is receiving praise for an excellent job, a member of your group speaks up and indicates that the group owes its success to you; that you had really pulled the project together. The other members of the group start spontaneously applauding you and your efforts.

128) Interested // Curious

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

129) Proud

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

130) Grateful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

131) Challenged // Determined // Motivated

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

132) Hopeful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

133) Happy

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

134) Awed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

135) Content // Satisfied

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Please respond to each item by selecting one button per row.

136) In general, would you say your health is:

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

137) In general, would you say your quality of life is:

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

138) In general, how would you rate your physical health?

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

139) In general, how would you rate your mental health, including your mood and your ability to think?

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

140) In general, how would you rate your satisfaction with your social activities and relationships?

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

141) In general, please rate how well you carry out your usual social activities and roles. (This includes activities at home, at work and in your community, and responsibilities as a parent, child, spouse, employee, friend, etc.)

◯ 1 Poor ◯ 2 Fair ◯ 3 Good ◯ 4 Very Good ◯ 5 Excellent

142) To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?

◯ 1 not at all ◯ 2 a little ◯ 3 moderately ◯ 4 mostly ◯ 5 completely

In the past 7 days...

143) How often have you been bothered by emotional problems such as feeling anxious, depressed or irritable?

◯ 1 never ◯ 2 rarely ◯ 3 sometimes ◯ 4 often ◯ 5 always

144) How would you rate your fatigue on average?

◯ 1 none ◯ 2 mild ◯ 3 moderate ◯ 4 severe ◯ 5 very severe

145) How would you rate your pain on average?

◯ 0 no pain ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 worst imaginable pain

Physical Function

	1 unable to do	2 with much difficulty	3 with some difficulty	4 with a little difficulty	5 without any difficulty
146) Are you able to do chores such as vacuuming or yard work?	○	○	○	○	○
147) Are you able to go up and down stairs at a normal pace?	○	○	○	○	○
148) Are you able to go for a walk of at least 15 minutes?	○	○	○	○	○
149) Are you able to run errands and shop?	○	○	○	○	○

AnxietyIn the past 7 days...

	1 never	2 rarely	3 sometimes	4 often	5 always
150) I felt fearful	○	○	○	○	○
151) I found it hard to focus on anything other than my anxiety	○	○	○	○	○
152) My worries overwhelmed me	○	○	○	○	○
153) I felt uneasy	○	○	○	○	○

DepressionIn the past 7 days...

	1 never	2 rarely	3 sometimes	4 often	5 always
154) I felt worthless	○	○	○	○	○
155) I felt helpless	○	○	○	○	○
156) I felt depressed	○	○	○	○	○
157) I felt hopeless	○	○	○	○	○

FatigueDuring/In the past 7 days...

	1 not at all	2 a little bit	3 somewhat	4 quite a bit	5 very much
158) I felt fatigued	○	○	○	○	○
159) I have trouble starting things because I am tired	○	○	○	○	○
160) How run-down did you feel on average?	○	○	○	○	○
161) How fatigued were you on average?	○	○	○	○	○

Sleep DisturbanceIn the past 7 days...

	1 not at all	2 a little bit	3 somewhat	4 quite a bit	very much
162) My sleep was refreshing	◯	◯	◯	◯	◯
163) I had a problem with my sleep	◯	◯	◯	◯	◯
164) I had difficulty falling asleep	◯	◯	◯	◯	◯

165) In the past 7 days...My sleep quality was:

◯ 1 very poor ◯ 2 poor ◯ 3 fair ◯ 4 good ◯ 5 very good

Satisfaction with Social RoleIn the past 7 days...

	1 not al all	2 a little bit	3 somewhat	4 quite a bit	5 very much
166) I am satisfied with how much work I can do (include work at home)	○	○	○	○	○
167) I am satisfied with my ability to work (include work at home)	○	○	○	○	○
168) I am satisfied with my ability to do regular personal and household responsibilities	○	○	○	○	○
169) I am satisfied with my ability to perform my daily routines	○	○	○	○	○

Pain InferenceIn the past 7 days...

	1 not at all	2 a little bit	3 somewhat	4 quite a bit	5 very much
170) How much did pain interfere with your day to day activities?	◯	◯	◯	◯	◯
171) How much did pain interfere with work around the home?	◯	◯	◯	◯	◯
172) How much did pain interfere with your ability to participate in social activities?	◯	◯	◯	◯	◯
173) How much did pain interfere with your household chores?	◯	◯	◯	◯	◯

174) In the past 7 days...How would you rate your pain on average?

◯ 0 no pain ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 worst imaginable pain

For the next set of questions, you will see brief descriptions of 8 hypothetical situations. Each situation is followed by a series of questions.

For each situation please try to imagine yourself in the situation as vividly as you can. If such a situation happened to you, how do you think you would be feeling while you were in this situation? When you are imagining yourself in the situation as vividly as you can, please answer the questions that follow the description to rate your feelings. When you have answered all the questions for one situation you should go on to the next situation, until you have imagined yourself in all 8 situations. There are no right or wrong answers. Please try to answer every question as best you can, and make it true for you.

The First Situation: After a long hard fight with cancer you grandmother has died in her sleep. She was your role model and friend, and you spent many of her last days together. The doctors warned you that these would be her last days and you did all you could to be there for her. You leave the funeral service knowing that you have lost a very important person in your life.

175) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

176) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

177) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

178) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

179) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

180) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

181) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

182) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You are about to fulfill a once in a lifetime dream and embark on a long hike up one of the largest peaks in the world. You have been preparing for over a year for the journey and have taken off several weeks of work to make the climb. You've planned your hike carefully during what is supposed to be the optimal time of year to attempt an ascent. After your first day of climbing, however, you are informed that a freak storm has set in, and no summit attempt will be possible. Although your life is not in danger now, you must turn back and abandon the climb.

183) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

184) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

185) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

186) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

187) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

188) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

189) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

190) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You have spent the past month working on a project with a colleague. You have put in a lot of extra hours because your partner has consistently gone home early leaving you with the bulk of the work. Come presentation day, your colleague seems to be getting all the praise for your work, ignoring your contributions. To top it off as you are leaving, you discover that he has received a promotion for doing such an excellent job, now becoming your supervisor.

191) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

192) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

193) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

194) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

195) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

196) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

197) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

198) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

At your first day at a new job you are getting lunch during your break in the company cafeteria. You gather your food and on your way out, you see the other people in your department waving for you to join them. They are seated in the eating area down a flight of stairs and as you descend the first step you trip, sending your food and belongings into the air. Covered in salad dressing you see the entire cafeteria of your coworkers staring at you wide-eyed.

199) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

200) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

201) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

202) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

203) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

204) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

205) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

206) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You open your eyes. It's dark, and although you feel disoriented, you can make out the interior of your car. Your head feels warm and you feel blood rushing out. Bubbles float by your window and you realize you're under water. You need to get out. Reaching for the door, you cannot open it due to the pressure from the water and your electric windows will not roll down. You hear a cracking sound. A torrent of water begins to surge through the opposite window as the car sinks further. You know you are running out of time, so desperate to get out, you begin to panic and find yourself running out of air.

207) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

208) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

209) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

210) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

211) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

212) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

213) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

214) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

It is a Monday. You are sitting at work in your cubicle staring at the screen. No non-work related tasks are permitted by the computer, and your phone has lost all its charge. You have finished your tasks and are waiting for your superiors to delegate a new assignment, but they will not be out of a staff meeting for another two hours. All you can do is wait at your desk until their return.

215) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

216) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

217) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

218) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

219) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

220) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

221) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

222) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Your friend has just purchased a new car. She is very proud of it and says she feels great when she drives it. With a reunion coming up, you ask your friend to borrow her car. Although hesitant, she decides to lend you the car for the evening because you promise to keep it safe. On your way out of the driveway, you back the car into a tree, ruining the rear bumper. You know that the damage caused is completely your fault. As you tell your friend what has happened, she says it is alright, but you can tell that she is upset.

223) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

224) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

225) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

226) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

227) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

228) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

229) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

230) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

You turn on the evening news and begin listening to a story about parents who have abandoned their newborn child in front of an unknown house. The child has sustained severe injuries from being exposed to cold weather overnight. The news reporter begins to interview the parents who were seen fleeing the scene. You need to change the channel as you can see that the parents feel no sense of remorse for what they have done.

231) Angry

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

232) Sad

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

233) Guilty

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

234) Fearful

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

235) Disgusted // Contemptuous

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

236) Resigned

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

237) Bored

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

238) Embarrassed

◯ 1 not at all ◯ 2 ◯ 3 ◯ 4 moderately ◯ 5 ◯ 6 ◯ 7 extremely

Appendix D: Study 2 Additional Materials

Participant Information Sheet

"Attitudes, Health, and Task Performance"

Thank you for participating in the "Attitudes, Health, and Task Performance" study. This sheet outlines the various stages of the study for your convenience.

Session	**Date**
Today's session will take place in Wilson 210D and will last approximately 40 minutes. You will be asked to reflect on your beliefs and health and complete a brief performance assessment task. You will receive **2 SONA credits** at the conclusion of the study today.	
Over the next 3 weeks, you will be asked to complete a weekly survey assessing changes in health and stress, which will be sent to you via e-mail on the three consecutive Sundays following this visit (1 survey per week for 3 weeks). Each survey will take approximately 30 minutes to complete. We ask that you please complete each survey within 48 hours. Each survey will be worth **1 SONA credit**, equaling **3 SONA credits** if all 3 are completed.	Survey 1: Survey 2: Survey 3:
At the end of the three-week period, you will schedule another in-laboratory visit to complete follow–up surveys and a brief cognitive task. You will receive **2 SONA credits** at the conclusion of the session. You will also receive **3 additional SONA credits** at the end of the session as a bonus for completing all portions of the experiment.	

Therefore, if all sessions are completed, participants will be granted **10 SONA credits** in total. Please e-mail your researcher or kellie.m.kuzmuk@vanderbilt.edu with any questions or concerns you may have regarding the breakdown of the study.

Thank you again for your participation!

Participant E-mails

Week 1:
Hello,

Thank you for your continued participation in the "Experience and Adjustment in College Life" study. As mentioned in your initial session, this e-mail contains the link to the first of three weekly surveys. The survey will take around 30 minutes to complete and we ask that you please complete it within 48 hours.
Survey:

Please e-mail kellie.m.kuzmuk@vanderbilt.edu with any questions.

Thank you!

Week 2:
Hello,

Thank you for completing the first weekly survey. This e-mail contains the link to the second of the three weekly surveys. Again, the survey will take around 30 minutes to complete and we ask that you please complete it within 48 hours.
Survey:

Please e-mail kellie.m.kuzmuk@vanderbilt.edu with any questions.

Thank you!

Week 3:
Hello,

Thank you for completing the second weekly survey. This e-mail contains the link to the third (and final) weekly survey. Again, the survey will take around 30 minutes to complete and we ask that you please complete it within 48 hours. Please remember to check SONA regarding your follow-up session or e-mail me to schedule a follow-up if you are not already scheduled.
Survey:

Please e-mail kellie.m.kuzmuk@vanderbilt.edu with any questions.

Thank you!

Appendix E: Study 1 & 2 Demographic Information

Study 1
Baseline Survey Data (from REDcap reports)
Condition: *Positive* (n= 70) 50.7%; *Negative* (n=68) 49.3%
Age: 18 (n=53) 41.1%
19 (n=36) 27.9%
20 (n=25) 19.4%
21 (n=12) 9.3%
22 (n=3) 2.3%
Missing: (n=9) 6.5%
Average age: (calculated) 19.04
Gender: *Male* (n=51) 39.5%; *Female* (n=78) 60.5%
Missing: (n=9) 6.5%
Race or Ethnicity: *Hispanic or Latino* (n=3) 2.3%
American Indian or Alaska Native (n=0) 0.0%
Asian (n=27) 20.9%
Black or African American (n=14) 10.9%
Native Hawaiian or Other Pacific Islander (n=2) 1.6%
White (n=83) 64.3%
Other (n=0) 0.0%
Missing: (n=9) 6.5%
Complete Survey: *Incomplete* (n=9) 6.5%; *Complete* (n=129) 93.5%

Study 2
Baseline Survey Data (from REDcap reports)
Condition: *Positive* (n=15) 46.9%; *Negative* (n=17) 53.1%
Age: 18 (n=10) 31.3%
19 (n=12) 37.5%
20 (n=5) 15.6%
21 (n=5) 15.6%
22 (n=0) 0%
Missing: (n=0) 0%
Average age: 19.16 (calculated)
Gender: *Male* (n=4) 12.5%; *Female* (n=28) 87.5%
Missing: (n=0) 0%
Race or Ethnicity: *Hispanic or Latino* (n=0) 0%
American Indian or Alaska Native (n=0) 0%
Asian (n=11) 34.4%
Black or African American (n=2) 6.3%
Native Hawaiian or Other Pacific Islander (n=0) 0%
White (n=18) 56.3%
Other (n=1) 3.1% (Middle Eastern)
Missing: (n=0) 0%
Complete Survey: *Incomplete* (n=5) 13.5%; *Complete* (n=32) 86.6%

Appendix F: Study 1 & 2 Stress Manipulation Checks

Study 1

```
> t.test(TotalPAPre,TotalPAPost, paired=TRUE)
      Paired t-test
data:  TotalPAPre and TotalPAPost
t = 4.1034, df = 110, p-value = 7.839e-05***
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.2787040 0.7993741
sample estimates:
mean of the differences
               0.539039
> dPA<-4.1034/sqrt(111)
> dPA
[1] 0.3894775

> t.test(TotalNAPre,TotalNAPost,  paired=TRUE)
      Paired t-test
data:  TotalNAPre and TotalNAPost
t = -6.9205, df = 110, p-value = 3.143e-10***
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.2017621 -0.6667063
sample estimates:
mean of the differences
            -0.9342342
> dNA<- -6.9205/sqrt(111)
> dNA
[1] -0.6568648
```

	Positive Affect	Negative Affect
Baseline	3.57	1.91
Post-Stressor	3.08	2.80

```
> t.test(BaselineSystolic,PostTaskSystolic, paired=TRUE)
      Paired t-test
data:  BaselineSystolic and PostTaskSystolic
t = 4.4252, df = 110, p-value = 2.278e-05
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 2.487208 6.521801
sample estimates:
mean of the differences
               4.504505
> dsystolic<-4.4252/sqrt(111)
> dsystolic
[1] 0.4200214

> t.test(BaselineDiastolic,PostTaskDiastolic, paired=TRUE)
      Paired t-test
data:  BaselineDiastolic and PostTaskDiastolic
t = 1.8028, df = 110, p-value = 0.07415
alternative hypothesis: true difference in means is not equal to 0
```

```
95 percent confidence interval:
 -0.1484189  3.1394099
sample estimates:
mean of the differences
              1.495495
```

	Systolic BP
Baseline	116.53
Post-Stressor	112.03

Study 2: Initial Session

```
> t.test(TotalPAPre2,TotalPAPost2, paired=TRUE)
      Paired t-test
data:  TotalPAPre2 and TotalPAPost2
t = 1.6237, df = 30, p-value = 0.1149
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.06651666  0.58264569
sample estimates:
mean of the differences
             0.2580645

> t.test(TotalNAPre2,TotalNAPost2,  paired=TRUE)
      Paired t-test
data:  TotalNAPre2 and TotalNAPost2
t = -4.7246, df = 30, p-value = 5.065e-05
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.2520739 -0.4963132
sample estimates:
mean of the differences
            -0.8741935
> (affectd<- -4.7246/sqrt(31))
[1] -0.8485632
```

	Positive Affect	Negative Affect
Baseline	3.55	1.85
Post-Stressor	3.3	2.72

```
> t.test(BaselineSystolic,PostTaskSystolic, paired=TRUE)
      Paired t-test
data:  BaselineSystolic and PostTaskSystolic
t = 0.1282, df = 26, p-value = 0.899
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -2.227157  2.523453
sample estimates:
mean of the differences
             0.1481481

> t.test(BaselineDiastolic,PostTaskDiastolic, paired=TRUE)
      Paired t-test
data:  BaselineDiastolic and PostTaskDiastolic
```

```
t = 1.272, df = 26, p-value = 0.2146
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.9810831  4.1662683
sample estimates:
mean of the differences
              1.592593
```

Study 2: Follow-Up Session

```
> t.test(TotalPAPre,TotalPAPost, paired=TRUE)
      Paired t-test
data:  TotalPAPre and TotalPAPost
t = 0.4018, df = 29, p-value = 0.6908
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2272082  0.3383193
sample estimates:
mean of the differences
             0.05555556

> t.test(TotalNAPre,TotalNAPost, paired=TRUE)
      Paired t-test
data:  TotalNAPre and TotalNAPost
t = -0.1646, df = 29, p-value = 0.8704
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2685422  0.2285422
sample estimates:
mean of the differences
                -0.02
```

	Positive Affect	Negative Affect
Baseline	3.27	1.85
Post-Stressor	3.22	1.87

```
> t.test(BaselineSystolic,PostTaskSystolic, paired=TRUE)
      Paired t-test
data:  BaselineSystolic and PostTaskSystolic
t = 3.3572, df = 24, p-value = 0.002619
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 1.956937 8.203063
sample estimates:
mean of the differences
                  5.08
> dsys<-3.3572/sqrt(25)
> dsys
[1] 0.67144

> t.test(BaselineDiastolic,PostTaskDiastolic, paired=TRUE)
      Paired t-test
data:  BaselineDiastolic and PostTaskDiastolic
t = 0.4903, df = 24, p-value = 0.6284
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
```

```
 -2.6962  4.3762
sample estimates:
mean of the differences
                   0.84
```

	Systolic	Diastolic
Baseline	111.76	70.04
Post-Stressor	106.68	69.2

```
> mean(rdeesRANGE) #part1
[1] 4.011074
> mean(rdeesRANGE)  #part2
[1] 4

> mean(rdeesDIFF)  #part1
[1] 3.66113
> mean(rdeesDIFF)  #part2
[1] 3.705357

> mean(PSS)  #part1
[1] 2.900886
> mean(PSS)  #part2
[1] 2.897321

> mean(pglobalPHYSICAL)  #part1
[1] 3.94186
> mean(pglobalPHYSICAL)  #part2
[1] 3.84375

> mean(pglobalMENTAL)  #part1
[1] 3.624031
> mean(pglobalMENTAL)  #part2
[1] 3.429688

> median(rdeesRANGE) #part1
[1] 4
> median(rdeesRANGE) #part2
[1] 4.214286

> median(rdeesDIFF)  #part1
[1] 3.714286
> median(rdeesDIFF)  #part2
[1] 3.642857

> median(PSS)  #part1
[1] 2.928571
> median(PSS)  #part2
[1] 2.857143

> median(pglobalPHYSICAL)  #part1
[1] 4
> median(pglobalPHYSICAL)  #part2
[1] 3.75

> median(pglobalMENTAL)  #part1
[1] 3.5
> median(pglobalMENTAL)  #part2
[1] 3.375

> range(rdeesRANGE) #part1
[1] 2.428571 5.000000
> range(rdeesRANGE) #part2
```

```
[1] 2.285714 5.000000


> range(rdeesDIFF)  #part1
[1] 1.571429 5.000000
> range(rdeesDIFF)  #part2
[1] 2.571429 5.000000

> range(PSS)  #part1
[1] 1.714286 4.142857
> range(PSS)  #part2
[1] 1.714286 4.071429

> range(pglobalPHYSICAL)  #part1
[1] 2.5 5.0
> range(pglobalPHYSICAL)  #part2
[1] 2.75 4.75

> range(pglobalMENTAL)  #part1
[1] 1.25 5.00
> range(pglobalMENTAL)  #part2
[1] 2.0 4.5



> mean(BaselineSystolic)  #part1
[1] 116.5315
> mean(BaselineSystolic)  #part2
[1] 110.963

> mean(BaselineDiastolic)  #part1
[1] 71.35135
> mean(BaselineDiastolic)  #part2
[1] 70.03704

> mean(PostTaskSystolic)  #part1
[1] 112.027
> mean(PostTaskSystolic)  #part2
[1] 110.8148

> mean(PostTaskDiastolic)  #part1
[1] 69.85586
> mean(PostTaskDiastolic)  #part2
[1] 68.44444

> median(BaselineSystolic)  #part1
[1] 116
> median(BaselineSystolic)  #part2
[1] 108

> median(BaselineDiastolic)  #part1
[1] 71
> median(BaselineDiastolic)  #part2
[1] 69

> median(PostTaskSystolic)  #part1
[1] 113
```

```
> median(PostTaskSystolic)  #part2
[1] 108

> median(PostTaskDiastolic)  #part1
[1] 70
> median(PostTaskDiastolic)  #part2
[1] 68

> range(BaselineSystolic)  #part1
[1]  91 154
> range(BaselineSystolic)  #part2
[1]  95 143

> range(BaselineDiastolic)  #part1
[1] 27 96
> range(BaselineDiastolic)  #part2
[1] 54 90

> range(PostTaskSystolic)  #part1
[1]  63 142
> range(PostTaskSystolic)  #part2
[1]  91 143

> range(PostTaskDiastolic)  #part1
[1] 52 92
> range(PostTaskDiastolic)  #part2
[1] 51 93

> mean(TotalPAPost)  #part1
[1] 3.077327
> mean(TotalPAPost2)  #part2
[1] 3.295699

> mean(TotalNAPost)  #part1
[1] 2.806306
> mean(TotalNAPost2)  #part2
[1] 2.722581

> mean(TotalPAPre)  #part1
[1] 3.616366
> mean(TotalPAPre2)  #part2
[1] 3.553763

> mean(TotalNAPre)  #part1
[1] 1.872072
> mean(TotalNAPre2)  #part2
[1] 1.848387

> median(TotalPAPost)  #part1
[1] 3.083333
> median(TotalPAPost2)  #part2
[1] 3.166667

> median(TotalNAPost)  #part1
[1] 2.6
> median(TotalNAPost2)  #part2
[1] 2.8
```

```
> median(TotalPAPre)  #part1
[1] 3.666667
> median(TotalPAPre2)  #part2
[1] 3.75

> median(TotalNAPre)  #part1
[1] 1.6
> median(TotalNAPre2)  #part2
[1] 1.6

> range(TotalPAPost)  #part1
[1] 1.00 5.25
> range(TotalPAPost2)  #part2
[1] 1.333333 5.666667

> range(TotalNAPost)  #part1
[1] 1.0 6.1
> range(TotalNAPost2)  #part2
[1] 1.1 4.7

> range(TotalPAPre)  #part1
[1] 1.333333 5.583333
> range(TotalPAPre2)  #part2
[1] 1.833333 5.083333

> range(TotalNAPre)  #part1
[1] 1.0 4.5
> range(TotalNAPre2)  #part2
[1] 1 4
```

