

## **Perfectionism and The Efficacy of Mindfully-Based Coping Interventions**

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### **Author Note**

Data collection was sponsored by the Honors Program and College of Social Sciences, Mathematics, and Education at The University of Tampa. Profound gratitude to Catherine Rutstein for her assistance with this research. There are no conflicts of interest to disclose.

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### **Abstract**

Two studies investigated links among perfectionism, stress, and mindfulness. An exploratory pilot study (N = 297) showed correlations among perfectionistic tendencies, stress levels, and mindfully-inclined thinking. The main study (N = 69) asked whether mindfulness interventions are effective at reducing stress and increasing mindfulness for those with different types of perfectionism (high standards vs. maladaptive, as measured by the Revised Almost Perfect Scale). Participants completed a stressful task and then were randomly assigned to complete a mindfully-inclined journaling exercise, art exercise or control condition, which were all developed by the author. The primary dependent variables were pre-post exercise changes in mindfulness scores measured by the State Mindfulness Scale (SMS) and stress scores measured by the Perceived Stress Scale (PSS). Findings supported increased state mindfulness and decreased stress levels following treatment, regardless of treatment condition or variations in perfectionism. Notable interactions and future implications were explored and discussed.

*Keywords:* mindful, self-compassion, art, journaling, interventions, stress, perfectionism

### **Perfectionism and The Efficacy of Mindfully-Based Coping Interventions**

College is a time period marked by external demands that may be very stressful. Many college students experience an excess of socially-garnered pressure to succeed in their academic pursuits (Chang, 2006). This period tends to be filled with uncertainty of the present and future, leaving many yearning for a sense of security. Even though perfectionistic tendencies may be applauded for facilitating excellent academic achievement, perfectionism could also be maladaptive; linked to exacerbated psychological distress (Flett, et al., 1998). Therefore, it is relevant to ask whether mindfulness-based exercises or interventions may reduce stress for people with high levels of perfectionism.

Research has shown that maladaptive perfectionistic traits are linked to various types of psychological distress, including: depression, anxiety, hopelessness and suicidal ideation (Chang, 2006). It is therefore important to differentiate between adaptive and maladaptive variations of perfectionistic thoughts. Characteristically, many presenting with high levels of perfectionism set high standards for their personal performance. Therefore, they are more likely to experience amplified critical evaluations of their own behavior and accrue higher stress levels (Chang, 2006; Frost et al., 1990; Hewitt & Flett 1991; Flett, 1998; Flett & Hewitt 2002 as cited in Achziger & Bayer 2013). For example, placing unattainable standards on oneself can lead to rumination marked by obsessive thinking, potentially inflicting and heightening: anxiety, depression, eating disorders and/or an array of other physical health issues. Carrying perfectionistic tendencies have been found to amplify stress and reduce life satisfaction, particularly amongst young adults in competitive academic environments (Chang, 2000).

Shafique et al. (2017) exposed a significant link between maladaptive perfectionism and perceived stress; identifying negative evaluation as a stress-inducing mediator in collegiate settings. Slaney et. al (2001) elaborated upon the subject of maladaptive thought patterns resulting from perfectionism, acknowledging the contributing role that existent social pressures play on one's acquisition of perfectionism. Hewitt & Flett (1991) stated that social pressures on perfectionistic people prompt "unrealistic standards for them, evaluate them stringently, and exert pressure on them to be perfect" (p.457). The highly pressurized college environment is a perfect breeding ground for socially prescribed perfectionism which has a particularly negative impact on mental health and the manifestation of psychological dysfunction (Chang, 2006). These young adults typically present with heightened levels of self-doubt, self-criticism, and are intolerant of their own mistakes. Socially prescribed perfectionists adhere to the belief that others hold idealistic expectations of their behavior and therefore may perceive their own work to be inadequate or inferior (Kilbert, Langhinrichsen-Rohling & Saito, 2005).

In developing the Revised Almost Perfect Scale, Slaney et al., (2001) defined perfectionism as a multidimensional construct including both an achievement-oriented, adaptive component, as well as a self-critical, maladaptive one. Slaney and his colleagues distinguished the discrepancy subscale to be a measure of maladaptive perfectionism, typically attributed to high standards, consequential frustration and a loss of control. Those who score high on the discrepancy subscale prefer to blame their perceived failures on other people or external factors. Thus, both achievement-oriented and maladaptive perfectionism are important in understanding the overall construct.

Positive psychology, a relatively recent paradigm shift in the study of psychology, emphasizes human growth and positive coping that nurtures a foundation for resilience, optimism, happiness, and spirituality. This realm of psychology is beginning to identify positive implications for Mindfulness; a state of conscious awareness in which thoughts and feelings are experienced and accepted in a non-judgmental way, via focusing one's awareness to the present moment (Dhiman, 2009). This practice encompasses an array of healthful techniques, giving rise to holistic approaches to enhance health and well-being.

The practice of mindfulness includes cognitive attention to, as well as a kind-hearted interest in one's present experience. This practice encourages one to observe and to label thoughts and emotions through a self-compassionate lens rather than react to them critically (Kabat-Zinn, 2003 as cited in Barnard & Curry, 2011). Mindful attention is believed to assist one to more fully experience and learn from the present instead of participating in self-judgment that directs one's attention towards feared past or future failures (Neff, 2003). Compassion towards self and/or others seems to encompass experiences such as being touched by suffering, remaining present with and aware of personal pain, and desiring to alleviate one's suffering. It appears that self-kindness enables a person to embrace a more balanced perspective when experiencing feelings of pain or inadequacy and encourages them to engage in self-patience and non-judgmental observation of their internal dialogue. (Greenberg, Watson, & Goldman, 1998 as cited in Barnard & Curry, 2011).

Integrative mindful practices and training mechanisms aim to heighten awareness to the present moment through the lens of self-compassion, counteracting obtrusive mental states. (Dhiman, 2009). Redirecting one's attention away from maladaptive thought patterns such as

rumination and worry, and towards self-compassion in the present moment, enhances well-being. Within the clinical literature, Williams (2008) defines mindfulness as an emergent collective of three noted skills. First, one's ability to pay attention to moment by moment events within the external and internal world. Secondly, being aware of one's reactions to events. Lastly, cultivating the ability to be responsive to events and to our reactions while maintaining an attitude of openness, compassion, and curiosity. This allows those who practice the agility to adapt more effectively to challenging situations.

The intention of the current studies was therefore to broaden our understanding of how mindfulness practices may influence the experiences of perfectionistic individuals, who may be particularly vulnerable to rumination and maladaptive thought patterns.

### **Investigative Pilot Study**

A preliminary correlation study was conducted to determine if there were links among levels of perfectionism, stress, and mindfulness. This pilot study was done as the first of a two-part Mindfulness study series. We hypothesized that a) mindfulness scores would be negatively correlated with stress scores, b) mindfulness scores would also be negatively correlated with perfectionism scores, and c) stress scores would be positively correlated with perfectionism scores.

**Participants.** Undergraduate college students ( $N = 297$ ) enrolled in General Psychology at The University of Tampa participated in the pilot study. The participants consisted of college-aged adolescents with a mean age of 19.2 ( $SD = 1.7$ ); inclusive of both males (28.3%) and females (71.4%). Data was collected from a range of students as 53% of participants were

Freshman, 25% were Sophomores, 16% were Juniors, and 6% were Seniors. The average GPA reported was 3.26 ( $SD = .44$ ). No monetary compensation was offered to students for participating. However, course credit was awarded for completed participation utilizing SONA Systems.

**Materials and Methods.** Pilot study procedures took place online within a scheduled out of class, 25-minute time frame. Participants were instructed to log-in to a computer and fill out the surveys. Data collection was anonymous. Participants were provided with an informed consent and were given a debriefing statement when they completed the study.

***Mindful Attention Awareness Scale (MAAS).*** The MAAS is the most commonly used scale to measure the core of dispositional mindfulness, within the branch of positive psychology. There is evidence of reliable psychometric properties, as validated in samples of college, community, and cancer patients (Brown & Ryan, 2003). The MAAS is a 15-item scale that conceptualizes mindfulness through experiential accounts of attention and awareness to the present moment. An item example is “It seems I am “running on automatic,” without much awareness of what I’m doing”.

***The Almost Perfect Scale Revised (APS-R).*** The APS-R is a 23-item scale utilized to distinguish between adaptive and maladaptive levels of perfectionism. Slaney and his colleagues (1996) designed The Almost Perfect Scale (APS-R) to organize perfectionism into 3 subscales: High Standards, Order, and Discrepancy, noting an elevated display in Discrepancy for maladaptive perfectionists. An example of an item is “I am not satisfied even when I know I

have done my best.” Exploratory and confirmatory factor analyses of the APS-R support adequate internal consistencies as well as promising relationships with relevant measures of Perfectionism inclusive of: achievement, self-esteem, depression, and worries (Slaney et al., 2001).