Appendix H: Combined Baseline Analyses

Main Hypothesis Testing

```
>  (summary(lm(TotalPAPost~donesscore)))
Call:
lm(formula = TotalPAPost ~ donesscore)
Residuals:
    Min      1Q  Median      3Q     Max
-2.1289 -0.7146 -0.0351  0.7228  2.4131
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   12.700      2.647   4.797 3.73e-06 ***
donesscore    -4.692      1.296  -3.619    4e-04 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.026 on 156 degrees of freedom
  (2 observations deleted due to missingness)
Multiple R-squared:  0.07744, Adjusted R-squared:  0.07153
F-statistic: 13.09 on 1 and 156 DF,  p-value: 0.0003996

>  (summary(lm(TotalPAPost~donesscore+TotalPAPre)))
Call:
lm(formula = TotalPAPost ~ donesscore + TotalPAPre)
Residuals:
     Min       1Q   Median       3Q      Max
-2.15837 -0.69610 -0.04269  0.69867  2.45882
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 12.25121    2.77749   4.411 1.92e-05 ***
donesscore  -4.55755    1.32236  -3.447 0.000731 ***
TotalPAPre   0.04910    0.08993   0.546 0.585900
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.029 on 155 degrees of freedom
  (2 observations deleted due to missingness)
Multiple R-squared:  0.07921, Adjusted R-squared:  0.06733
F-statistic: 6.667 on 2 and 155 DF,  p-value: 0.001669

>  (summary(lm(TotalPAPost~donesscore+TotalPAPre+TotalNAPre)))
Call:
lm(formula = TotalPAPost ~ donesscore + TotalPAPre + TotalNAPre)
Residuals:
     Min       1Q   Median       3Q      Max
-2.24106 -0.68499 -0.00539  0.66930  2.52931
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 12.30083    2.76624   4.447 1.66e-05 ***
donesscore  -4.70013    1.32029  -3.560 0.000494 ***
TotalPAPre   0.02859    0.09058   0.316 0.752676
TotalNAPre   0.16550    0.10949   1.512 0.132689
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 1.024 on 154 degrees of freedom
```

```
  (2 observations deleted due to missingness)
Multiple R-squared:  0.09267, Adjusted R-squared:  0.075
F-statistic: 5.243 on 3 and 154 DF,  p-value: 0.001795
```

Main Hypothesis Testing (Outlier Removed)

```
>   (summary(lm(TotalPAPost~donesscore)))
Call:
lm(formula = TotalPAPost ~ donesscore)
Residuals:
    Min      1Q  Median      3Q     Max
-2.1269 -0.7260 -0.0436  0.7212  2.4027
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   12.382      2.928   4.229 3.99e-05 ***
donesscore    -4.537      1.432  -3.167  0.00185 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 1.029 on 155 degrees of freedom
  (2 observations deleted due to missingness)
Multiple R-squared:  0.06079, Adjusted R-squared:  0.05473
F-statistic: 10.03 on 1 and 155 DF,  p-value: 0.001853

>  (summary(lm(TotalPAPost~donesscore+TotalPAPre)))
Call:
lm(formula = TotalPAPost ~ donesscore + TotalPAPre)
Residuals:
     Min       1Q   Median       3Q      Max
-2.15697 -0.69544 -0.04419  0.70572  2.44853
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 11.88464    3.06651   3.876 0.000157 ***
donesscore  -4.38136    1.46242  -2.996 0.003189 **
TotalPAPre   0.05047    0.09033   0.559 0.577140
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 1.032 on 154 degrees of freedom
  (2 observations deleted due to missingness)
Multiple R-squared:  0.06269, Adjusted R-squared:  0.05051
F-statistic:  5.15 on 2 and 154 DF,  p-value: 0.006841

>  (summary(lm(TotalPAPost~donesscore+TotalPAPre+TotalNAPre)))
Call:
lm(formula = TotalPAPost ~ donesscore + TotalPAPre + TotalNAPre)
Residuals:
     Min       1Q   Median       3Q      Max
-2.24167 -0.69930  0.00085  0.69400  2.51660
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 11.80583    3.05369   3.866 0.000163 ***
donesscore  -4.46423    1.45710  -3.064 0.002584 **
TotalPAPre   0.03010    0.09092   0.331 0.741003
TotalNAPre   0.16832    0.11003   1.530 0.128149
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 1.027 on 153 degrees of freedom
```

```
  (2 observations deleted due to missingness)
Multiple R-squared:  0.07681, Adjusted R-squared:  0.0587
F-statistic: 4.243 on 3 and 153 DF,  p-value: 0.006523
```

Correlations

```
> mean(dopesscore,na.rm=TRUE)
[1] 1.863228

> mean(donesscore,na.rm=TRUE)
[1] 2.040949

> t.test(dopesscore,donesscore,paired=TRUE,na.rm=TRUE)
      Paired t-test
data:  dopesscore and donesscore
t = -13.7665, df = 157, p-value < 2.2e-16
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2032206 -0.1522224
sample estimates:
mean of the differences
             -0.1777215

> (ddiff<- -13.7665/sqrt(160))
[1] -1.088337

> cor.test(dopesscore,rdeesRANGE)
      Pearson's product-moment correlation
data:  dopesscore and rdeesRANGE
t = 0.194, df = 157, p-value = 0.8464
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1405015  0.1707201
sample estimates:
       cor
0.01548432

> cor.test(dopesscore,rdeesDIFF)
      Pearson's product-moment correlation
data:  dopesscore and rdeesDIFF
t = -1.0332, df = 157, p-value = 0.3031
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.23482590  0.07441665
sample estimates:
        cor
-0.08218246

> cor.test(dopesscore,PSS)
      Pearson's product-moment correlation
data:  dopesscore and PSS
t = -0.6592, df = 157, p-value = 0.5108
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2064922  0.1039639
sample estimates:
```

```
        cor
-0.05253337

> cor.test(dopesscore,pglobalPHYSICAL)
      Pearson's product-moment correlation
data:  dopesscore and pglobalPHYSICAL
t = 0.1615, df = 157, p-value = 0.8719
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.143047  0.168197
sample estimates:
       cor
0.01288718

> cor.test(dopesscore,pglobalMENTAL)
      Pearson's product-moment correlation
data:  dopesscore and pglobalMENTAL
t = 0.904, df = 157, p-value = 0.3674
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.0846375  0.2250839
sample estimates:
       cor
0.07195765

> cor.test(dopesscore,PAchange)
      Pearson's product-moment correlation
data:  dopesscore and PAchange
t = 0.182, df = 157, p-value = 0.8558
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1414397  0.1697906
sample estimates:
       cor
0.01452732

> cor.test(dopesscore,NAchange)
      Pearson's product-moment correlation
data:  dopesscore and NAchange
t = 0.8792, df = 157, p-value = 0.3807
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.08659767  0.22320849
sample estimates:
       cor
0.06999296

> cor.test(dopesscore,SystolicChange)
      Pearson's product-moment correlation
data:  dopesscore and SystolicChange
t = 0.597, df = 136, p-value = 0.5515
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1169757  0.2163847
sample estimates:
       cor
0.05112859
```

```
> cor.test(dopesscore,DiastolicChange)
      Pearson's product-moment correlation
data:  dopesscore and DiastolicChange
t = -1.0599, df = 136, p-value = 0.2911
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.25377980  0.07776765
sample estimates:
        cor
-0.09051344

> cor.test(dopesscore,donesscore)
      Pearson's product-moment correlation
data:  dopesscore and donesscore
t = 3.6998, df = 156, p-value = 0.0002986
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.1338129 0.4214686
sample estimates:
      cor
0.2840191
> (dcorr<-(2*0.28)/sqrt((1-0.28^2)))
[1] 0.5833333
> cor.test(donesscore,rdeesRANGE)
      Pearson's product-moment correlation
data:  donesscore and rdeesRANGE
t = -0.4794, df = 156, p-value = 0.6323
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1933386  0.1184937
sample estimates:
        cor
-0.03835623

> cor.test(donesscore,rdeesDIFF)
      Pearson's product-moment correlation
data:  donesscore and rdeesDIFF
t = -0.7086, df = 156, p-value = 0.4797
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2109139  0.1003893
sample estimates:
        cor
-0.05663879

> cor.test(donesscore,PSS)
      Pearson's product-moment correlation
data:  donesscore and PSS
t = -0.6454, df = 156, p-value = 0.5196
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2060850  0.1053842
sample estimates:
        cor
-0.05160522
```

```
> cor.test(donesscore,pglobalPHYSICAL)
      Pearson's product-moment correlation
data:  donesscore and pglobalPHYSICAL
t = 0.927, df = 156, p-value = 0.3554
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.0830858  0.2275256
sample estimates:
       cor
0.07401471

> cor.test(donesscore,pglobalMENTAL)
      Pearson's product-moment correlation
data:  donesscore and pglobalMENTAL
t = 0.7124, df = 156, p-value = 0.4773
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1000890  0.2112037
sample estimates:
      cor
0.0569412

> cor.test(donesscore,PAchange)
      Pearson's product-moment correlation
data:  donesscore and PAchange
t = -1.1551, df = 156, p-value = 0.2498
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.24471021  0.06498621
sample estimates:
        cor
-0.09208852

> cor.test(donesscore,NAchange)
      Pearson's product-moment correlation
data:  donesscore and NAchange
t = -1.1964, df = 156, p-value = 0.2334
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.24779961  0.06171057
sample estimates:
        cor
-0.09534848

> cor.test(donesscore,SystolicChange)
      Pearson's product-moment correlation
data:  donesscore and SystolicChange
t = 1.8219, df = 135, p-value = 0.07069
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.0131486  0.3144543
sample estimates:
      cor
0.1549085

> cor.test(donesscore,DiastolicChange)
      Pearson's product-moment correlation
```

```
data:  donesscore and DiastolicChange
t = -1.3645, df = 135, p-value = 0.1747
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.27889377  0.05210084
sample estimates:
       cor
-0.1166338

> cor.test(diff,rdeesRANGE)
      Pearson's product-moment correlation
data:  diff and rdeesRANGE
t = -0.0864, df = 156, p-value = 0.9312
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1628842  0.1493819
sample estimates:
         cor
-0.006919842

> cor.test(diff,rdeesDIFF)
      Pearson's product-moment correlation
data:  diff and rdeesDIFF
t = -1.1915, df = 156, p-value = 0.2353
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.24743536  0.06209713
sample estimates:
        cor
-0.09496394

> cor.test(diff,PSS)
      Pearson's product-moment correlation
data:  diff and PSS
t = -0.673, df = 156, p-value = 0.5019
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2081970  0.1032015
sample estimates:
       cor
-0.0538058

> cor.test(diff,pglobalPHYSICAL)
      Pearson's product-moment correlation
data:  diff and pglobalPHYSICAL
t = 0.3173, df = 156, p-value = 0.7514
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1312614  0.1808227
sample estimates:
       cor
0.02539947

> cor.test(diff,pglobalMENTAL)
      Pearson's product-moment correlation
data:  diff and pglobalMENTAL
t = 0.969, df = 156, p-value = 0.3341
```

```
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.0797570  0.2307007
sample estimates:
       cor
0.07734653

> cor.test(diff,PAchange)
      Pearson's product-moment correlation
data:  diff and PAchange
t = -0.2391, df = 156, p-value = 0.8114
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1747546  0.1374144
sample estimates:
        cor
-0.01913646

> cor.test(diff,NAchange)
      Pearson's product-moment correlation
data:  diff and NAchange
t = 0.398, df = 156, p-value = 0.6912
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1249123  0.1870593
sample estimates:
       cor
0.03184919

> cor.test(diff,SystolicChange)
      Pearson's product-moment correlation
data:  diff and SystolicChange
t = 1.209, df = 135, p-value = 0.2288
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.06535144  0.26658644
sample estimates:
      cor
0.1034984

> cor.test(diff,DiastolicChange)
      Pearson's product-moment correlation
data:  diff and DiastolicChange
t = -1.3475, df = 135, p-value = 0.1801
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.27755258  0.05355051
sample estimates:
       cor
-0.1151996

> cor.test(rdeesRANGE,rdeesDIFF)
      Pearson's product-moment correlation
data:  rdeesRANGE and rdeesDIFF
t = 5.2643, df = 158, p-value = 4.53e-07
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
```

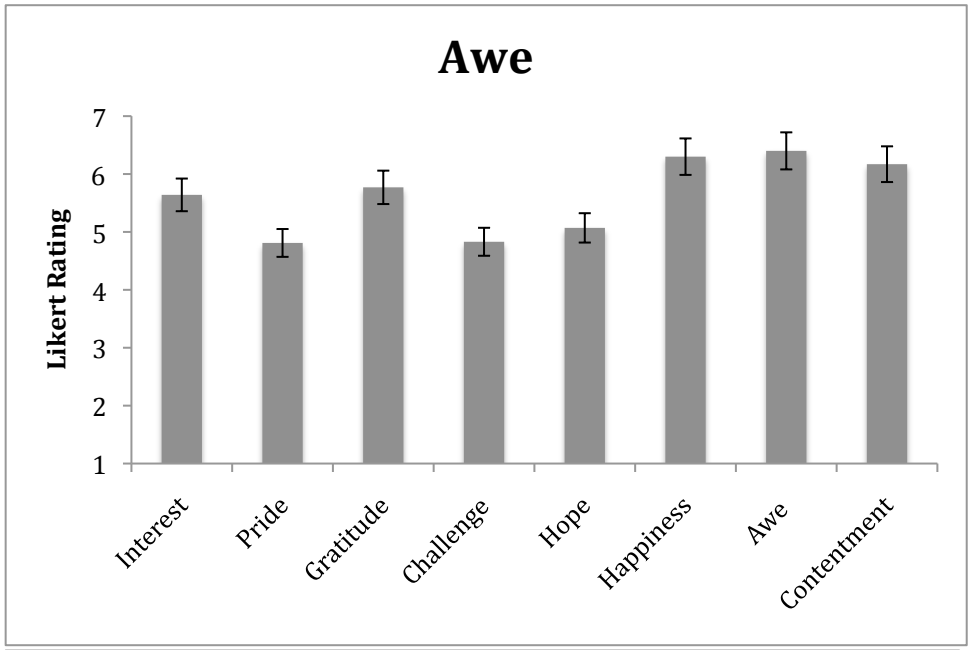
```
 0.2458749 0.5108371
sample estimates:
      cor
0.3862965
> (drangediffcor<-(2*0.39)/(sqrt(1-(0.39^2))))
[1] 0.8470758

> cor.test(rdeesRANGE,PSS)
      Pearson's product-moment correlation
data:  rdeesRANGE and PSS
t = 2.1475, df = 158, p-value = 0.03328
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.01360099 0.31532387
sample estimates:
      cor
0.1684044
> (drangepsscor<-(2*0.17)/(sqrt(1-(0.17^2))))
[1] 0.3450221

> cor.test(rdeesRANGE,pglobalPHYSICAL)
      Pearson's product-moment correlation
data:  rdeesRANGE and pglobalPHYSICAL
t = -1.1413, df = 158, p-value = 0.2555
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.24218237  0.06565855
sample estimates:
       cor
-0.09042136

> cor.test(rdeesRANGE,pglobalMENTAL)
      Pearson's product-moment correlation
data:  rdeesRANGE and pglobalMENTAL
t = -0.3246, df = 158, p-value = 0.7459
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1802501  0.1298656
sample estimates:
       cor
-0.02581325

> cor.test(rdeesRANGE,PAchange)
      Pearson's product-moment correlation
data:  rdeesRANGE and PAchange
t = -0.2862, df = 157, p-value = 0.7751
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1778504  0.1332857
sample estimates:
       cor
-0.02283528

> cor.test(rdeesRANGE,NAchange)
      Pearson's product-moment correlation
data:  rdeesRANGE and NAchange
t = 0.3926, df = 157, p-value = 0.6951
```

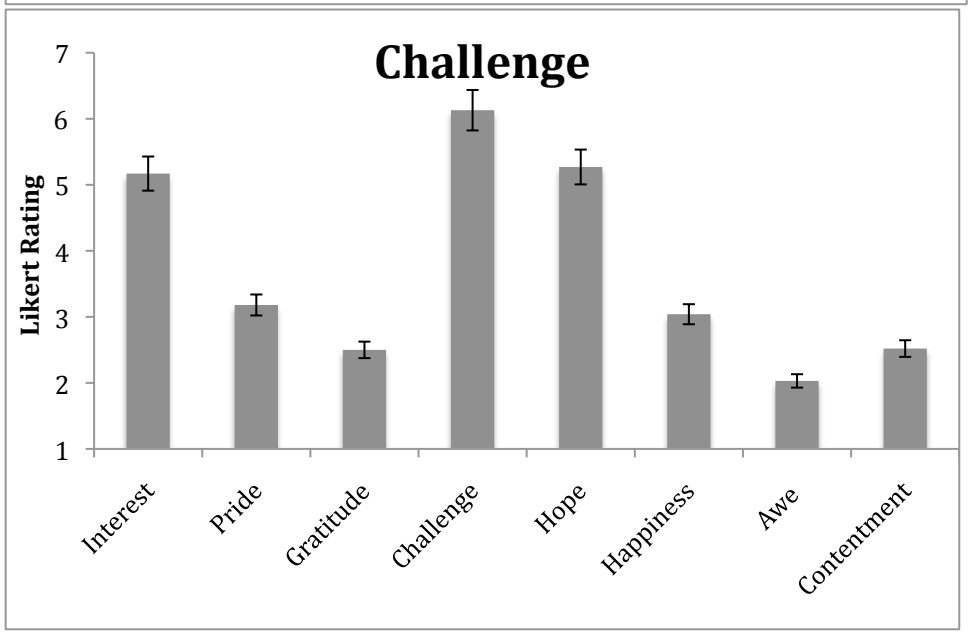
```
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1249389  0.1860576
sample estimates:
       cor
0.03131729

> cor.test(rdeesRANGE,SystolicChange)
      Pearson's product-moment correlation
data:  rdeesRANGE and SystolicChange
t = 0.4373, df = 136, p-value = 0.6626
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1304516  0.2033019
sample estimates:
       cor
0.03747006

> cor.test(rdeesRANGE,DiastolicChange)
      Pearson's product-moment correlation
data:  rdeesRANGE and DiastolicChange
t = -0.6771, df = 136, p-value = 0.4995
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2229121  0.1102058
sample estimates:
       cor
-0.0579665

> cor.test(rdeesDIFF,PSS)
      Pearson's product-moment correlation
data:  rdeesDIFF and PSS
t = -0.4622, df = 158, p-value = 0.6446
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1908145  0.1190941
sample estimates:
        cor
-0.03674358

> cor.test(rdeesDIFF,pglobalPHYSICAL)
      Pearson's product-moment correlation
data:  rdeesDIFF and pglobalPHYSICAL
t = 1.0284, df = 158, p-value = 0.3053
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.0745561  0.2337472
sample estimates:
       cor
0.08154597

> cor.test(rdeesDIFF,pglobalMENTAL)
      Pearson's product-moment correlation
data:  rdeesDIFF and pglobalMENTAL
t = 0.9263, df = 158, p-value = 0.3557
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
```

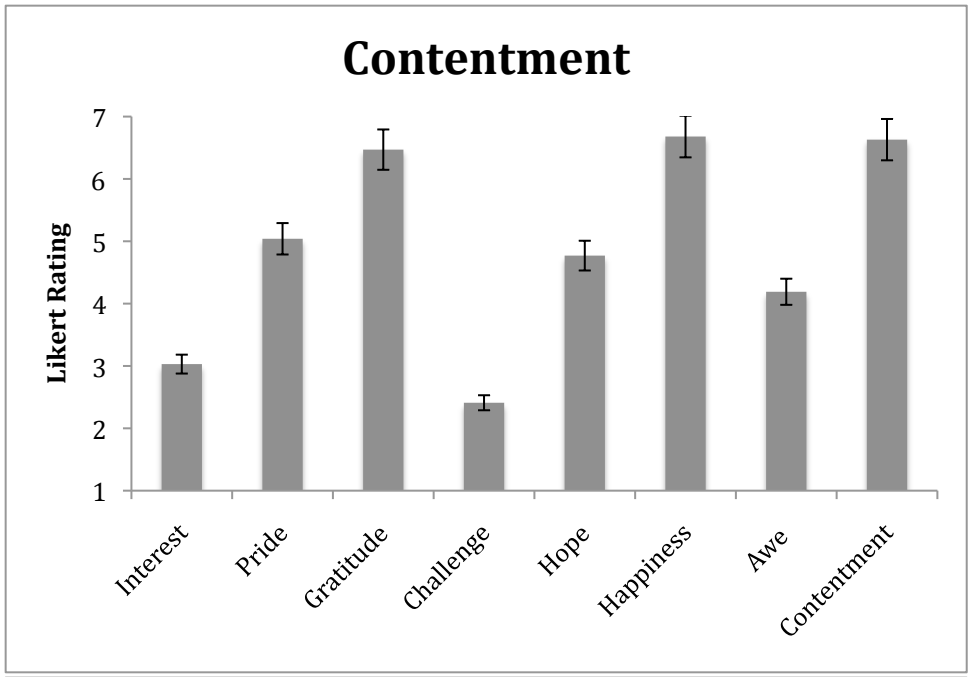
```
 -0.08260793  0.22607361
sample estimates:
       cor
0.07349279

> cor.test(rdeesDIFF,PAchange)
      Pearson's product-moment correlation
data:  rdeesDIFF and PAchange
t = 0.4467, df = 157, p-value = 0.6557
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1206924  0.1902165
sample estimates:
       cor
0.03562401

> cor.test(rdeesDIFF,NAchange)
      Pearson's product-moment correlation
data:  rdeesDIFF and NAchange
t = -0.0404, df = 157, p-value = 0.9678
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1587904  0.1525008
sample estimates:
         cor
-0.003222864

> cor.test(rdeesDIFF,SystolicChange)
      Pearson's product-moment correlation
data:  rdeesDIFF and SystolicChange
t = -0.6526, df = 136, p-value = 0.5151
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2209182  0.1122771
sample estimates:
        cor
-0.05587612

> cor.test(rdeesDIFF,DiastolicChange)
      Pearson's product-moment correlation
data:  rdeesDIFF and DiastolicChange
t = -0.7657, df = 136, p-value = 0.4452
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2301012  0.1027139
sample estimates:
        cor
-0.06551548
```

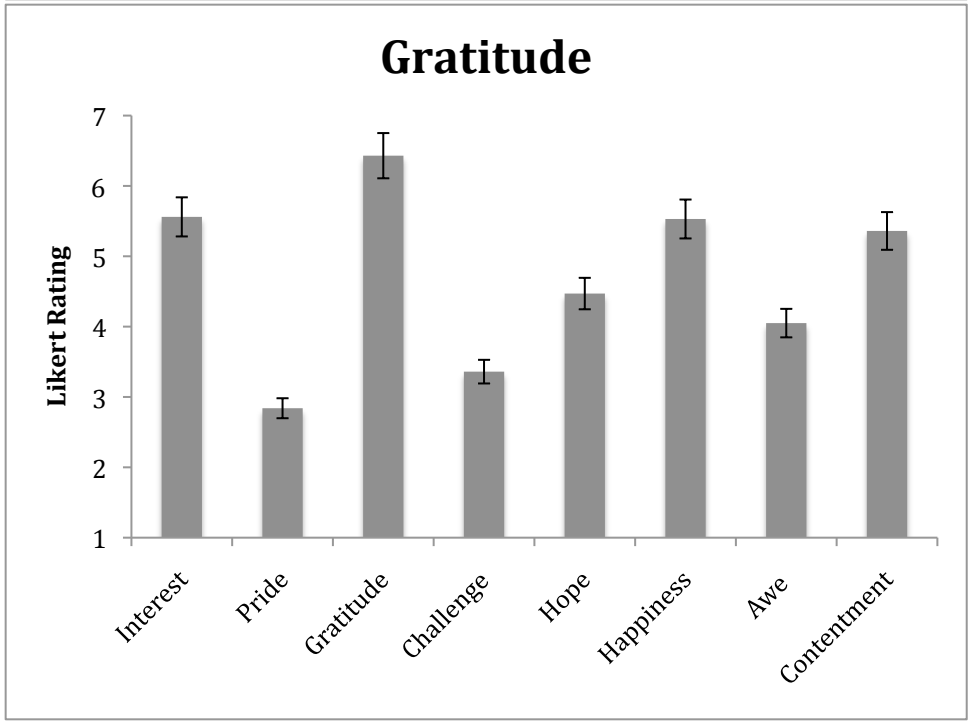
Appendix I: DOPES & DONES Emotion Profile Graphs