***The Educational Stress Scale for Adolescents (ESSA).*** The ESSA consists of 16-items measuring experiences such as: pressure from study, worry involving grades, self-expectation, workload and despondency (Sun et al., 2011). Academic demand is one of the most pressing stressors amongst college students. Scales showed adequate internal consistency, test-retest reliability, along with satisfactory concurrent validity (2011). An example of an item is “Future education and employment brings me a lot of academic pressure.” This scale is particularly useful for researching academic stress among adolescent populations.

**Results.** Findings from the pilot study supported the hypotheses. As predicted, students with high mindfulness scores had significantly lower educational stress scores ( $r = -.40, p < .001$ ). Furthermore, those with higher mindfulness scores also had significantly lower perfectionism total scores, ( $r = -.29, p < .001$ ). These findings suggest that mindfulness experiences are different from experiences related to stress and perfectionism. One who is mindfully-inclined may tend to have a healthier mindset with heightened focus on the current moment and less scattering of thoughts.

Also as predicted, students with high total perfectionism scores were significantly more likely to experience higher educational stress ( $r = .69, p < .001$ ). This finding supports the idea



that perfectionistic people tend to experience more educational stress due to their unrealistic standards of self, coupled with the importance placed on high academic achievement under high-pressure circumstances. Taken together, findings from the correlational pilot study demonstrated predicted links among these variables and served as the basis for developing the main experimental study.

### **Main Study**

Research into holistic approaches that incorporate daily practices encompassing mind, body and spirit to prevent distress, have increased. The goal of this current research is to build upon prior findings and expand knowledge with regards to the impact of mindful interventions for perfectionistic and non-perfectionistic individuals. Findings from research in this area could have a range of applications in education and community settings. Thus, we asked in this study whether a mindfulness activity / skill-building approach could have a positive influence on perfectionistic students by increasing mindfulness experiences.

Dispositional mindfulness is a psychologically resilient state that could be achieved through mindfulness exercises and training that emphasizes the connection between mind, body and spirit. Skill subsets for developing attentive thinking are self-regulation of thought and developing a directed orientation towards the present moment; harnessing curiosity, openness, and acceptance (Bishop, 2004 as cited in Dhiman, 2009). Dispositional mindfulness facilitates improved emotional regulation when encountering stressful dynamics. (Prakash, Hussain, & Schirda, 2015).

Holistic mindfulness approaches have been shown to improve physical and psychological well-being. For example, Garland's (2015) research supported the positive effect of 'routine mindfulness' on physical health, linking regular mindful practice to lower levels of stress and improved cardiovascular health. Garland elected to analyze mindfulness through an emotional lens utilizing the Emotional Regulation Scale. His research exemplified the power of mindfulness training, indicating the profound effect of mindful meditation on developing state mindfulness after only one week of implementing mindful techniques. Mindfulness may be linked to positive emotions through the process of cognitive reappraisal or the willingness to reframe and reinterpret stressful thoughts. Mindfulness may help people reflect and reconsider the extent to which events were distressful, thus assisting them to process their emotions more positively.

Mindfulness is also a training-based discipline, offering development with time and practice. An important assumption here is that 'mindfulness' is a degree of nonjudgmental attention to the present moment. Conversely, 'mindlessness' is the sense of acute detachment from what is happening internally and externally (Bodhi, 1994). Integrative mindful interventions and training mechanisms enable one to expand their awareness to the present moment from a self-compassionate perspective. The process of 'redirection' facilitates one's mental health and overall well-being by counteracting 'mindless' tendencies and obtrusive mental states (Dhiman, 2009).

Mindfulness strategies consist of interventions based on the practice of meditation and experiential exercises (Baer, 2003 as cited in Muniz-Martinez et al., 2017) that are aligned with the goals of therapists and / or researchers offering clients guided instructions and supportive

environments for personal practice (Mace, 2007). The purpose of a mindfulness exercise is to encourage people to attend to their moment to moment internal experiences involving body sensations, thoughts and emotions or aspects of their environment, like images and sounds (Baer, 2003 as cited in Muniz-Martinez et al., 2017). Since the National Institute of Mental Health continues to finance integrative mindfulness techniques, clinical practices have begun to employ mindfulness interventions to address a variety of psychological challenges including: anxiety, depression, and personality disorders (Baer, 2003).