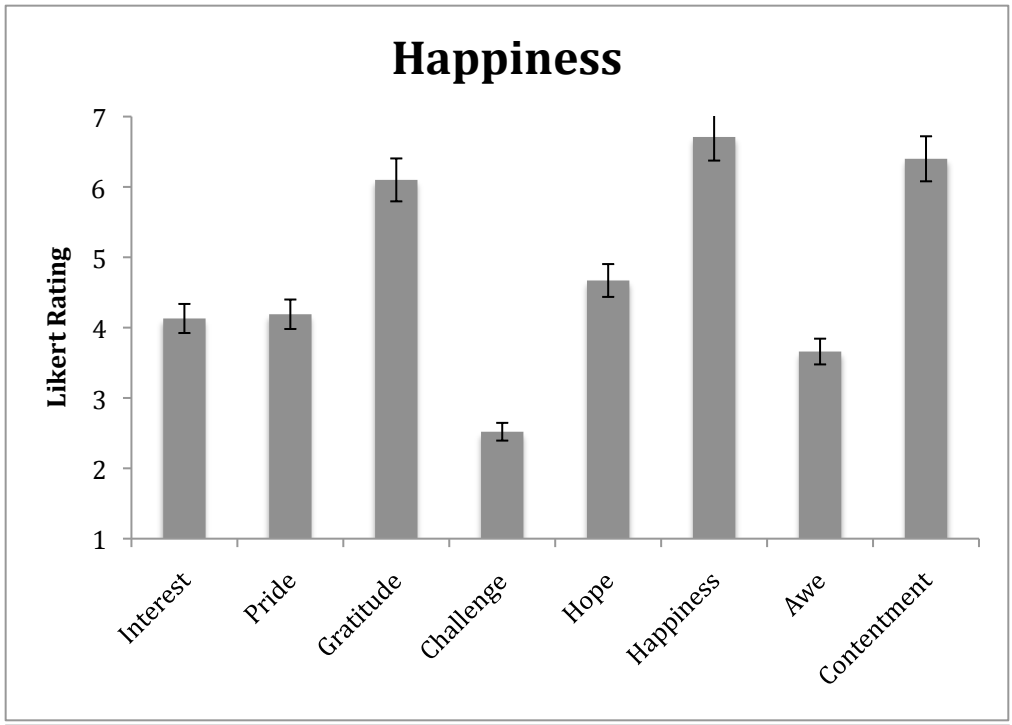
Study 1: DOPES
n=129

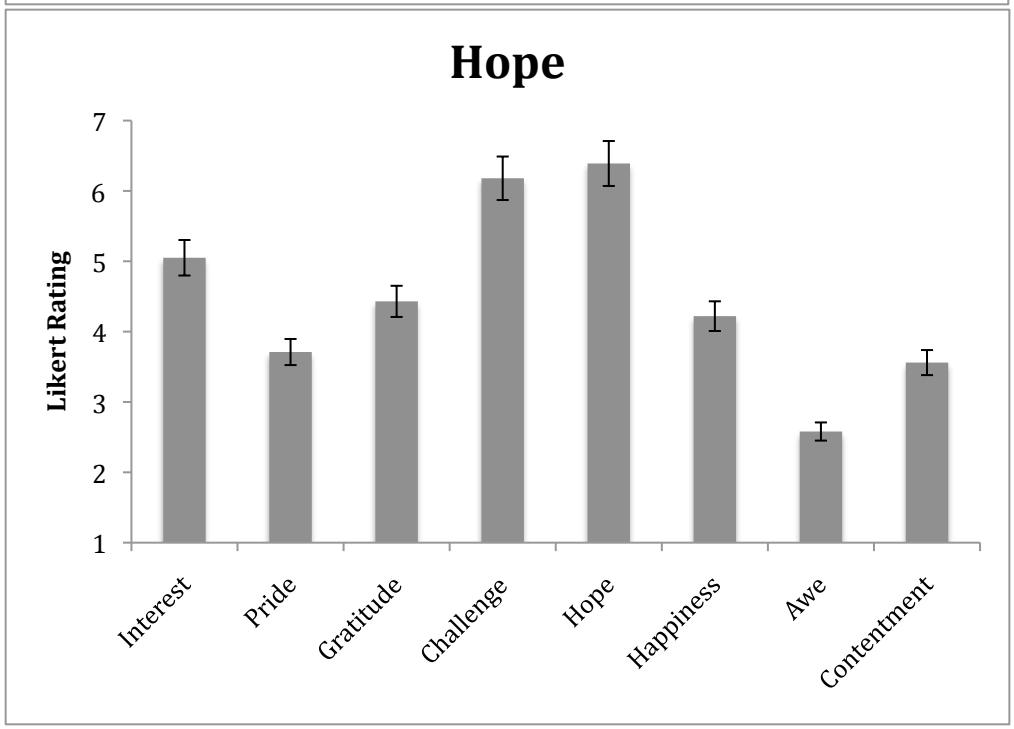


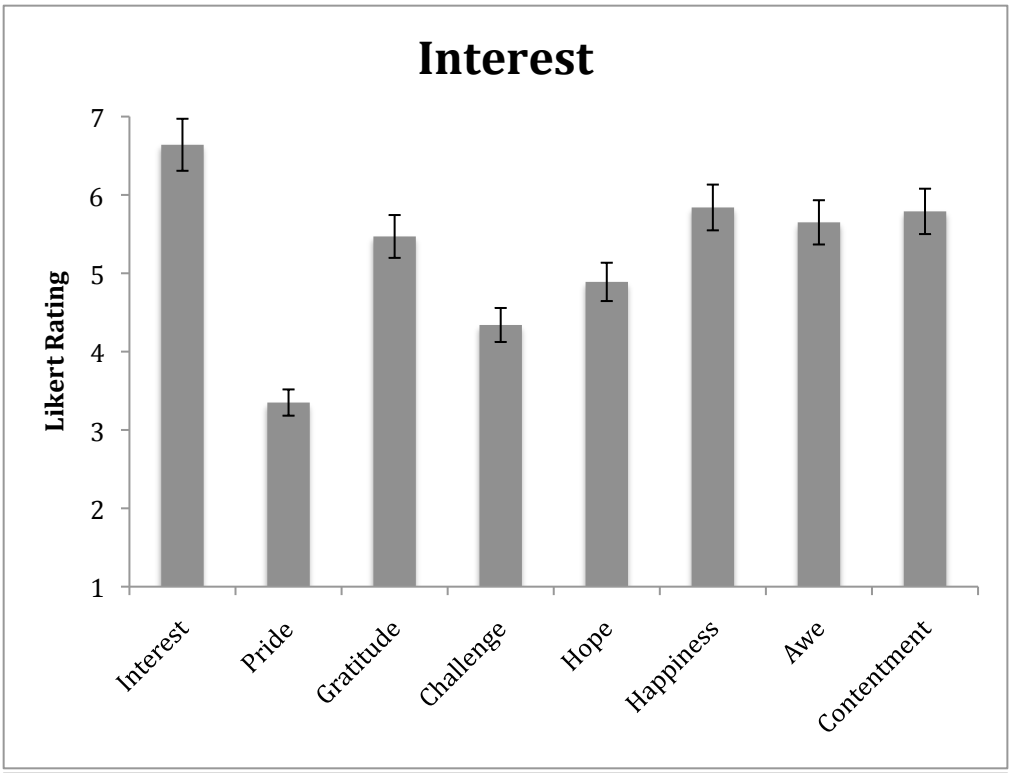


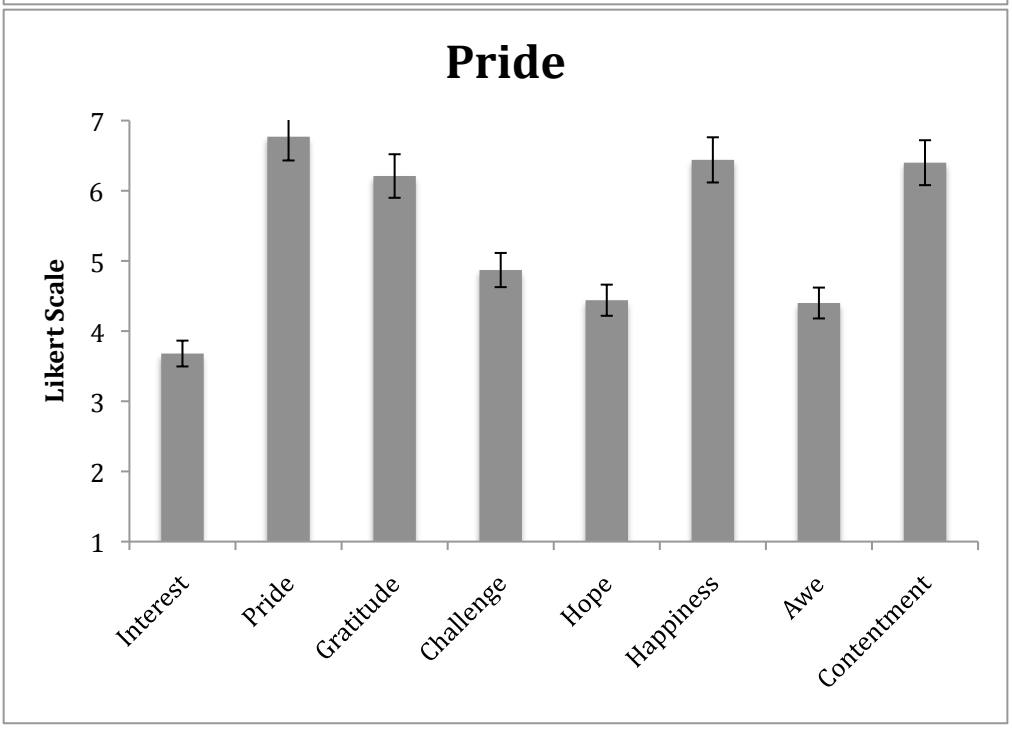

Contentment
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment


Gratitude
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

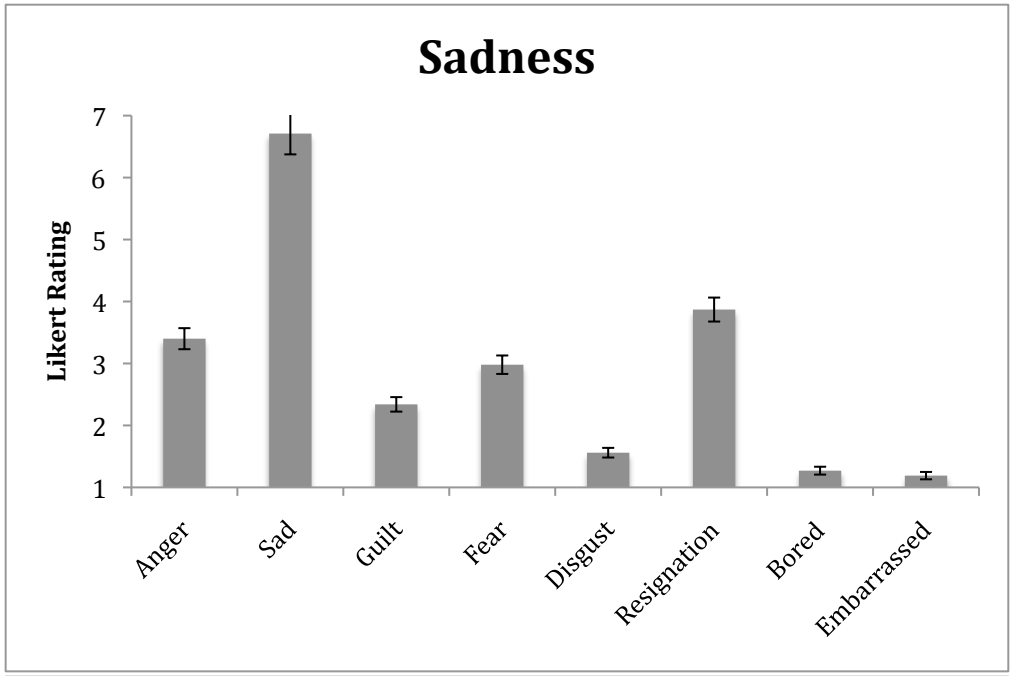

Happiness
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

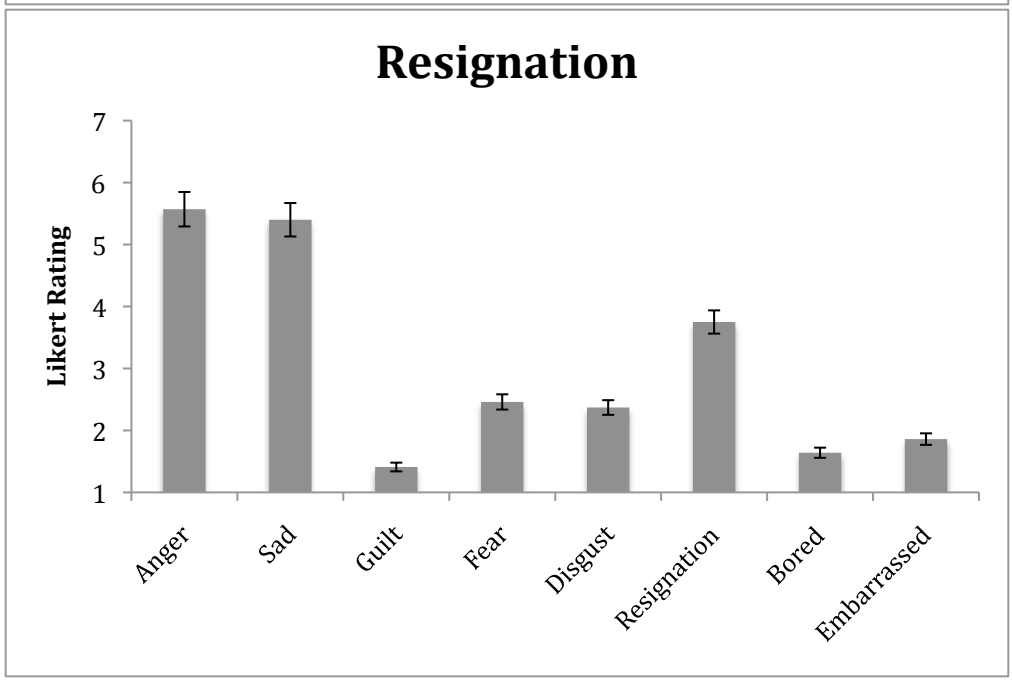

Hope
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

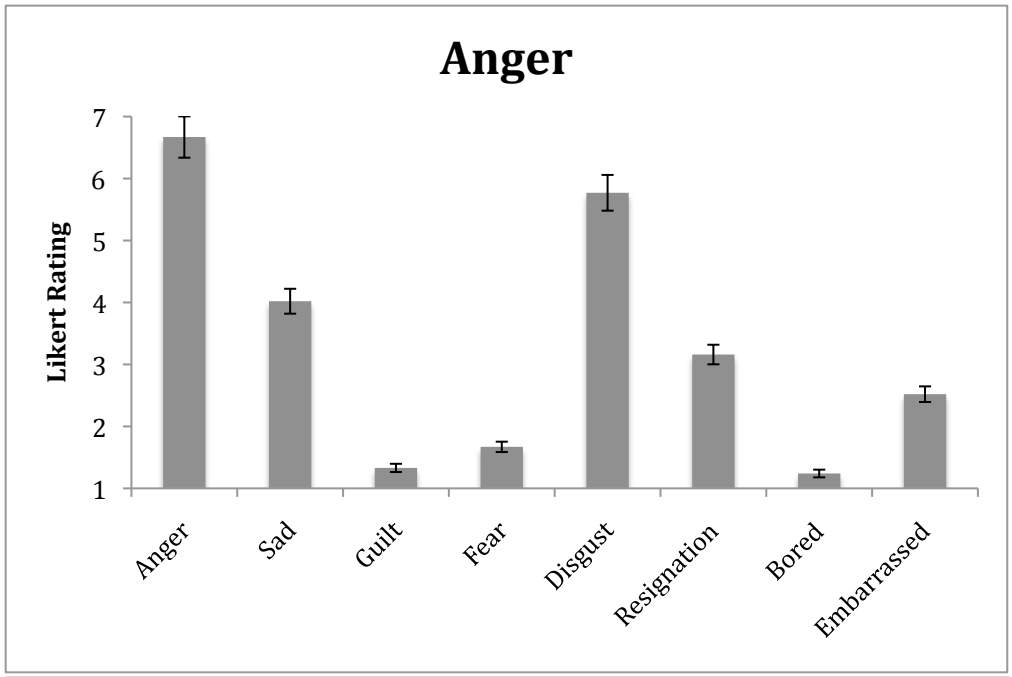

Interest
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

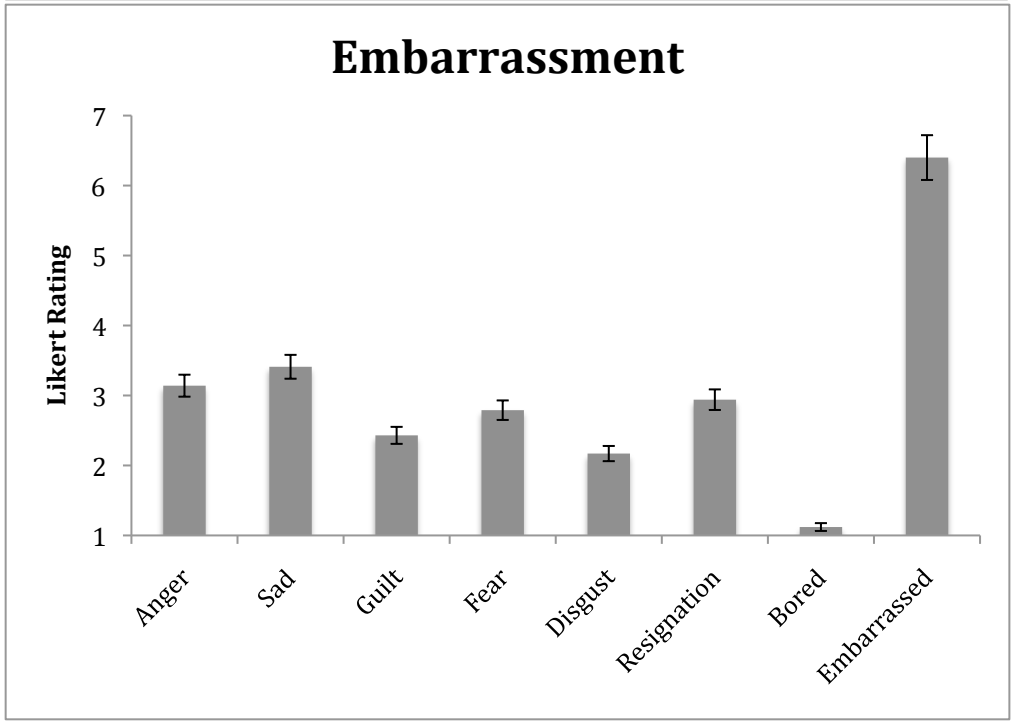

Pride
Likert Scale
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

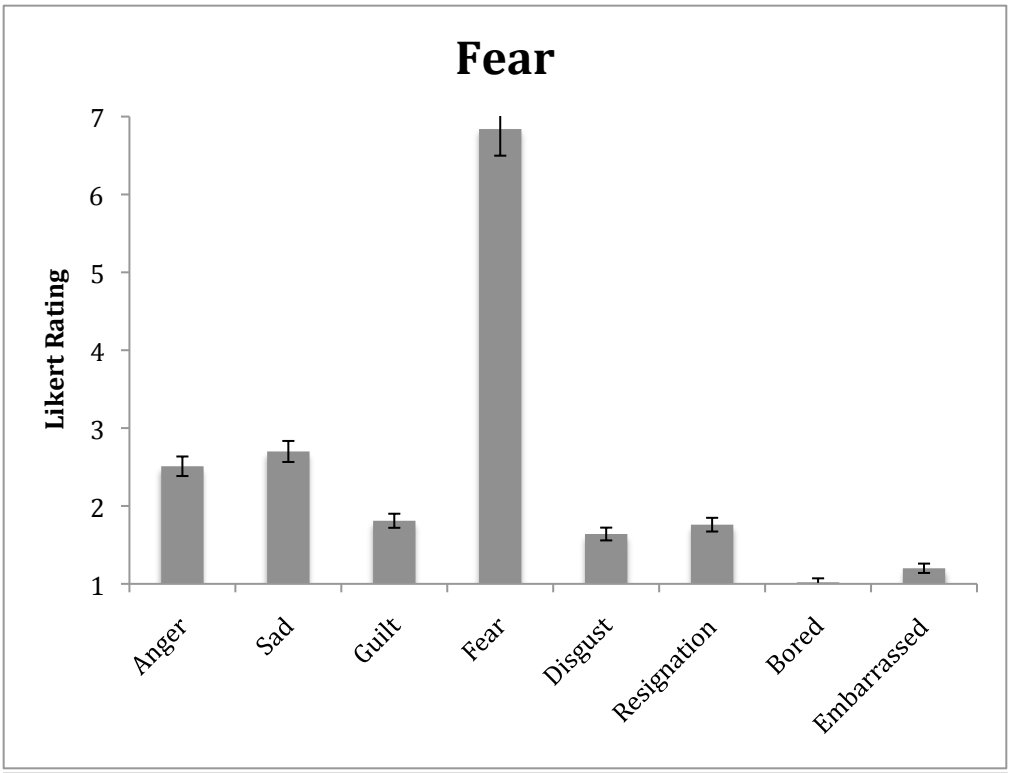
Study 1: DONES
n=129

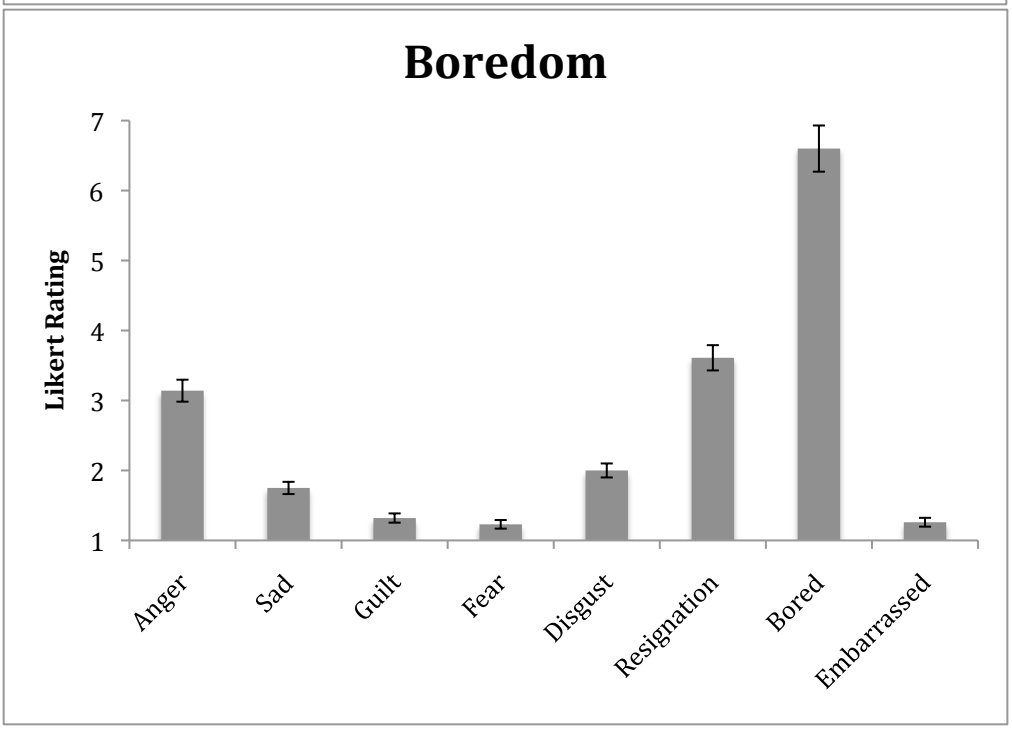


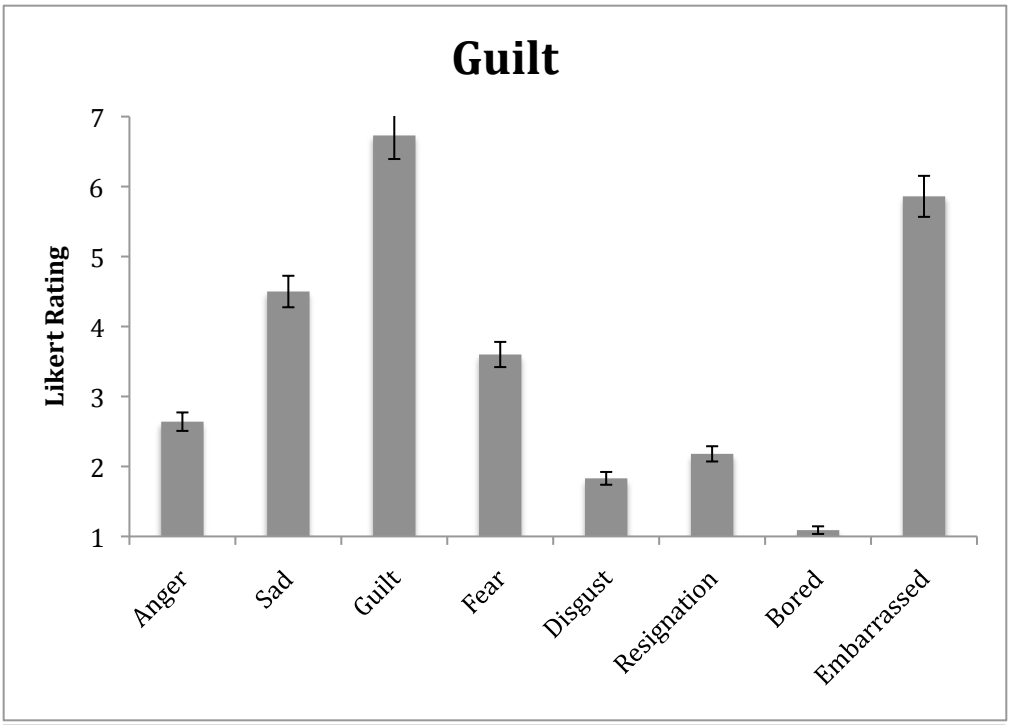


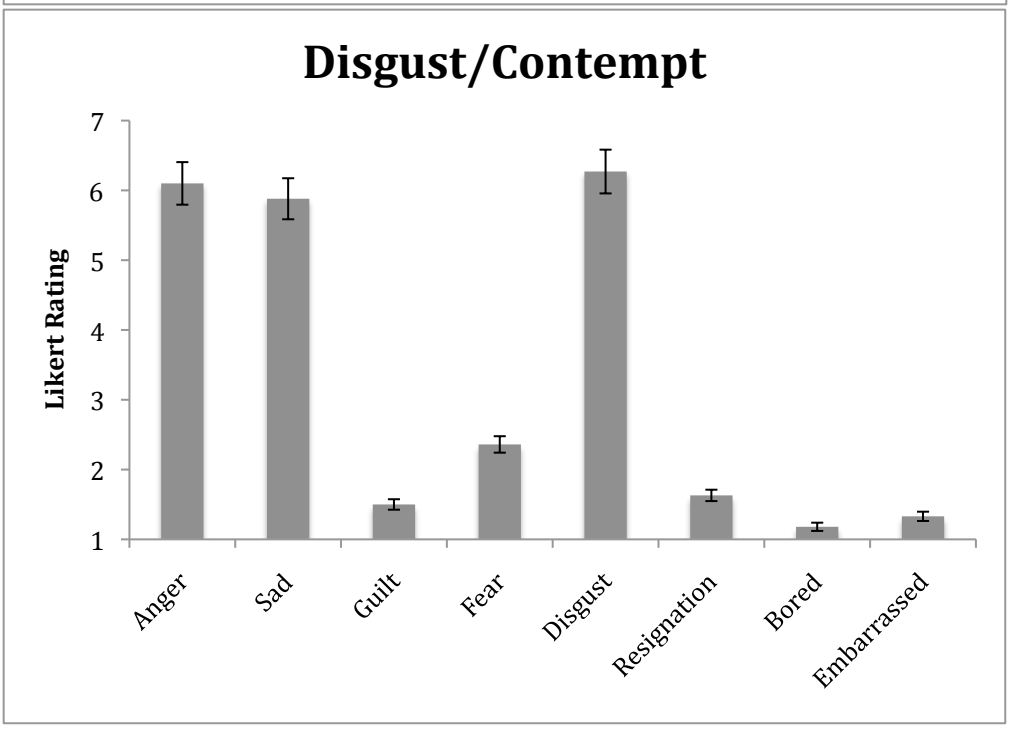

Anger
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilt
Fear
Disgust
Resignation
Bored
Embarrassed


Embarrassment
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilt
Fear
Disgust
Resignation
Bored
Embarrassed

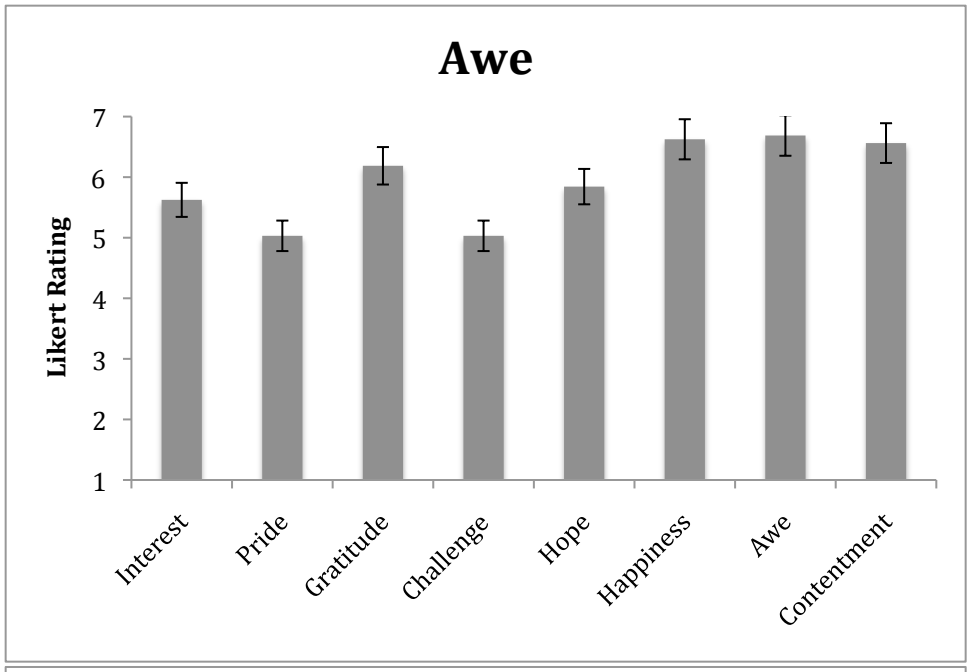

Fear
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilt
Fear
Disgust
Resignation
Bored
Embarrassed

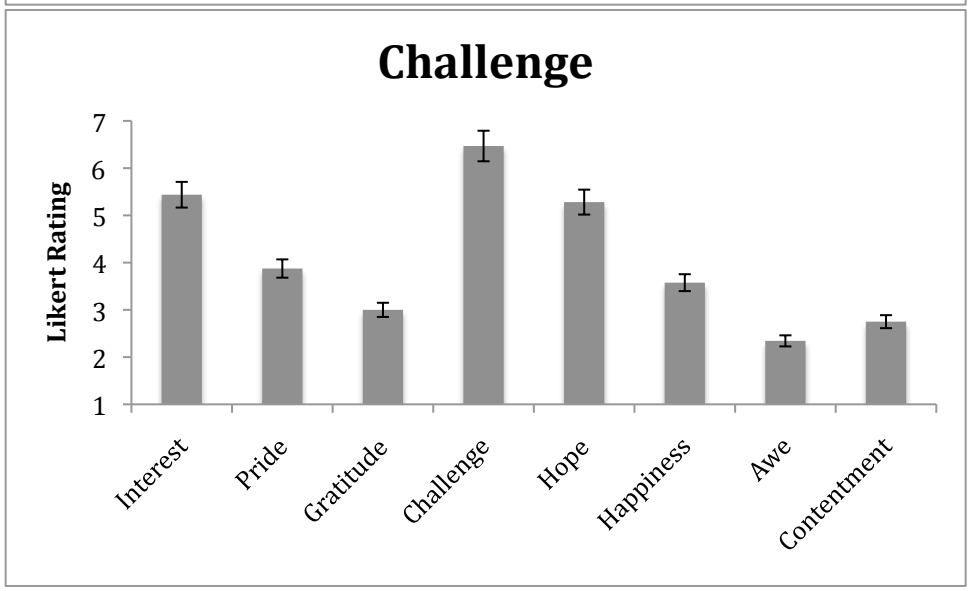

Boredom
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilt
Fear
Disgust
Resignation
Bored
Embarrassed