Since perfectionist people tend to have high standards of performance and engage in self-criticism, it would be useful to know whether a mindfulness exercise, requiring an act of undoing interferences from thinking, judging, associating, planning, imagining, and wishing (Bodhi, 1994 as cited in Dhiman, 2009) would influence their perfectionistic tendencies. Skill sets for advancing attentive thinking are self-regulation of thought, developing a directed orientation towards the present moment as well as harnessing curiosity, openness, acceptance, and self-compassion (Bishop, 2004).

Fostering self-compassion may be particularly impactful to perfectionistic people, who tend to judge themselves harshly across a number of domains. Neff (2003) previously sought to examine the relationship between perfectionism and self-compassion. In her research, she found a significant negative correlation ( $r = -.57$ ) between discrepancy (maladaptive) perfectionism and self-compassion. Being caring and patient towards oneself may counteract maladaptive feelings of shame and withdrawal from others (Brown, 1998). This study provides an early link between perfectionism and aspects of mindfulness.

Current research in art, healing, and public health has sought to investigate the beneficial outcomes of expressive writing amongst various therapeutic engagements. The findings of Stuckey & Nobel (2010) display how those who have written about previous traumatic events experience significant improvements in physical health as compared to those who did not engage in expressive writing following their trauma (2010). Overall, the writing process encourages enhanced health and wellness through its multi-level engagement across cognitive, emotional, social, and biological domains. A range of preliminary studies looking at emotional writing, journaling, poetic writing, amongst other forms of writing, have continued to observe a wide range of positive outcomes (Stuckey & Nobel 2010). Expressive writing in of itself resulted in improved control over one's appraisal of pain and depressed mood, supporting its therapeutic value (Graham et al., 2008 as cited in Stuckey & Nobel 2010).

Lieberman et al. (2007) identified beneficial implications of labeling experiences and feelings, suggesting the act of attaching words to experiences improves one's ability to cope with daily stressors by assisting individuals to process their experiences. Journaling helps one to organize thoughts and feelings enabling them to more effectively deal with trauma. This mindfully inclined practice reduces activity in the overly-excited amygdala. Thus, this study suggests that therapeutic writing facilitates stress-reduction by enhancing coping abilities at a neurological level.

Problem solving via journaling and artful expression taps into our visual thinking skills which in turn has the capacity to alter our visual perception of a given situation. Art therapy, which could also be utilized as a mindfully inclined practice, is a newer approach to treating anxiety and depression. The practice is based upon engaging in creative processes involving

self-expression, including conflict resolution, enhanced self-awareness, and stress management (Dilawari & Tripathi, 2014). Mindful-Based Art therapy (MBAT) otherwise known as “focusing-oriented art therapy” proposed by Rappaport (2008), further incorporates mindful awareness within therapeutic art practices. MBAT emphasizes one’s awareness in the art-making process, fostering the connection between mind, body and creative expression; a practice beginning to exhibit a range of therapeutic benefits (2009). Additionally, since the right hemisphere of the brain is related to higher emotional activity; engaging in art therapy practices and creative pursuits may improve mood experiences (Feist, et al., 2018).

Our study aims to build upon prior findings to expand the knowledge base regarding the efficacy of mindful interventions (journaling, art-making) on stress-reduction and mindful attunement, particularly among perfectionistic students. Several hypotheses were investigated. It was predicted that a) participants with high perfectionistic standards (vs. low) who engaged with the mindfully-inclined writing exercise, would experience higher levels of state mindfulness and lower levels of stress than those in the art and control groups. We expected this result because the writing exercise offers perfectionistic people with the most influence over the task, while the abstract nature of the art-making prompt offers participants less control.

Next, it was predicted that b) participants with low levels of maladaptive perfectionism (vs. high) will be more likely to experience higher mindfulness and lower stress after engaging in either form of mindful intervention (journaling or art) as compared to the control condition. Finally, it was predicted that c) mindfulness interventions would be less effective for people with higher maladaptive perfectionism because those with rigid thought patterns will be more

reluctant to engage with prompts, therefore less likely to achieve mindful attunement and stress reduction.

## **Methods**

### **Sample**

Undergraduate college students ( $N = 69$ ) enrolled in General Psychology at The University of Tampa participated for course credit. No monetary compensation was offered. Mean age of participants was 19.2 ( $SD = 1.20$ ) and included both males (18.5%) and females (81.5%). Thirty percent of participants were First year students, 24% were Sophomores, 8% were Juniors, while 3% were Seniors. Participants reported their past experiences with mindfulness: 45% stated they were new to the practice, 47% considered themselves beginners, and 8% endorsed intermediate experience.