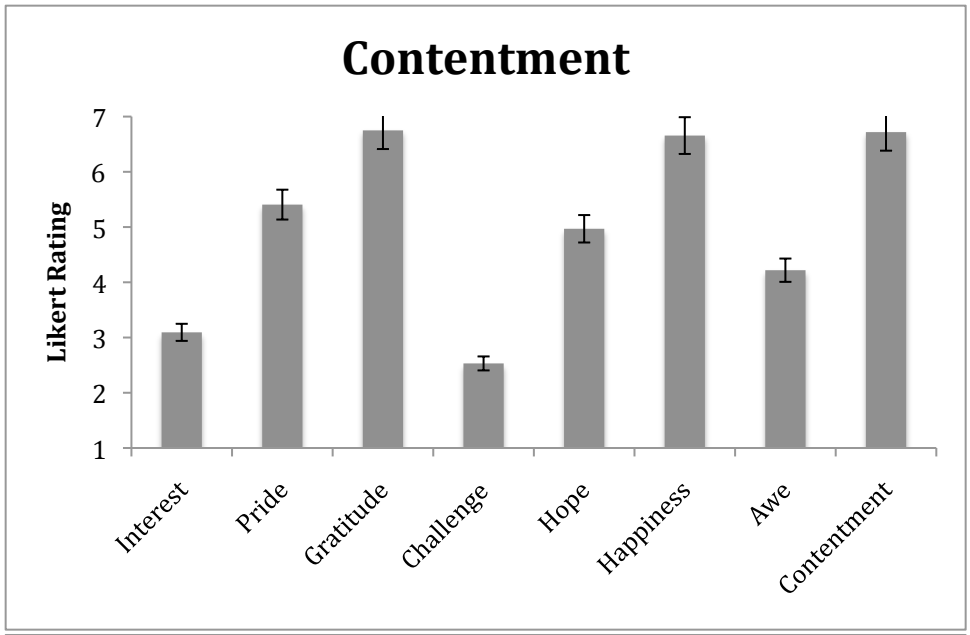


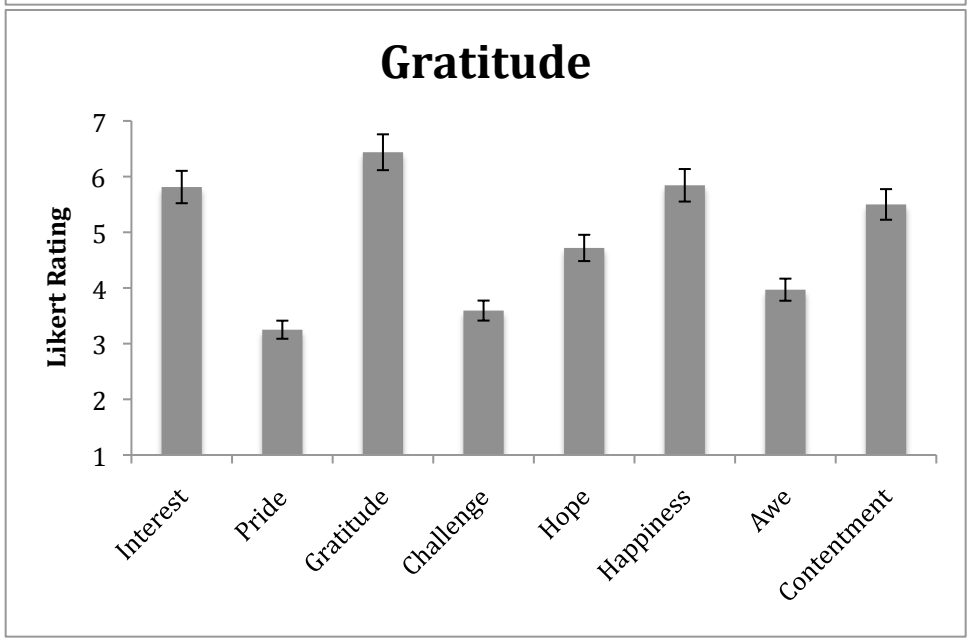


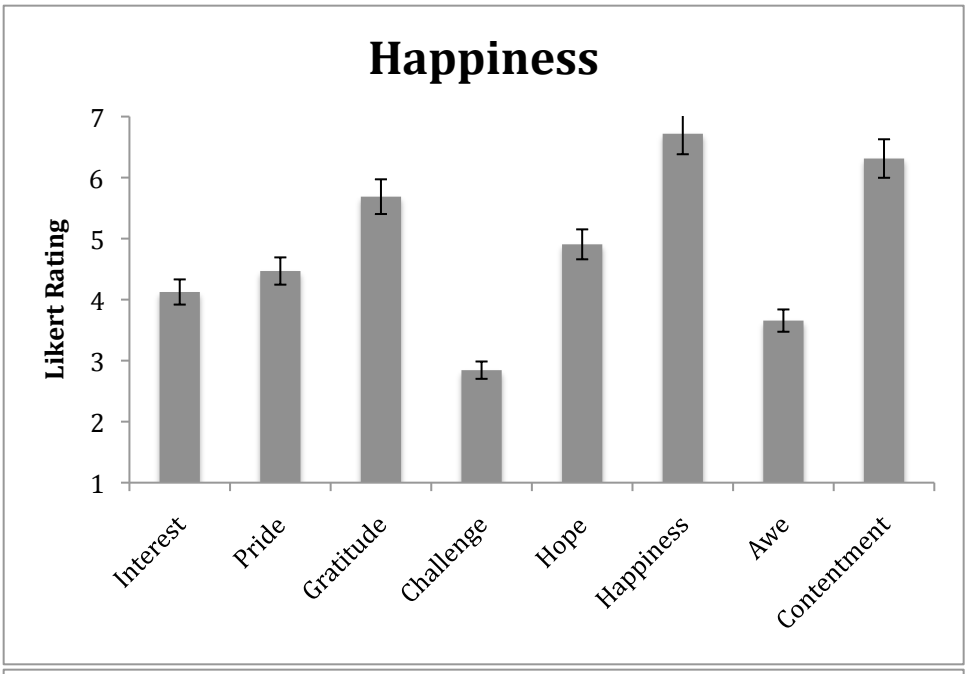
Study 2: DOPES
n=32

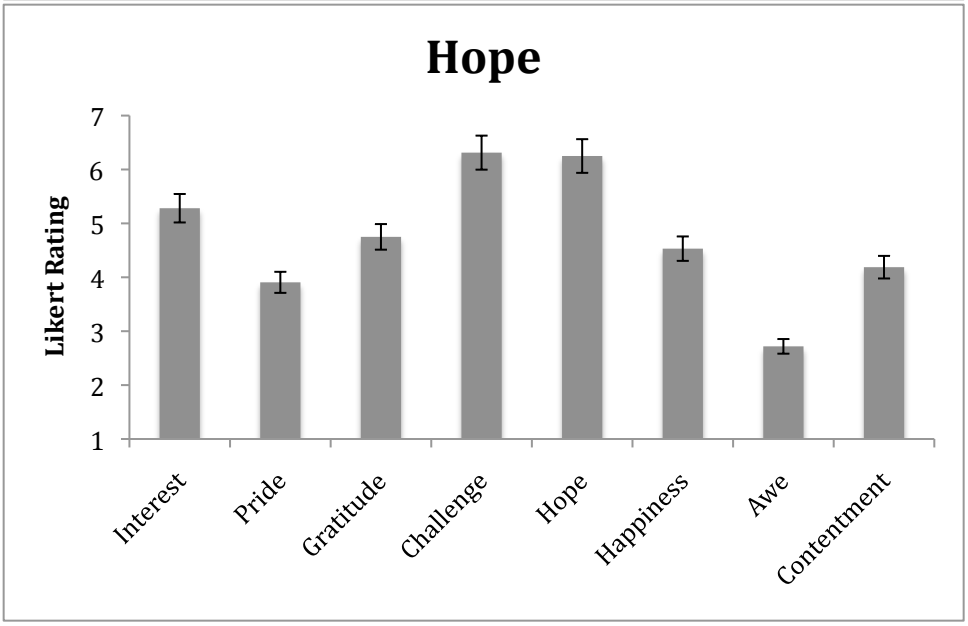

Awe
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

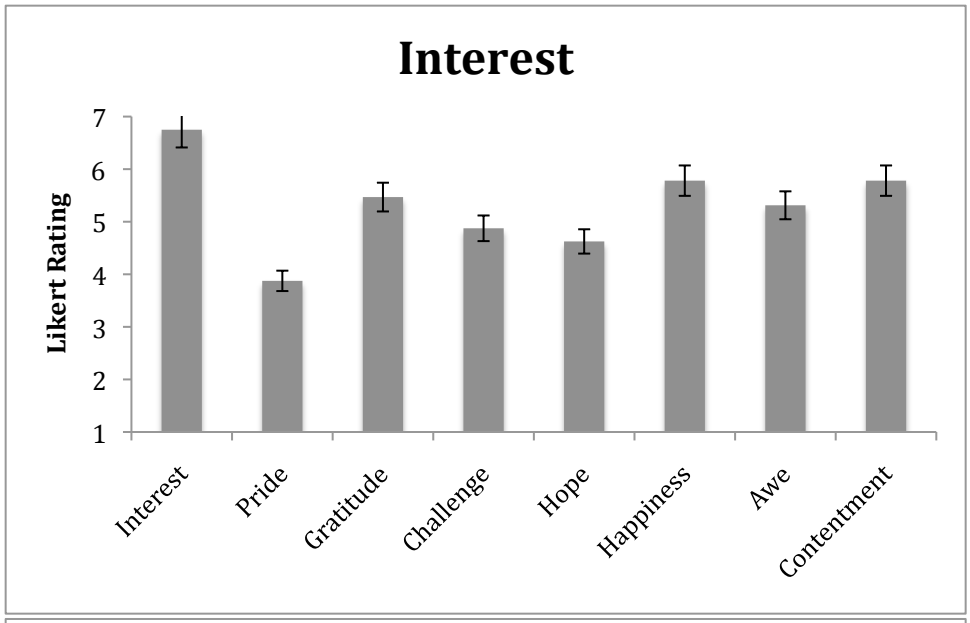

Challenge
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

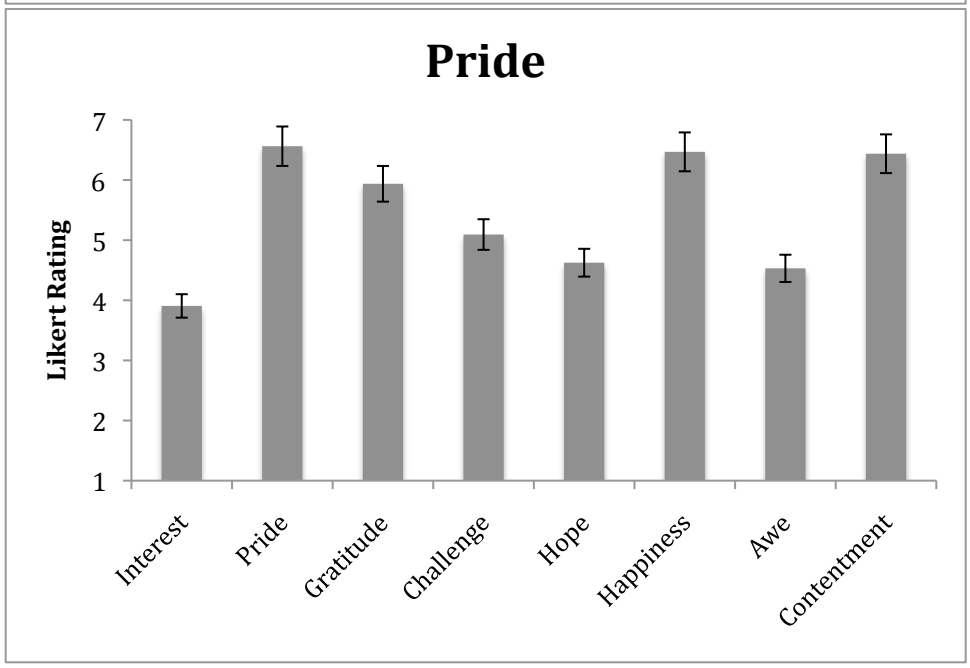

Contentment
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment


Gratitude
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

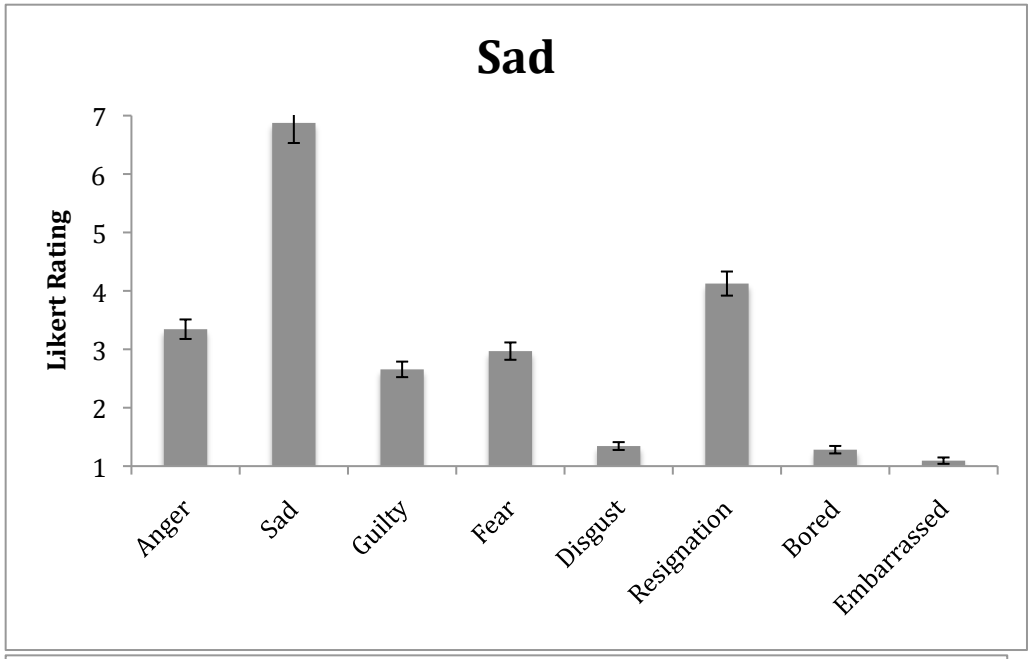

Happiness
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

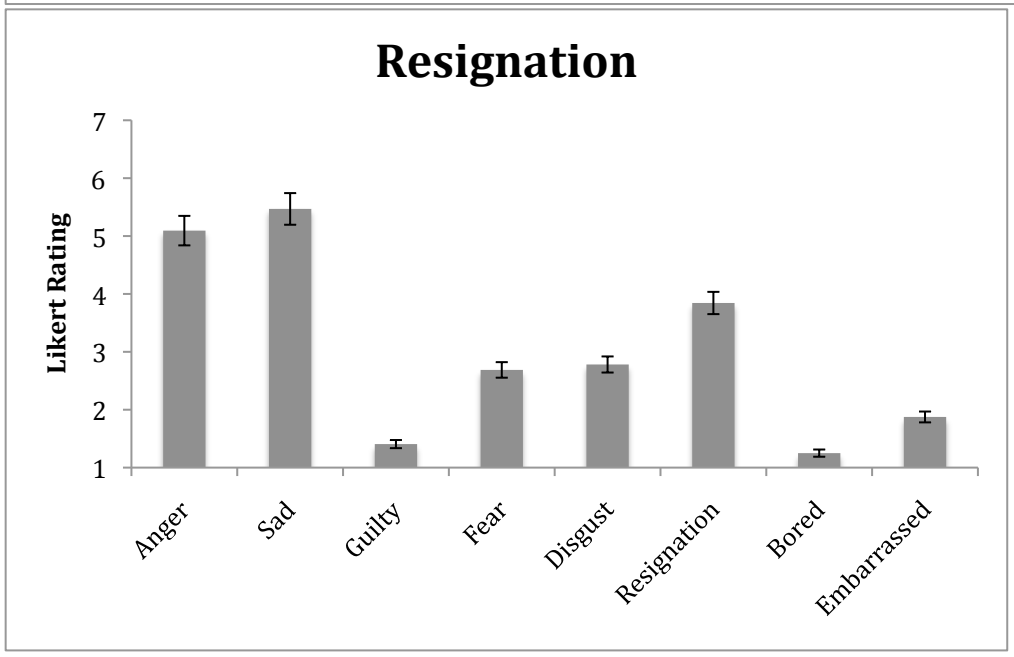

Hope
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

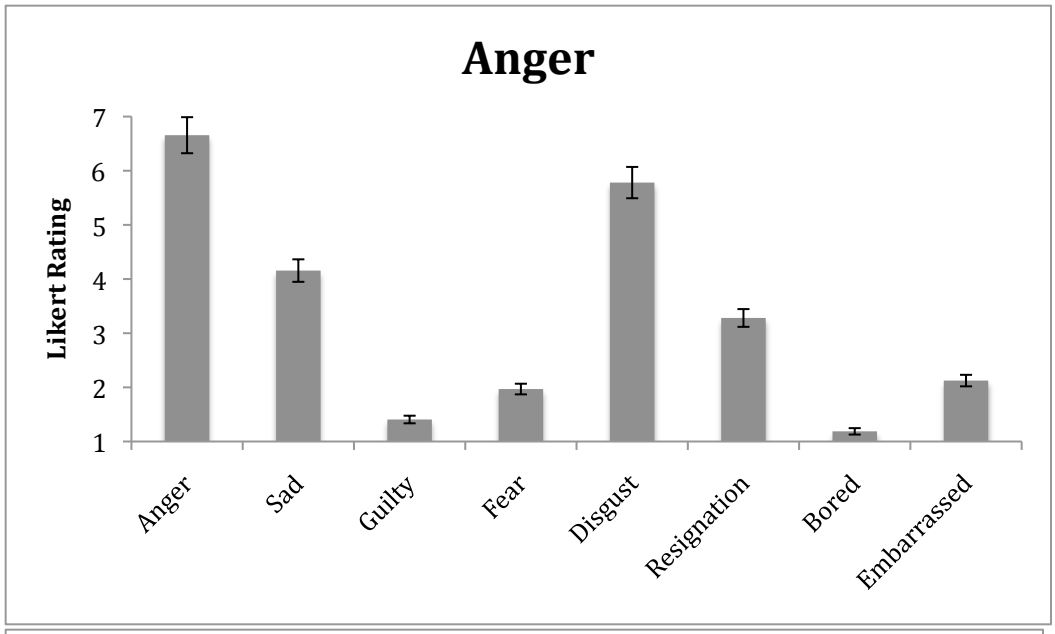

Interest
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

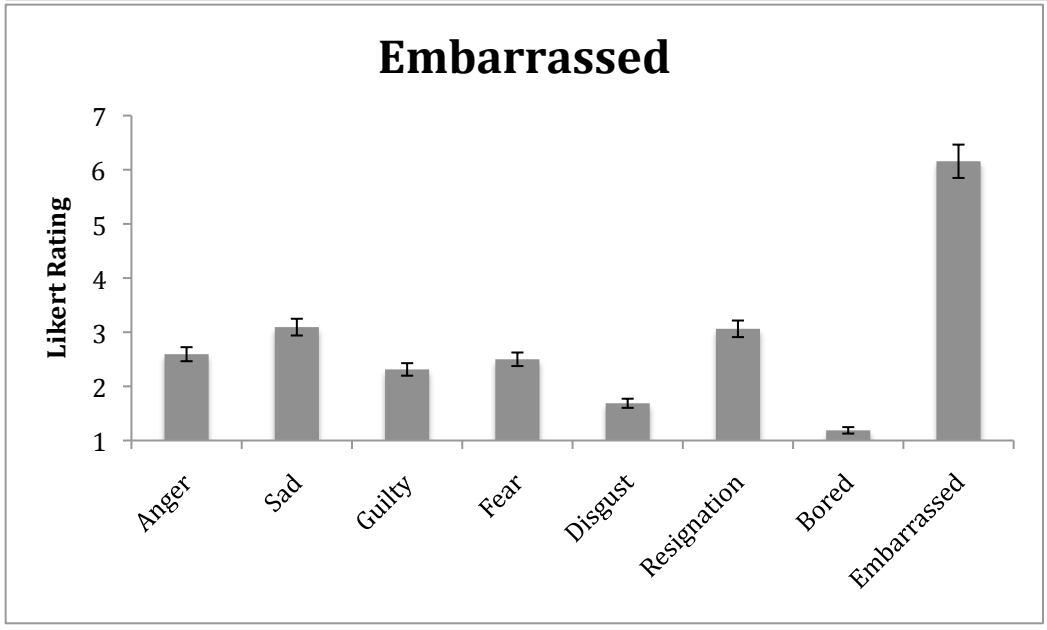

Pride
Likert Rating
7
6
5
4
3
2
1
Interest
Pride
Gratitude
Challenge
Hope
Happiness
Awe
Contentment