### **Psychometric Instruments**

**The Revised Almost Perfect Scale (APS-R).** (See earlier description.)

**The Perceived Stress Scale (PSS;** Cohen et al., 1983) is a widely-utilized 10-item scale measuring one's perception of stress and its impact on the participant's thoughts and feelings. Items are designed to measure the magnitude of one's stress appraisal, encompassing the extent of unpredictability, uncontrollability, as well as feelings of overload. The original directions instruct respondents to consider stressful feelings in the past month; this was modified to read "currently" in our study's appraisal of the present moment. An item example is "Do you currently feel nervous and stressed out?"

**The State Mindfulness Scale (SMS;** Tanay & Bernstein, 2013) is a 21-item measure of mindfulness, reflecting the mental state of mindfulness conceived by contemporary psychological studies and traditional Buddhist texts. The SMS has two subscales that assess mindful bodily sensations and mindful cognitive thoughts; both funnel into a total composite mindfulness score.

### **Stress Induction Task**

A stress induction task, developed by the author, was used to prompt stress in the study's participants. The task was described as an 'aptitude test' to participants and mimicked the format of the Graduate Record Examination. Participants were presented with ten timed questions with one minute allotted per question. The questions themselves were unanswerable with the information provided. Upon completion, each student was provided the same false feedback report indicating a low score that fell in the 25th percentile of respondents. False-feedback procedures like this one are intended to evoke fear of negative evaluation and prompt stress among participants (Shafique et al., 2017).

### **Treatment Conditions**

In creating the 3 treatment conditions, the intention was to steer away from activities likely to trigger maladaptive thought patterns, such as rumination or negative self-talk. Our writing condition was tailored to prompt a mindful journaling reflection, framed through the lens of self-compassion to promote acceptance of the moment. Taking this into consideration, each mindful intervention includes a guided imagery directed towards nurturing self-compassion. Self-compassion, as defined by Kristin Neff (2003), is an interplay of three components (1)

being kind and understanding toward oneself rather than being self-critical during instances of pain or failure, (2) perceiving experiences as part of the larger human condition rather than an isolated personal experience (3) holding painful thoughts and feelings in mindful awareness rather than engaging in over-identification (p.223). Additionally, conditions were tailored to avoid entering “flow states,” which are periods of activity without thinking, in order to encourage the cognizant mindful state, reflective of ongoing emotional and physical awareness. Prompts and timing of the interventions were designed and executed accordingly with 18 minutes allotted for each condition split into 4 consecutive videos.

Both mindful conditions (journaling and art) emphasized attunement to the present moment as well as acceptance and self-compassion. The mindful journaling directive consisted of a reflective process involving tuning into the present moment with self-compassion while the student wrote a letter to themselves from the perspective of a loving and accepting friend. The mindful art directive involved self-compassion, self-awareness and visual grounding via guided imagery, as students were instructed to draw a tree transitioning through the seasons. The control condition involved various puzzle-based activities. Necessary writing and/or drawing materials were provided for each participant, allowing for optimal engagement within each condition.

## **Procedures**

Experimental procedures took place in a distraction-free computer lab to ensure individual space and privacy; groups were limited to 12. Upon entry into the computer lab, participants were instructed to sign in on a sheet for course credit then draw from a pool of



color-coded notecards. The colored note card determined which one of the three experimental conditions they were assigned. Each note card contained a direct access link to one of the three conditions; inclusive of: a mindfully inclined journaling intervention, a mindfully inclined art intervention, as well as the puzzle-based control condition.

Following their selection, a research assistant directed each participant to the corresponding computer station stocked with necessary supplies in accordance with their assigned condition. Once every participant in the room was seated, the research assistant read from the standardized script, instructing students to type in their links on the standard web browser. Each student read the informed consent and chose whether or not to engage in the experimental procedures or to complete an alternative activity (100% chose the study).

Participants completed the APS-R and were then presented with a stress-inducing activity in the form of a timed aptitude test described above. Students' contingent stress levels underwent a manipulation check to measure whether or not students found the stimulus to be stress-inducing. Results of the manipulation check indicated that 83% of the participants found the so-called aptitude test to be stressful. Following this manipulation check, students were directed to appraise their current state by completing the pretest Perceived Stress Scale and the pretest State Mindfulness Scale. Each participant was then exposed to one of the three randomly assigned conditions: mindful journaling, mindful art-making or the control condition.