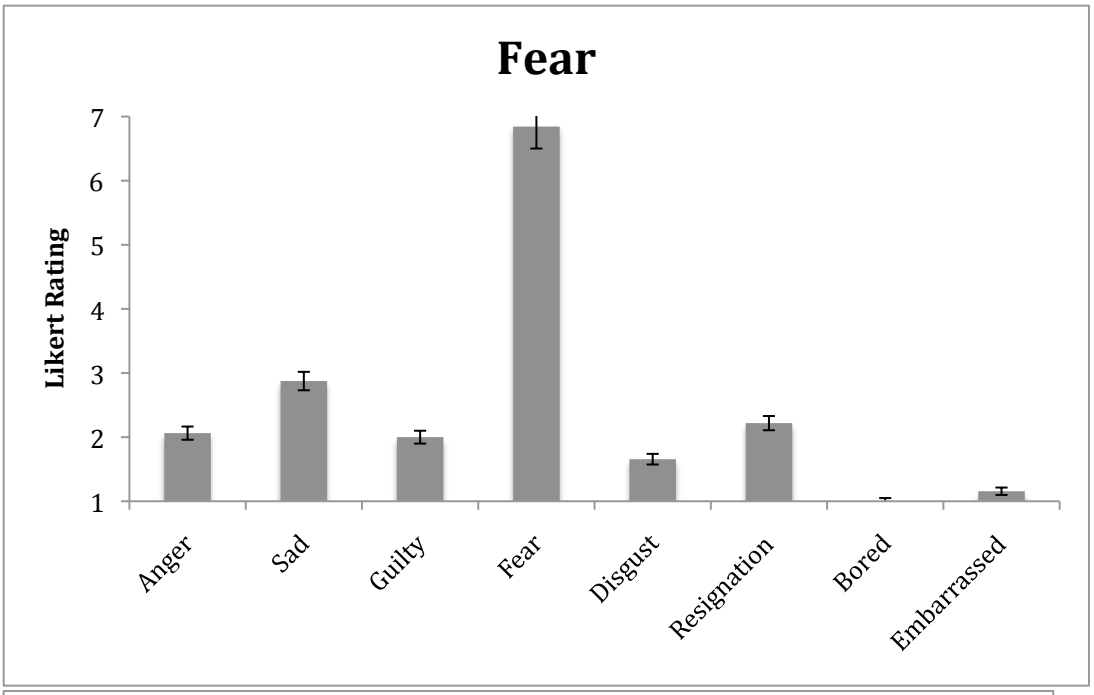
Study 2: DONES
n=32

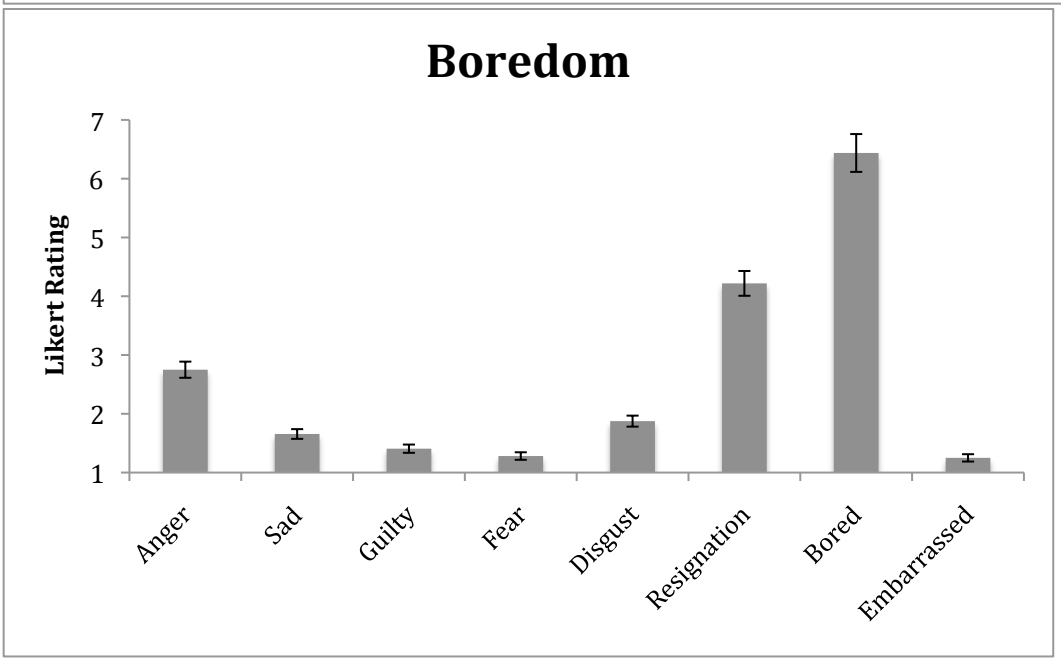


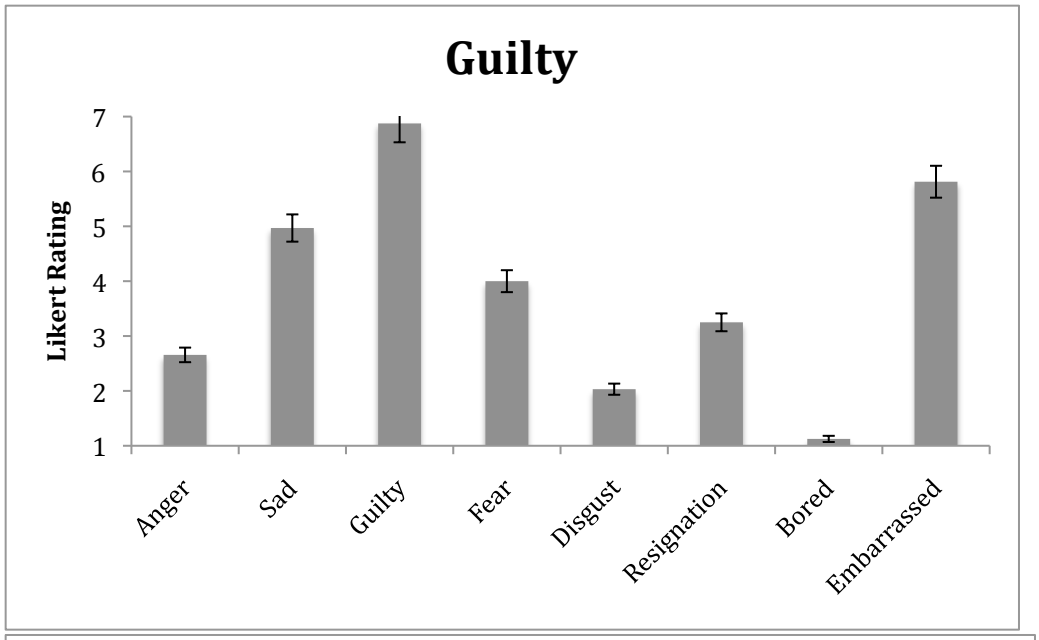


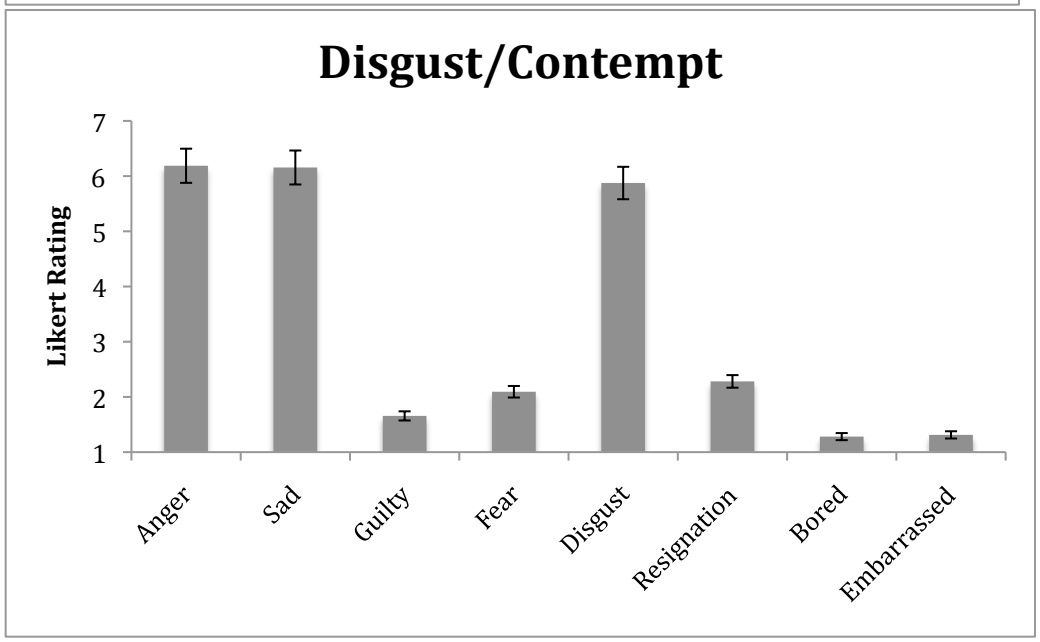

Anger
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilty
Fear
Disgust
Resignation
Bored
Embarrassed


Embarrassed
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilty
Fear
Disgust
Resignation
Bored
Embarrassed


Fear
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilty
Fear
Disgust
Resignation
Bored
Embarrassed


Boredom
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilty
Fear
Disgust
Resignation
Bored
Embarrassed


Guilty
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilty
Fear
Disgust
Resignation
Bored
Embarrassed


Disgust/Contempt
Likert Rating
7
6
5
4
3
2
1
Anger
Sad
Guilty
Fear
Disgust
Resignation
Bored
Embarrassed

Differences between P and N condition

```
> t.test(PSSscore1P,PSSscore1N)
      Welch Two Sample t-test
data:  PSSscore1P and PSSscore1N
t = -0.4798, df = 26.713, p-value = 0.6353
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5891391  0.3659248
sample estimates:
mean of x mean of y
 2.821429  2.933036
> t.test(PSSscore2P,PSSscore2N)
      Welch Two Sample t-test
data:  PSSscore2P and PSSscore2N
t = 0.5019, df = 25.888, p-value = 0.62
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.3487296  0.5740043
sample estimates:
mean of x mean of y
 2.934066  2.821429
> t.test(PSSscore3P,PSSscore3N)
      Welch Two Sample t-test
data:  PSSscore3P and PSSscore3N
t = -1.6104, df = 26.467, p-value = 0.1192
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.8636936  0.1045100
sample estimates:
mean of x mean of y
 2.591837  2.971429

> t.test(Exscore1P,Exscore1N)
      Welch Two Sample t-test
data:  Exscore1P and Exscore1N
t = -1.2734, df = 27.518, p-value = 0.2135
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.7142103  0.1668889
sample estimates:
mean of x mean of y
 1.985714  2.259375
> t.test(Exscore2P,Exscore2N)
      Welch Two Sample t-test
data:  Exscore2P and Exscore2N
t = -0.5529, df = 21.154, p-value = 0.5861
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5743224  0.3329763
sample estimates:
mean of x mean of y
 2.023077  2.143750
> t.test(Exscore3P,Exscore3N)
```

```
      Welch Two Sample t-test
data:  Exscore3P and Exscore3N
t = -0.9868, df = 26.651, p-value = 0.3326
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5713503  0.2003979
sample estimates:
mean of x mean of y
 1.967857  2.153333

> t.test(TotalPA1P,TotalPA1N)
      Welch Two Sample t-test
data:  TotalPA1P and TotalPA1N
t = 0.1231, df = 27.705, p-value = 0.9029
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.9776537  1.1026537
sample estimates:
mean of x mean of y
 3.333333  3.270833
> t.test(TotalPA2P,TotalPA2N)
      Welch Two Sample t-test
data:  TotalPA2P and TotalPA2N
t = -0.3573, df = 23.549, p-value = 0.724
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.2145325  0.8563594
sample estimates:
mean of x mean of y
 2.961538  3.140625
> t.test(TotalPA3P,TotalPA3N)
      Welch Two Sample t-test
data:  TotalPA3P and TotalPA3N
t = 1.8759, df = 25.168, p-value = 0.07231
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.08288245  1.78288245
sample estimates:
mean of x mean of y
 3.583333  2.733333

> t.test(TotalNA1P,TotalNA1N)
      Welch Two Sample t-test
data:  TotalNA1P and TotalNA1N
t = -1.2514, df = 26.291, p-value = 0.2218
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.2901575  0.3133718
sample estimates:
mean of x mean of y
 2.542857  3.031250
> t.test(TotalNA2P,TotalNA2N)
      Welch Two Sample t-test
data:  TotalNA2P and TotalNA2N
t = -0.7457, df = 25.538, p-value = 0.4627
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
```

```
 -1.3771315  0.6444392
sample estimates:
mean of x mean of y
 2.546154  2.912500
> t.test(TotalNA3P,TotalNA3N)
      Welch Two Sample t-test
data:  TotalNA3P and TotalNA3N
t = -2.5114, df = 25.946, p-value = 0.01859
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.9779048 -0.1973333
sample estimates:
mean of x mean of y
 1.985714  3.073333
> tes(-2.5114,12,15)
Mean Differences ES:
 d [ 95 %CI] = -0.97 [ -1.82 , -0.13 ]
  var(d) = 0.17
  p-value(d) = 0.03
  U3(d) = 16.54 %
  CLES(d) = 24.58 %
  Cliff's Delta = -0.51
 g [ 95 %CI] = -0.94 [ -1.76 , -0.13 ]
  var(g) = 0.16
  p-value(g) = 0.03
  U3(g) = 17.28 %
  CLES(g) = 25.24 %
 Correlation ES:
 r [ 95 %CI] = 0.45 [ 0.06 , 0.72 ]
  var(r) = 0.02
  p-value(r) = 0.03
 z [ 95 %CI] = 0.48 [ 0.06 , 0.9 ]
  var(z) = 0.04
  p-value(z) = 0.03
 Odds Ratio ES:
 OR [ 95 %CI] = 0.17 [ 0.04 , 0.79 ]
  p-value(OR) = 0.03

 Log OR [ 95 %CI] = -1.76 [ -3.29 , -0.24 ]
  var(lOR) = 0.55
  p-value(Log OR) = 0.03
 Other:
 NNT = -6.05
 Total N = 27

> t.test(SHSscore1P,SHSscore1N)
      Welch Two Sample t-test
data:  SHSscore1P and SHSscore1N
t = 0.8499, df = 26.055, p-value = 0.4031
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5445149  1.3123721
sample estimates:
mean of x mean of y
 5.321429  4.937500
> t.test(SHSscore2P,SHSscore2N)
      Welch Two Sample t-test
```

```
data:  SHSscore2P and SHSscore2N
t = 0.5778, df = 23.949, p-value = 0.5688
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.6832953  1.2145453
sample estimates:
mean of x mean of y
 5.250000  4.984375
> t.test(SHSscore3P,SHSscore3N)
      Welch Two Sample t-test
data:  SHSscore3P and SHSscore3N
t = 1.4209, df = 25.915, p-value = 0.1673
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.3112203  1.7040775
sample estimates:
mean of x mean of y
 5.446429  4.750000

> t.test(SWLscore1P,SWLscore1N)
      Welch Two Sample t-test
data:  SWLscore1P and SWLscore1N
t = 1.0612, df = 27.998, p-value = 0.2977
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.3986617  1.2558046
sample estimates:
mean of x mean of y
 5.228571  4.800000
> t.test(SWLscore2P,SWLscore2N)
      Welch Two Sample t-test
data:  SWLscore2P and SWLscore2N
t = 1.612, df = 26.43, p-value = 0.1188
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1834659  1.5219274
sample estimates:
mean of x mean of y
 5.369231  4.700000
> t.test(SWLscore3P,SWLscore3N)
      Welch Two Sample t-test
data:  SWLscore3P and SWLscore3N
t = 2.6269, df = 26.949, p-value = 0.01404
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.2532271 2.0610586
sample estimates:
mean of x mean of y
 5.757143  4.600000
> tes(2.6269,12,15)
Mean Differences ES:
 d [ 95 %CI] = 1.02 [ 0.17 , 1.86 ]
  var(d) = 0.17
  p-value(d) = 0.02
  U3(d) = 84.55 %
  CLES(d) = 76.41 %
  Cliff's Delta = 0.53
```

```
 g [ 95 %CI] = 0.99 [ 0.17 , 1.81 ]
  var(g) = 0.16
  p-value(g) = 0.02
  U3(g) = 83.81 %
  CLES(g) = 75.73 %
 Correlation ES:
 r [ 95 %CI] = 0.47 [ 0.08 , 0.73 ]
  var(r) = 0.02
  p-value(r) = 0.02
 z [ 95 %CI] = 0.5 [ 0.08 , 0.92 ]
  var(z) = 0.04
  p-value(z) = 0.02
 Odds Ratio ES:
 OR [ 95 %CI] = 6.33 [ 1.36 , 29.42 ]
  p-value(OR) = 0.02
 Log OR [ 95 %CI] = 1.85 [ 0.31 , 3.38 ]
  var(lOR) = 0.56
  p-value(Log OR) = 0.02
 Other:
 NNT = 2.7
 Total N = 27

> t.test(pglobalPHYSICAL1P,pglobalPHYSICAL1N)
      Welch Two Sample t-test
data:  pglobalPHYSICAL1P and pglobalPHYSICAL1N
t = 0.5045, df = 27.848, p-value = 0.6179
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.093362  1.807647
sample estimates:
mean of x mean of y
 15.85714  15.50000
> t.test(pglobalPHYSICAL2P,pglobalPHYSICAL2N)
      Welch Two Sample t-test
data:  pglobalPHYSICAL2P and pglobalPHYSICAL2N
t = 0.0272, df = 18.731, p-value = 0.9786
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.460846  1.499308
sample estimates:
mean of x mean of y
 15.76923  15.75000
> t.test(pglobalPHYSICAL3P,pglobalPHYSICAL3N)
      Welch Two Sample t-test
data:  pglobalPHYSICAL3P and pglobalPHYSICAL3N
t = 0.5773, df = 23.899, p-value = 0.5691
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.361601  2.418744
sample estimates:
mean of x mean of y
 15.92857  15.40000

> t.test(pglobalMENTAL1P,pglobalMENTAL1N)
      Welch Two Sample t-test
data:  pglobalMENTAL1P and pglobalMENTAL1N
t = 0.4325, df = 27.992, p-value = 0.6687
```

```
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.534680  2.356108
sample estimates:
mean of x mean of y
 14.28571  13.87500
> t.test(pglobalMENTAL2P,pglobalMENTAL2N)
      Welch Two Sample t-test
data:  pglobalMENTAL2P and pglobalMENTAL2N
t = 0.4136, df = 26.99, p-value = 0.6824
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.466367  2.206751
sample estimates:
mean of x mean of y
 14.30769  13.93750
> t.test(pglobalMENTAL3P,pglobalMENTAL3N)
      Welch Two Sample t-test
data:  pglobalMENTAL3P and pglobalMENTAL3N
t = 0.7179, df = 25.391, p-value = 0.4794
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.733436  3.590579
sample estimates:
mean of x mean of y
 14.92857  14.00000
> t.test(W3PDOPES,W3NDOPES)
      Welch Two Sample t-test
data:  W3PDOPES and W3NDOPES
t = -0.5771, df = 24.22, p-value = 0.5692
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1836337  0.1033480
sample estimates:
mean of x mean of y
 1.817857  1.858000

> t.test(W1PDOPES,W1NDOPES)
      Welch Two Sample t-test
data:  W1PDOPES and W1NDOPES
t = 1.2023, df = 23.627, p-value = 0.2412
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.08873487  0.33587773
sample estimates:
mean of x mean of y
 1.823571  1.700000
> t.test(W1PDONES,W1NDONES)
      Welch Two Sample t-test
data:  W1PDONES and W1NDONES
t = 0.7794, df = 27.443, p-value = 0.4424
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.02882507  0.06418221
sample estimates:
mean of x mean of y
 2.026429  2.008750
```

```
> t.test(W2PDOPES,W2NDOPES)
      Welch Two Sample t-test
data:  W2PDOPES and W2NDOPES
t = -0.317, df = 24.85, p-value = 0.7539
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1744745  0.1279361
sample estimates:
mean of x mean of y
 1.829231  1.852500
> t.test(W2PDONES,W2NDONES)
      Welch Two Sample t-test
data:  W2PDONES and W2NDONES
t = 1.1138, df = 23.453, p-value = 0.2767
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.03446111  0.11503804
sample estimates:
mean of x mean of y
 2.021538  1.981250
> t.test(W3PDONES,W3NDONES)
      Welch Two Sample t-test
data:  W3PDONES and W3NDONES
t = 0.4679, df = 22.642, p-value = 0.6443
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.09393553  0.14879267
sample estimates:
mean of x mean of y
 1.961429  1.934000
```

Differences Within Group from Week 1 to Week 2

```
> t.test(PSSscore1P,PSSscore2P,paired=TRUE)
      Paired t-test
data:  PSSscore1P and PSSscore2P
t = -0.9529, df = 11, p-value = 0.3611
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.8077273  0.3196320
sample estimates:
mean of the differences
             -0.2440476
> t.test(PSSscore1N,PSSscore2N,paired=TRUE)
      Paired t-test
data:  PSSscore1N and PSSscore2N
t = 0.6175, df = 14, p-value = 0.5468
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.3180016  0.5751445
sample estimates:
mean of the differences
              0.1285714
> t.test(Exscore1P,Exscore2P,paired=TRUE)
      Paired t-test
data:  Exscore1P and Exscore2P
```

```
t = 0.0947, df = 11, p-value = 0.9262
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.4631367  0.5048034
sample estimates:
mean of the differences
             0.02083333
> t.test(Exscore1N,Exscore2N,paired=TRUE)
      Paired t-test
data:  Exscore1N and Exscore2N
t = 0.2841, df = 14, p-value = 0.7805
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.3274836  0.4274836
sample estimates:
mean of the differences
                  0.05
> t.test(TotalPA1P,TotalPA2P,paired=TRUE)
      Paired t-test
data:  TotalPA1P and TotalPA2P
t = 1.5416, df = 11, p-value = 0.1514
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2940426  1.6690426
sample estimates:
mean of the differences
                 0.6875
> t.test(TotalPA1N,TotalPA2N,paired=TRUE)
      Paired t-test
data:  TotalPA1N and TotalPA2N
t = 0.7523, df = 14, p-value = 0.4643
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5244625  1.0911292
sample estimates:
mean of the differences
              0.2833333
> t.test(TotalNA1P,TotalNA2P,paired=TRUE)
      Paired t-test
data:  TotalNA1P and TotalNA2P
t = -0.2594, df = 11, p-value = 0.8001
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.343677  1.060344
sample estimates:
mean of the differences
             -0.1416667
> t.test(TotalNA1N,TotalNA2N,paired=TRUE)
      Paired t-test
data:  TotalNA1N and TotalNA2N
t = -0.0814, df = 14, p-value = 0.9363
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.9113538  0.8446872
sample estimates:
mean of the differences
            -0.03333333
```

```
> t.test(SHSscore1P,SHSscore2P,paired=TRUE)
      Paired t-test
data:  SHSscore1P and SHSscore2P
t = 0.1537, df = 11, p-value = 0.8806
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.109829  1.276495
sample estimates:
mean of the differences
            0.08333333
> t.test(SHSscore1N,SHSscore2N,paired=TRUE)
      Paired t-test
data:  SHSscore1N and SHSscore2N
t = -0.0777, df = 14, p-value = 0.9391
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.9529673  0.8863006
sample estimates:
mean of the differences
           -0.03333333
> t.test(SWLscore1P,SWLscore2P,paired=TRUE)
      Paired t-test
data:  SWLscore1P and SWLscore2P
t = -0.3905, df = 11, p-value = 0.7036
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.8847874  0.6181207
sample estimates:
mean of the differences
            -0.1333333
> t.test(SWLscore1N,SWLscore2N,paired=TRUE)
      Paired t-test
data:  SWLscore1N and SWLscore2N
t = 0.2667, df = 14, p-value = 0.7936
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.7511118  0.9644452
sample estimates:
mean of the differences
             0.1066667
> t.test(pglobalPHYSICAL1P,pglobalPHYSICAL2P,paired=TRUE)
      Paired t-test
data:  pglobalPHYSICAL1P and pglobalPHYSICAL2P
t = 0.6916, df = 11, p-value = 0.5035
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.09131  2.09131
sample estimates:
mean of the differences
                   0.5
> t.test(pglobalPHYSICAL1N,pglobalPHYSICAL2N,paired=TRUE)
      Paired t-test
data:  pglobalPHYSICAL1N and pglobalPHYSICAL2N
t = -0.4498, df = 14, p-value = 0.6597
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.922802  1.256135
```

```
sample estimates:
mean of the differences
             -0.3333333
> t.test(pglobalMENTAL1P,pglobalMENTAL2P,paired=TRUE)
      Paired t-test
data:  pglobalMENTAL1P and pglobalMENTAL2P
t = 0, df = 11, p-value = 1
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -2.115973  2.115973
sample estimates:
mean of the differences
                      0
> t.test(pglobalMENTAL1N,pglobalMENTAL2N,paired=TRUE)
      Paired t-test
data:  pglobalMENTAL1N and pglobalMENTAL2N
t = 0, df = 14, p-value = 1
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -2.154976  2.154976
sample estimates:
mean of the differences
                      0
> t.test(W1PDOPES,W2PDOPES,paired=TRUE)
      Paired t-test
data:  W1PDOPES and W2PDOPES
t = -0.2756, df = 11, p-value = 0.788
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.10484328  0.08150995
sample estimates:
mean of the differences
            -0.01166667
> t.test(W1PDONES,W2PDONES,paired=TRUE)
      Paired t-test
data:  W1PDONES and W2PDONES
t = 0.5159, df = 11, p-value = 0.6162
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.03266493  0.05266493
sample estimates:
mean of the differences
                  0.01
> t.test(W1NDOPES,W2NDOPES,paired=TRUE)
      Paired t-test
data:  W1NDOPES and W2NDOPES
t = -1.7351, df = 14, p-value = 0.1047
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.36373989  0.03840655
sample estimates:
mean of the differences
             -0.1626667
> t.test(W1NDONES,W2NDONES,paired=TRUE)
      Paired t-test
data:  W1NDONES and W2NDONES
t = 0.78, df = 14, p-value = 0.4484
```

```
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.0279949  0.0599949
sample estimates:
mean of the differences
                 0.016
```

Differences Within Group from Week 2 to Week 3

```
> t.test(PSSscore2P,PSSscore3P,paired=TRUE)
      Paired t-test
data:  PSSscore2P and PSSscore3P
t = 2.2576, df = 11, p-value = 0.04528
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.009556038 0.752348724
sample estimates:
mean of the differences
             0.3809524
> (dpss<-2.2576/sqrt(12))
[1] 0.651713
> t.test(PSSscore2N,PSSscore3N,paired=TRUE)
      Paired t-test
data:  PSSscore2N and PSSscore3N
t = -0.859, df = 14, p-value = 0.4048
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.6161239  0.2637429
sample estimates:
mean of the differences
            -0.1761905
> t.test(Exscore2P,Exscore3P,paired=TRUE)
      Paired t-test
data:  Exscore2P and Exscore3P
t = 0.1326, df = 11, p-value = 0.8969
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.4548034  0.5131367
sample estimates:
mean of the differences
            0.02916667
> t.test(Exscore2N,Exscore3N,paired=TRUE)
      Paired t-test
data:  Exscore2N and Exscore3N
t = -0.227, df = 14, p-value = 0.8237
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.3482848  0.2816181
sample estimates:
mean of the differences
           -0.03333333
> t.test(TotalPA2P,TotalPA3P,paired=TRUE)
      Paired t-test
data:  TotalPA2P and TotalPA3P
t = -0.7462, df = 11, p-value = 0.4712
alternative hypothesis: true difference in means is not equal to 0
```

```
95 percent confidence interval:
 -1.837733  0.907177
sample estimates:
mean of the differences
             -0.4652778
> t.test(TotalPA2N,TotalPA3N,paired=TRUE)
      Paired t-test
data:  TotalPA2N and TotalPA3N
t = 0.9028, df = 14, p-value = 0.3819
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5578737  1.3689848
sample estimates:
mean of the differences
              0.4055556
> t.test(TotalNA2P,TotalNA3P,paired=TRUE)
      Paired t-test
data:  TotalNA2P and TotalNA3P
t = 1.3308, df = 11, p-value = 0.2102
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.343274  1.393274
sample estimates:
mean of the differences
                  0.525
> t.test(TotalNA2N,TotalNA3N,paired=TRUE)
      Paired t-test
data:  TotalNA2N and TotalNA3N
t = -0.3176, df = 14, p-value = 0.7555
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.930437  0.690437
sample estimates:
mean of the differences
                 -0.12
> t.test(SHSscore2P,SHSscore3P,paired=TRUE)
      Paired t-test
data:  SHSscore2P and SHSscore3P
t = -0.0391, df = 11, p-value = 0.9695
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.194858  1.153191
sample estimates:
mean of the differences
            -0.02083333
> t.test(SHSscore2N,SHSscore3N,paired=TRUE)
      Paired t-test
data:  SHSscore2N and SHSscore3N
t = 0.6233, df = 14, p-value = 0.5431
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.6508807  1.1842140
sample estimates:
mean of the differences
              0.2666667
> t.test(SWLscore2P,SWLscore3P,paired=TRUE)
      Paired t-test
```

```
data:  SWLscore2P and SWLscore3P
t = -0.7056, df = 11, p-value = 0.4951
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.0298147  0.5298147
sample estimates:
mean of the differences
                 -0.25
> t.test(SWLscore2N,SWLscore3N,paired=TRUE)
      Paired t-test
data:  SWLscore2N and SWLscore3N
t = 0.4471, df = 14, p-value = 0.6617
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.6075706  0.9275706
sample estimates:
mean of the differences
                  0.16
> t.test(pglobalPHYSICAL2P,pglobalPHYSICAL3P,paired=TRUE)
      Paired t-test
data:  pglobalPHYSICAL2P and pglobalPHYSICAL3P
t = 0, df = 11, p-value = 1
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.691911  1.691911
sample estimates:
mean of the differences
                     0
> t.test(pglobalPHYSICAL2N,pglobalPHYSICAL3N,paired=TRUE)
      Paired t-test
data:  pglobalPHYSICAL2N and pglobalPHYSICAL3N
t = 0.658, df = 14, p-value = 0.5212
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.903783  1.703783
sample estimates:
mean of the differences
                   0.4
> t.test(pglobalMENTAL2P,pglobalMENTAL3P,paired=TRUE)
      Paired t-test
data:  pglobalMENTAL2P and pglobalMENTAL3P
t = -0.4318, df = 11, p-value = 0.6742
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -2.540574  1.707241
sample estimates:
mean of the differences
            -0.4166667
> t.test(pglobalMENTAL2N,pglobalMENTAL3N,paired=TRUE)
      Paired t-test
data:  pglobalMENTAL2N and pglobalMENTAL3N
t = 0.1766, df = 14, p-value = 0.8624
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.486171  1.752837
sample estimates:
mean of the differences
```

```
             0.1333333
> t.test(W2PDOPES,W3PDOPES,paired=TRUE)
      Paired t-test
data:  W2PDOPES and W3PDOPES
t = 0, df = 11, p-value = 1
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1110121  0.1110121
sample estimates:
mean of the differences
         -1.850372e-17
> t.test(W2PDONES,W3PDONES,paired=TRUE)
      Paired t-test
data:  W2PDONES and W3PDONES
t = 1.6796, df = 11, p-value = 0.1212
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.02017919  0.15017919
sample estimates:
mean of the differences
                 0.065
> t.test(W2NDOPES,W3NDOPES,paired=TRUE)
      Paired t-test
data:  W2NDOPES and W3NDOPES
t = -0.2853, df = 14, p-value = 0.7796
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.12492477  0.09559144
sample estimates:
mean of the differences
            -0.01466667
> t.test(W2NDONES,W3NDONES,paired=TRUE)
      Paired t-test
data:  W2NDONES and W3NDONES
t = 2.6134, df = 14, p-value = 0.02044
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.01016095 0.10317239
sample estimates:
mean of the differences
             0.05666667
> (ddones<-2.6134/sqrt(108))
[1] 0.2514745
```

Differences Within Group from Week 1 to Week 3

```
> t.test(PSSscore1P,PSSscore3P,paired=TRUE)
      Paired t-test
data:  PSSscore1P and PSSscore3P
t = 0.4395, df = 11, p-value = 0.6688
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5487702  0.8225797
sample estimates:
mean of the differences
              0.1369048
```

```
> t.test(PSSscore1N,PSSscore3N,paired=TRUE)
      Paired t-test
data:  PSSscore1N and PSSscore3N
t = -0.4834, df = 14, p-value = 0.6363
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2588776  0.1636395
sample estimates:
mean of the differences
           -0.04761905
> t.test(Exscore1P,Exscore3P,paired=TRUE)
      Paired t-test
data:  Exscore1P and Exscore3P
t = 0.1861, df = 11, p-value = 0.8558
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5413936  0.6413936
sample estimates:
mean of the differences
                  0.05
> t.test(Exscore1N,Exscore3N,paired=TRUE)
      Paired t-test
data:  Exscore1N and Exscore3N
t = 0.1335, df = 14, p-value = 0.8957
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2511081  0.2844414
sample estimates:
mean of the differences
             0.01666667
> t.test(TotalPA1P,TotalPA3P,paired=TRUE)
      Paired t-test
data:  TotalPA1P and TotalPA3P
t = 0.4623, df = 11, p-value = 0.6529
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.8358444  1.2802889
sample estimates:
mean of the differences
              0.2222222
> t.test(TotalPA1N,TotalPA3N,paired=TRUE)
      Paired t-test
data:  TotalPA1N and TotalPA3N
t = 1.5485, df = 14, p-value = 0.1438
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2652748  1.6430525
sample estimates:
mean of the differences
              0.6888889
> t.test(TotalNA1P,TotalNA3P,paired=TRUE)
      Paired t-test
data:  TotalNA1P and TotalNA3P
t = 0.8991, df = 11, p-value = 0.3879
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5551047  1.3217714
```

```
sample estimates:
mean of the differences
              0.3833333
> t.test(TotalNA1N,TotalNA3N,paired=TRUE)
      Paired t-test
data:  TotalNA1N and TotalNA3N
t = -0.5852, df = 14, p-value = 0.5677
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.7153082  0.4086416
sample estimates:
mean of the differences
             -0.1533333
> t.test(SHSscore1P,SHSscore3P,paired=TRUE)
      Paired t-test
data:  SHSscore1P and SHSscore3P
t = 0.1252, df = 11, p-value = 0.9026
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.036167  1.161167
sample estimates:
mean of the differences
                0.0625
> t.test(SHSscore1N,SHSscore3N,paired=TRUE)
      Paired t-test
data:  SHSscore1N and SHSscore3N
t = 0.6705, df = 14, p-value = 0.5135
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5130743  0.9797410
sample estimates:
mean of the differences
              0.2333333
> t.test(SWLscore1P,SWLscore3P,paired=TRUE)
      Paired t-test
data:  SWLscore1P and SWLscore3P
t = -0.788, df = 11, p-value = 0.4473
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.4540202  0.6873536
sample estimates:
mean of the differences
             -0.3833333
> t.test(SWLscore1N,SWLscore3N,paired=TRUE)
      Paired t-test
data:  SWLscore1N and SWLscore3N
t = 0.8351, df = 14, p-value = 0.4177
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.4182167  0.9515500
sample estimates:
mean of the differences
              0.2666667
> t.test(pglobalPHYSICAL1P,pglobalPHYSICAL3P,paired=TRUE)
      Paired t-test
data:  pglobalPHYSICAL1P and pglobalPHYSICAL3P
t = 0.4445, df = 11, p-value = 0.6653
```

```
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.975645  2.975645
sample estimates:
mean of the differences
                   0.5
> t.test(pglobalPHYSICAL1N,pglobalPHYSICAL3N,paired=TRUE)
      Paired t-test
data:  pglobalPHYSICAL1N and pglobalPHYSICAL3N
t = 0.1354, df = 14, p-value = 0.8942
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.9896047  1.1229380
sample estimates:
mean of the differences
            0.06666667
> t.test(pglobalMENTAL1P,pglobalMENTAL3P,paired=TRUE)
      Paired t-test
data:  pglobalMENTAL1P and pglobalMENTAL3P
t = -0.2563, df = 11, p-value = 0.8025
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -3.995084  3.161751
sample estimates:
mean of the differences
            -0.4166667
> t.test(pglobalMENTAL1N,pglobalMENTAL3N,paired=TRUE)
      Paired t-test
data:  pglobalMENTAL1N and pglobalMENTAL3N
t = 0.151, df = 14, p-value = 0.8821
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.760505  2.027172
sample estimates:
mean of the differences
             0.1333333
> t.test(W1PDOPES,W3PDOPES,paired=TRUE)
      Paired t-test
data:  W1PDOPES and W3PDOPES
t = -0.2084, df = 11, p-value = 0.8387
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1348942  0.1115609
sample estimates:
mean of the differences
           -0.01166667
> t.test(W1PDONES,W3PDONES,paired=TRUE)
      Paired t-test
data:  W1PDONES and W3PDONES
t = 1.7412, df = 11, p-value = 0.1095
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.01980354  0.16980354
sample estimates:
mean of the differences
                 0.075
> t.test(W1NDOPES,W3NDOPES,paired=TRUE)
```

```
      Paired t-test
data:  W1NDOPES and W3NDOPES
t = -1.8137, df = 14, p-value = 0.09121
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.38703482  0.03236816
sample estimates:
mean of the differences
             -0.1773333
> t.test(W1NDONES,W3NDONES,paired=TRUE)
      Paired t-test
data:  W1NDONES and W3NDONES
t = 3.376, df = 14, p-value = 0.004524
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.02650133 0.11883200
sample estimates:
mean of the differences
             0.07266667
> (ddones2<-3.376/sqrt(108))
[1] 0.3248558
```

Appendix K: Study 2 Correlations

Correlations of Differentiation Scores with Weekly Survey Outcomes by Group

```
> cor.test(W1NDIFF,PSSscore1N)
      Pearson's product-moment correlation
data:  W1NDIFF and PSSscore1N
t = -0.8285, df = 14, p-value = 0.4213
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6429819  0.3130756
sample estimates:
       cor
-0.2161793

> cor.test(W1NDIFF,Exscore1N)
      Pearson's product-moment correlation
data:  W1NDIFF and Exscore1N
t = -1.0972, df = 14, p-value = 0.2911
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6819714  0.2490522
sample estimates:
       cor
-0.2813929

> cor.test(W1NDIFF,TotalPA1N)
      Pearson's product-moment correlation
data:  W1NDIFF and TotalPA1N
t = 0.7899, df = 14, p-value = 0.4428
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3221368  0.6370321
sample estimates:
      cor
0.2065517

> cor.test(W1NDIFF,TotalNA1N)
      Pearson's product-moment correlation
data:  W1NDIFF and TotalNA1N
t = 0.6414, df = 14, p-value = 0.5316
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3566102  0.6133010
sample estimates:
      cor
0.1689633
> cor.test(W1NDIFF,SHSscore1N)
      Pearson's product-moment correlation
data:  W1NDIFF and SHSscore1N
t = 2.0505, df = 14, p-value = 0.05953
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.01985236  0.78845599
sample estimates:
      cor
```

```
0.4805823

> cor.test(W1NDIFF,SWLscore1N)
      Pearson's product-moment correlation
data:  W1NDIFF and SWLscore1N
t = 0.6551, df = 14, p-value = 0.523
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3534636  0.6155423
sample estimates:
      cor
0.1724589

> cor.test(W1NDIFF,pglobalPHYSICAL1N)
      Pearson's product-moment correlation
data:  W1NDIFF and pglobalPHYSICAL1N
t = -1.1868, df = 14, p-value = 0.2551
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6940307  0.2274529
sample estimates:
       cor
-0.3023413

> cor.test(W1NDIFF,pglobalMENTAL1N)
      Pearson's product-moment correlation
data:  W1NDIFF and pglobalMENTAL1N
t = 0.4003, df = 14, p-value = 0.695
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4109959  0.5719281
sample estimates:
      cor
0.1063832

> cor.test(W1PDIFF,PSSscore1P)
      Pearson's product-moment correlation
data:  W1PDIFF and PSSscore1P
t = 0.3293, df = 12, p-value = 0.7476
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4590008  0.5953146
sample estimates:
       cor
0.09462285

> cor.test(W1PDIFF,Exscore1P)
      Pearson's product-moment correlation
data:  W1PDIFF and Exscore1P
t = 0.7878, df = 12, p-value = 0.4461
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3499979  0.6731393
sample estimates:
      cor
0.2217635
```

```
> cor.test(W1PDIFF,TotalPA1P)
      Pearson's product-moment correlation
data:  W1PDIFF and TotalPA1P
t = -0.4202, df = 12, p-value = 0.6818
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6119053  0.4381519
sample estimates:
       cor
-0.1204228

> cor.test(W1PDIFF,TotalNA1P)
      Pearson's product-moment correlation
data:  W1PDIFF and TotalNA1P
t = 0.8047, df = 12, p-value = 0.4366
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3458260  0.6757267
sample estimates:
      cor
0.2262717

> cor.test(W1PDIFF,SHSscore1P)
      Pearson's product-moment correlation
data:  W1PDIFF and SHSscore1P
t = -1.0076, df = 12, p-value = 0.3335
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.7053481  0.2950034
sample estimates:
       cor
-0.2792916

> cor.test(W1PDIFF,SWLscore1P)
      Pearson's product-moment correlation
data:  W1PDIFF and SWLscore1P
t = -1.9275, df = 12, p-value = 0.07792
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.80828186  0.05977831
sample estimates:
       cor
-0.4862228

> cor.test(W1PDIFF,pglobalPHYSICAL1P)
      Pearson's product-moment correlation
data:  W1PDIFF and pglobalPHYSICAL1P
t = -0.3735, df = 12, p-value = 0.7153
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6034610  0.4489066
sample estimates:
       cor
-0.1072077

> cor.test(W1PDIFF,pglobalMENTAL1P)
      Pearson's product-moment correlation
```

```
data:  W1PDIFF and pglobalMENTAL1P
t = -0.3394, df = 12, p-value = 0.7402
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5971948  0.4566950
sample estimates:
        cor
-0.09751328

> cor.test(W2NDIFF,PSSscore2N)
      Pearson's product-moment correlation
data:  W2NDIFF and PSSscore2N
t = -0.3668, df = 14, p-value = 0.7192
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5659085  0.4183657
sample estimates:
        cor
-0.09757538

> cor.test(W2NDIFF,Exscore2N)
      Pearson's product-moment correlation
data:  W2NDIFF and Exscore2N
t = -0.6913, df = 14, p-value = 0.5007
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6214237  0.3451006
sample estimates:
       cor
-0.1816853

> cor.test(W2NDIFF,TotalPA2N)
      Pearson's product-moment correlation
data:  W2NDIFF and TotalPA2N
t = -0.4998, df = 14, p-value = 0.625
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5894185  0.3888274
sample estimates:
       cor
-0.1323965

> cor.test(W2NDIFF,TotalNA2N)
      Pearson's product-moment correlation
data:  W2NDIFF and TotalNA2N
t = -1.2003, df = 14, p-value = 0.2499
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6958111  0.2241854
sample estimates:
       cor
-0.3054664

> cor.test(W2NDIFF,SHSscore2N)
      Pearson's product-moment correlation
data:  W2NDIFF and SHSscore2N
t = -0.1844, df = 14, p-value = 0.8564
```

```
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5319398  0.4576589
sample estimates:
        cor
-0.04921054

> cor.test(W2NDIFF,SWLscore2N)
      Pearson's product-moment correlation
data:  W2NDIFF and SWLscore2N
t = -0.4336, df = 14, p-value = 0.6712
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5778426  0.4036273
sample estimates:
       cor
-0.1151091

> cor.test(W2NDIFF,pglobalPHYSICAL2N)
      Pearson's product-moment correlation
data:  W2NDIFF and pglobalPHYSICAL2N
t = 0.5084, df = 14, p-value = 0.6191
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3868841  0.5909093
sample estimates:
      cor
0.1346432

> cor.test(W2NDIFF,pglobalMENTAL2N)
      Pearson's product-moment correlation
data:  W2NDIFF and pglobalMENTAL2N
t = 0.4204, df = 14, p-value = 0.6806
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4065459  0.5755122
sample estimates:
      cor
0.1116624

> cor.test(W2PDIFF,PSSscore2P)
      Pearson's product-moment correlation
data:  W2PDIFF and PSSscore2P
t = -0.2493, df = 11, p-value = 0.8077
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6011216  0.4965288
sample estimates:
        cor
-0.07496561

> cor.test(W2PDIFF,Exscore2P)
      Pearson's product-moment correlation
data:  W2PDIFF and Exscore2P
t = 0.3776, df = 11, p-value = 0.7129
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
```

```
 -0.4669627  0.6251478
sample estimates:
      cor
0.1131297

> cor.test(W2PDIFF,TotalPA2P)
      Pearson's product-moment correlation
data:  W2PDIFF and TotalPA2P
t = -0.2805, df = 11, p-value = 0.7843
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6070739  0.4894340
sample estimates:
        cor
-0.08427891

> cor.test(W2PDIFF,TotalNA2P)
      Pearson's product-moment correlation
data:  W2PDIFF and TotalNA2P
t = 0.9532, df = 11, p-value = 0.361
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3240906  0.7179392
sample estimates:
      cor
0.2762189

> cor.test(W2PDIFF,SHSscore2P)
      Pearson's product-moment correlation
data:  W2PDIFF and SHSscore2P
t = 0.9561, df = 11, p-value = 0.3595
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3233311  0.7183500
sample estimates:
      cor
0.2770023

> cor.test(W2PDIFF,SWLscore2P)
      Pearson's product-moment correlation
data:  W2PDIFF and SWLscore2P
t = 0.8787, df = 11, p-value = 0.3984
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3433388  0.7072787
sample estimates:
      cor
0.2560928

> cor.test(W2PDIFF,pglobalPHYSICAL2P)
      Pearson's product-moment correlation
data:  W2PDIFF and pglobalPHYSICAL2P
t = 0.7019, df = 11, p-value = 0.4973
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3882383  0.6804041
sample estimates:
```

```
      cor
0.2070345

> cor.test(W2PDIFF,pglobalMENTAL2P)
      Pearson's product-moment correlation
data:  W2PDIFF and pglobalMENTAL2P
t = 0.8684, df = 11, p-value = 0.4037
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3459844  0.7057751
sample estimates:
      cor
0.2532852

> cor.test(W3NDIFF,PSSscore3N)
      Pearson's product-moment correlation
data:  W3NDIFF and PSSscore3N
t = -0.3168, df = 13, p-value = 0.7565
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5740432  0.4446832
sample estimates:
       cor
-0.08751514

> cor.test(W3NDIFF,Exscore3N)
      Pearson's product-moment correlation
data:  W3NDIFF and Exscore3N
t = 0.1581, df = 13, p-value = 0.8768
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4791992  0.5438747
sample estimates:
      cor
0.0438205

> cor.test(W3NDIFF,TotalPA3N)
      Pearson's product-moment correlation
data:  W3NDIFF and TotalPA3N
t = -1.4227, df = 13, p-value = 0.1784
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.7401391  0.1788542
sample estimates:
       cor
-0.3670367

> cor.test(W3NDIFF,TotalNA3N)
      Pearson's product-moment correlation
data:  W3NDIFF and TotalNA3N
t = -0.5675, df = 13, p-value = 0.5801
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6184802  0.3876620
sample estimates:
      cor
-0.155476
```

```
> cor.test(W3NDIFF,SHSscore3N)
      Pearson's product-moment correlation
data:  W3NDIFF and SHSscore3N
t = 1.01, df = 13, p-value = 0.3309
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2814053  0.6870666
sample estimates:
      cor
0.2697418
> cor.test(W3NDIFF,SWLscore3N)
      Pearson's product-moment correlation
data:  W3NDIFF and SWLscore3N
t = 0.7164, df = 13, p-value = 0.4864
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3525741  0.6429612
sample estimates:
      cor
0.1948875

> cor.test(W3NDIFF,pglobalPHYSICAL3N)
      Pearson's product-moment correlation
data:  W3NDIFF and pglobalPHYSICAL3N
t = 1.4871, df = 13, p-value = 0.1608
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1627532  0.7475472
sample estimates:
      cor
0.3812995

> cor.test(W3NDIFF,pglobalMENTAL3N)
      Pearson's product-moment correlation
data:  W3NDIFF and pglobalMENTAL3N
t = 1.1995, df = 13, p-value = 0.2517
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2345106  0.7126895
sample estimates:
      cor
0.3156745

> cor.test(W3PDIFF,PSSscore3P)
      Pearson's product-moment correlation
data:  W3PDIFF and PSSscore3P
t = -0.4384, df = 12, p-value = 0.6689
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6151607  0.4339240
sample estimates:
       cor
-0.1255643

> cor.test(W3PDIFF,Exscore3P)
      Pearson's product-moment correlation
```

```
data:  W3PDIFF and Exscore3P
t = 0.4519, df = 12, p-value = 0.6594
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4307871  0.6175531
sample estimates:
      cor
0.1293597

> cor.test(W3PDIFF,TotalPA3P)
      Pearson's product-moment correlation
data:  W3PDIFF and TotalPA3P
t = -0.1203, df = 12, p-value = 0.9063
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5550582  0.5051827
sample estimates:
        cor
-0.03469702

> cor.test(W3PDIFF,TotalNA3P)
      Pearson's product-moment correlation
data:  W3PDIFF and TotalNA3P
t = 0.1162, df = 12, p-value = 0.9094
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5060632  0.5542391
sample estimates:
       cor
0.03351541

> cor.test(W3PDIFF,SHSscore3P)
      Pearson's product-moment correlation
data:  W3PDIFF and SHSscore3P
t = -0.9735, df = 12, p-value = 0.3495
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.7005678  0.3036069
sample estimates:
       cor
-0.2705558

> cor.test(W3PDIFF,SWLscore3P)
      Pearson's product-moment correlation
data:  W3PDIFF and SWLscore3P
t = 0.3191, df = 12, p-value = 0.7552
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4613112  0.5934190
sample estimates:
       cor
0.09171727

> cor.test(W3PDIFF,pglobalPHYSICAL3P)
      Pearson's product-moment correlation
data:  W3PDIFF and pglobalPHYSICAL3P
t = 0.8322, df = 12, p-value = 0.4215
```

```
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3389970  0.6799085
sample estimates:
      cor
0.2335986

> cor.test(W3PDIFF,pglobalMENTAL3P)
      Pearson's product-moment correlation
data:  W3PDIFF and pglobalMENTAL3P
t = -0.0686, df = 12, p-value = 0.9464
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5446666  0.5161930
sample estimates:
        cor
-0.01981283

> cor.test(W1NDIFF,self1n)
      Pearson's product-moment correlation
data:  W1NDIFF and self1n
t = -0.1061, df = 14, p-value = 0.917
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5167978  0.4740114
sample estimates:
        cor
-0.02835696

> cor.test(W1NDIFF,social1n)
      Pearson's product-moment correlation
data:  W1NDIFF and social1n
t = -0.2322, df = 14, p-value = 0.8197
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5410375  0.4475009
sample estimates:
        cor
-0.06194576

> cor.test(W1NDIFF,positive1n)
      Pearson's product-moment correlation
data:  W1NDIFF and positive1n
t = -0.1953, df = 14, p-value = 0.848
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5340266  0.4553515
sample estimates:
        cor
-0.05211785

> cor.test(W1NDIFF,negative1n)
      Pearson's product-moment correlation
data:  W1NDIFF and negative1n
t = -1.7499, df = 14, p-value = 0.102
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
```

```
 -0.7597848  0.0912322
sample estimates:
       cor
-0.4236316

> cor.test(W1NDIFF,length1n)
      Pearson's product-moment correlation
data:  W1NDIFF and length1n
t = -1.0512, df = 14, p-value = 0.311
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6756014  0.2600995
sample estimates:
       cor
-0.2704794

> cor.test(W1PDIFF,self1p)
      Pearson's product-moment correlation
data:  W1PDIFF and self1p
t = -1.1291, df = 12, p-value = 0.2809
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.721792  0.264115
sample estimates:
       cor
-0.3098907

> cor.test(W1PDIFF,social1p)
      Pearson's product-moment correlation
data:  W1PDIFF and social1p
t = -2.1313, df = 12, p-value = 0.05443
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.825168650  0.009099563
sample estimates:
       cor
-0.5240099

> cor.test(W1PDIFF,positive1p)
      Pearson's product-moment correlation
data:  W1PDIFF and positive1p
t = 0.0571, df = 12, p-value = 0.9554
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5186438  0.5423085
sample estimates:
       cor
0.01646722

> cor.test(W1PDIFF,negative1p)
      Pearson's product-moment correlation
data:  W1PDIFF and negative1p
t = -0.0678, df = 12, p-value = 0.9471
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5444867  0.5163806
sample estimates:
```

```
        cor
-0.01955718

> cor.test(W1PDIFF,length1p)
      Pearson's product-moment correlation
data:  W1PDIFF and length1p
t = -1.7325, df = 12, p-value = 0.1088
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.7903196  0.1091834
sample estimates:
       cor
-0.4473089


> cor.test(W2NDIFF,self2n)
      Pearson's product-moment correlation
data:  W2NDIFF and self2n
t = -1.45, df = 13, p-value = 0.1708
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.7433084  0.1720257
sample estimates:
       cor
-0.3731171

> cor.test(W2NDIFF,social2n)
      Pearson's product-moment correlation
data:  W2NDIFF and social2n
t = -2.0581, df = 13, p-value = 0.06021
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.80385783  0.02216054
sample estimates:
       cor
-0.4957298

> cor.test(W2NDIFF,positive2n)
      Pearson's product-moment correlation
data:  W2NDIFF and positive2n
t = -0.7933, df = 13, p-value = 0.4418
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6550457  0.3341564
sample estimates:
       cor
-0.2148906

> cor.test(W2NDIFF,negative2n)
      Pearson's product-moment correlation
data:  W2NDIFF and negative2n
t = -0.7184, df = 13, p-value = 0.4852
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6432764  0.3521033
sample estimates:
       cor
```

```
-0.1954046

> cor.test(W2NDIFF,length2n)
      Pearson's product-moment correlation
data:  W2NDIFF and length2n
t = 0.0896, df = 13, p-value = 0.93
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4937035  0.5303557
sample estimates:
       cor
0.02484199

>
> cor.test(W2PDIFF,self2p)
      Pearson's product-moment correlation
data:  W2PDIFF and self2p
t = 0.0554, df = 11, p-value = 0.9568
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5392358  0.5625203
sample estimates:
     cor
0.016716

> cor.test(W2PDIFF,social2p)
      Pearson's product-moment correlation
data:  W2PDIFF and social2p
t = 0.7263, df = 11, p-value = 0.4828
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3821137  0.6842475
sample estimates:
      cor
0.2139075

> cor.test(W2PDIFF,positive2p)
      Pearson's product-moment correlation
data:  W2PDIFF and positive2p
t = 0.5128, df = 11, p-value = 0.6182
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4347823  0.6491403
sample estimates:
    cor
0.15281

> cor.test(W2PDIFF,negative2p)
      Pearson's product-moment correlation
data:  W2PDIFF and negative2p
t = -3.4901, df = 11, p-value = 0.005058
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.9117287 -0.2895581
sample estimates:
       cor
-0.7248924
```

```
> (dcorr<-(2*(-0.72))/(sqrt((1-(-0.72^2)))))
[1] -1.168609

> cor.test(W2PDIFF,length2p)
      Pearson's product-moment correlation
data:  W2PDIFF and length2p
t = -2.4139, df = 11, p-value = 0.03438
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.86045444 -0.05544547
sample estimates:
       cor
-0.5884537
> (dcorr<-(2*(-0.59))/(sqrt((1-(-0.59^2)))))
[1] -1.016298

> cor.test(W3NDIFF,self3n)
      Pearson's product-moment correlation
data:  W3NDIFF and self3n
t = -1.2781, df = 13, p-value = 0.2235
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.7226901  0.2149280
sample estimates:
       cor
-0.3341215

> cor.test(W3NDIFF,social3n)
      Pearson's product-moment correlation
data:  W3NDIFF and social3n
t = -1.0538, df = 13, p-value = 0.3111
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6931879  0.2706076
sample estimates:
      cor
-0.280545

> cor.test(W3NDIFF,positive3n)
      Pearson's product-moment correlation
data:  W3NDIFF and positive3n
t = -0.745, df = 13, p-value = 0.4695
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.6474992  0.3457470
sample estimates:
       cor
-0.2023557

> cor.test(W3NDIFF,negative3n)
      Pearson's product-moment correlation
data:  W3NDIFF and negative3n
t = 0.5473, df = 13, p-value = 0.5935
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3923596  0.6150475
sample estimates:
```

```
     cor
0.150065

> cor.test(W3NDIFF,length3n)
      Pearson's product-moment correlation
data:  W3NDIFF and length3n
t = 1.2787, df = 13, p-value = 0.2233
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2147832  0.7227626
sample estimates:
      cor
0.3342563

> cor.test(W3PDIFF,self3p)
      Pearson's product-moment correlation
data:  W3PDIFF and self3p
t = 0.6808, df = 12, p-value = 0.5089
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3762421  0.6562669
sample estimates:
      cor
0.1928317

> cor.test(W3PDIFF,social3p)
      Pearson's product-moment correlation
data:  W3PDIFF and social3p
t = 1.1076, df = 12, p-value = 0.2898
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2696049  0.7189485
sample estimates:
      cor
0.3045378

> cor.test(W3PDIFF,positive3p)
      Pearson's product-moment correlation
data:  W3PDIFF and positive3p
t = -2.0508, df = 12, p-value = 0.06278
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.81871716  0.02898053
sample estimates:
       cor
-0.5094322

> cor.test(W3PDIFF,negative3p)
      Pearson's product-moment correlation
data:  W3PDIFF and negative3p
t = 1.1103, df = 12, p-value = 0.2886
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.2689064  0.7193122
sample estimates:
      cor
0.3052209
```

```
> cor.test(W3PDIFF,length3p)
      Pearson's product-moment correlation
data:  W3PDIFF and length3p
t = -2.4339, df = 12, p-value = 0.03151
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.8470867 -0.0637575
sample estimates:
       cor
-0.5748894
> (dcorr<-(2*(-0.57))/(sqrt((1-(-0.57^2)))))
[1] -0.9904061

> cor.test(FollowupDIFF,PAchange2)
      Pearson's product-moment correlation
data:  FollowupDIFF and PAchange2
t = -1.7346, df = 28, p-value = 0.09382
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.60398146  0.05494351
sample estimates:
       cor
-0.3114915

> cor.test(FollowupDIFF,NAchange2)
      Pearson's product-moment correlation
data:  FollowupDIFF and NAchange2
t = 1.2399, df = 28, p-value = 0.2253
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1439625  0.5437193
sample estimates:
      cor
0.2281392

> cor.test(FollowupDIFF,SystolicChange)
      Pearson's product-moment correlation
data:  FollowupDIFF and SystolicChange
t = 0.2088, df = 23, p-value = 0.8364
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3577816  0.4312180
sample estimates:
       cor
0.04349879

> cor.test(FollowupDIFF,DiastolicChange)
      Pearson's product-moment correlation
data:  FollowupDIFF and DiastolicChange
t = 1.8933, df = 23, p-value = 0.07096
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.03266454  0.66574138
sample estimates:
      cor
0.3672058
```

```
> cor.test(FollowupDIFF,rdeesRANGE)
      Pearson's product-moment correlation
data:  FollowupDIFF and rdeesRANGE
t = -1.0852, df = 28, p-value = 0.2871
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5232936  0.1718049
sample estimates:
       cor
-0.2008992

> cor.test(FollowupDIFF,rdeesDIFF)
      Pearson's product-moment correlation
data:  FollowupDIFF and rdeesDIFF
t = 0.0824, df = 28, p-value = 0.9349
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3466447  0.3737418
sample estimates:
      cor
0.0155689

> cor.test(FollowupDIFF,PSS)
      Pearson's product-moment correlation
data:  FollowupDIFF and PSS
t = -0.692, df = 28, p-value = 0.4946
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.4680748  0.2418973
sample estimates:
       cor
-0.1296726

> cor.test(FollowupDIFF,pglobalPHYSICAL)
      Pearson's product-moment correlation
data:  FollowupDIFF and pglobalPHYSICAL
t = 1.2639, df = 28, p-value = 0.2167
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1396296  0.5468264
sample estimates:
      cor
0.2323266

> cor.test(FollowupDIFF,pglobalMENTAL)
      Pearson's product-moment correlation
data:  FollowupDIFF and pglobalMENTAL
t = -0.0707, df = 28, p-value = 0.9442
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.3718319  0.3485948
sample estimates:
        cor
-0.01335116
```

```
> (summary(lm(lengthp~PDIFF)))
Call:
lm(formula = lengthp ~ PDIFF)
Residuals:
    Min      1Q  Median      3Q     Max
-88.628 -25.628   3.199  28.686  78.901
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   418.66      88.67   4.721    3e-05 ***
PDIFF        -164.90      46.24  -3.566 0.000977 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 39.35 on 39 degrees of freedom
  (6 observations deleted due to missingness)
Multiple R-squared:  0.2459,  Adjusted R-squared:  0.2266
F-statistic: 12.72 on 1 and 39 DF,  p-value: 0.0009772

> (summary(lm(length~DIFF)))
Call:
lm(formula = length ~ DIFF)
Residuals:
    Min      1Q  Median      3Q     Max
-91.703 -27.922   1.649  26.056  98.993
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   269.99      65.27   4.136 8.26e-05 ***
DIFF          -87.68      34.27  -2.558   0.0123 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 42.17 on 85 degrees of freedom
  (1 observation deleted due to missingness)
Multiple R-squared:  0.0715,  Adjusted R-squared:  0.06057
F-statistic: 6.545 on 1 and 85 DF,  p-value: 0.01229

> (summary(lm(negative~DIFF)))
Call:
lm(formula = negative ~ DIFF)
Residuals:
    Min      1Q  Median      3Q     Max
-4.0831 -1.9629 -0.7428  1.7171  7.3571
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   10.044      3.817   2.631   0.0101 *
DIFF          -4.001      2.004  -1.996   0.0491 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 2.466 on 85 degrees of freedom
  (1 observation deleted due to missingness)
Multiple R-squared:  0.04477, Adjusted R-squared:  0.03353
F-statistic: 3.984 on 1 and 85 DF,  p-value: 0.04914

> (summary(lm(NAchange2~FollowupDIFF+PAchange2)))
Call:
lm(formula = NAchange2 ~ FollowupDIFF + PAchange2)
```

```
Residuals:
     Min       1Q   Median       3Q      Max
-0.89611 -0.31567 -0.06795  0.30358  1.17913
Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)   -0.4492     1.7272  -0.260 0.796763
FollowupDIFF   0.2317     0.9094   0.255 0.800868
PAchange2     -0.5291     0.1403  -3.772 0.000806 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 0.5435 on 27 degrees of freedom
  (17 observations deleted due to missingness)
Multiple R-squared:  0.3792,  Adjusted R-squared:  0.3332
F-statistic: 8.246 on 2 and 27 DF,  p-value: 0.001603

> (summary(lm(PAchange2~FollowupDIFF+NAchange2)))
Call:
lm(formula = PAchange2 ~ FollowupDIFF + NAchange2)
Residuals:
    Min      1Q  Median      3Q     Max
-1.5520 -0.2082  0.0788  0.3524  1.0356
Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    2.1819     1.8737   1.164 0.254418
FollowupDIFF  -1.1716     0.9856  -1.189 0.244900
NAchange2     -0.6523     0.1729  -3.772 0.000806 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 0.6035 on 27 degrees of freedom
  (17 observations deleted due to missingness)
Multiple R-squared:  0.4087,  Adjusted R-squared:  0.3649
F-statistic: 9.329 on 2 and 27 DF,  p-value: 0.0008314
```

Appendix M: Restarts on Math Task

Baseline (Study 1 & 2 Combined) and Follow-up Session (Only Study 2)

```
> mean(restartsbaseline,na.rm=TRUE)
[1] 2.408805
> mean(restartsfollowup,na.rm=TRUE)
[1] 1.8
> t.test(restartsbaseline,restartsfollowup)
      Welch Two Sample t-test
data:  restartsbaseline and restartsfollowup
t = 2.0936, df = 44.876, p-value = 0.04198
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.02307363 1.19453643
sample estimates:
mean of x mean of y
 2.408805  1.800000
```

Baseline and Follow-Up Session (Study 2 Only)- Paired

```
> mean(restartsbaseline2,na.rm=TRUE)
[1] 2.733333
> mean(restartsfollowup2,na.rm=TRUE)
[1] 1.8
> t.test(restartsbaseline2,restartsfollowup2,paired=TRUE)
      Paired t-test
data:  restartsbaseline2 and restartsfollowup2
t = 3.4448, df = 29, p-value = 0.001762
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.3791932 1.4874734
sample estimates:
mean of the differences
              0.9333333
```