Each condition was distributed within an 18 minute time frame through step-by-step video clips with guided audio and visual prompts. Following completion of the assigned condition, each participant's stress and state mindfulness levels were reassessed at posttest follow-up. Participants then completed a demographic questionnaire, which also asked

participants how engaged they were with the conditions. Lastly, students read the debriefing statement which informed them of the false nature of the aptitude test along with the purpose of the study. The study was completed within a 45 minute time frame.

### **Design**

This experimental design was a 2 x 3 factorial ANOVA with repeated measures. Perfectionism level was the first independent variable. We conducted a median split on the APS-R scores to create groups of higher vs. lower perfectionism. This was done for both the Standards subscale scores and the Maladaptive subscale scores. The second independent variable was the mindfulness intervention video prompt (mindful art intervention, mindful journaling, and control condition). The dependent variables consisted of participants' (1) stress levels and (2) state of mindfulness as measured before (pretest) completing one of treatment exercises and then again (post-test) after the task was completed.

## **Results**

### **Demographic Questionnaire**

Following engagement, participants were asked if they had been able to “live in the moment” through the duration of their condition. Many participants confirmed “yes” [art 65%, journaling 77%, control 70%]. When participants were asked if they felt engaged during their directives, there was a consensus across the conditions. Seventy eight percent of participants in the mindful art condition reported feeling strongly-slightly engaged. Eighty two percent of participants in the mindful journaling condition reported feeling strongly-slightly engaged.

Ninety five percent of participants in the control condition reported feeling strongly-slightly engaged.

### **Preliminary Analyses**

A Chi-square analysis was utilized to test whether participants found the “Aptitude Test” to be stressful or not. Results indicate that a significant proportion of the whole sample found the aptitude test to be stressful ( $\chi^2, N = 65) = 28.45, p < .001$ .

Further chi-square analysis displayed no differences amongst the various treatment groups in their initial stress appraisal (before engagement in treatment condition). Participants found the Aptitude test to be equally stressful across all groups.

One-way ANOVAs were conducted to test whether or not the three treatment groups (mindful journaling, mindful art-making, control) displayed pre-existing differences in stress or mindfulness scores at the PRE-TEST. Statistical analyses showed no differences in stress,  $F(2, 62) = 0.91, p = 0.41$  or mindfulness,  $F(2, 62) = 0.28, p = 0.76$ , across groups prior to the administration of the treatment conditions.

### **Main Analyses**

For our first main analysis, we tested whether level of perfectionistic standards and treatment group condition would influence pre-post changes in stress scores. Findings across all groups demonstrated that stress was significantly lowered from pre-test ( $M = 32.66, SD = 6.74$ ) to post-test ( $M = 26.91, SD = 6.56$ ),  $F(1, 59) = 69.44, p < .001, \eta_p^2 = 0.54$ . There were no main effects of either Standard perfectionism or treatment type on pre-post changes in stress scores. However, there was a significant interaction between these two variables,  $F(2, 59) = 10.53, p < .001, \eta_p^2 = 0.26$ . Examination of the graph (See Figure 1) of this interaction shows that those

with low Standard perfectionism experienced the greatest stress reduction in the Art condition, while those with high Standard perfectionism experienced the greatest stress reduction in the Journal condition (See Figure 2). Those with high perfectionistic Standards who engaged in the Control condition also displayed a reduction in stress levels.

The above analysis was repeated, this time using scores on maladaptive perfectionism as one of the independent variables. Similarly, findings showed that participants (regardless of perfectionism level or treatment group) showed a significant decrease in stress scores,  $F(1, 59) = 50.53, p < .001, \eta_p^2 = 0.46$ . Neither perfectionism, treatment type, nor the interaction between them influenced the pre-post changes in stress levels. In looking at the graph (See Figure 3), people with low levels of maladaptive perfectionism tended to report more stress reduction in the Art condition, however this change was not statistically significant.

Another 2 x 3 factorial ANOVA with repeated measures was conducted to test whether levels of standards perfectionism and treatment condition influenced subsequent pre-post change in total mindfulness scores. Results indicated that total mindfulness scores significantly increased from pre-test ( $M = 74.34, SD = 13.26$ ) to post-test ( $M = 80.11, SD = 10.65$ ), regardless of perfectionism level or the treatment condition,  $F(1, 59) = 20.89, p < .001, \eta_p^2 = 0.26$ . Otherwise, neither independent variable changed pre-post mindfulness scores. People with lower levels of perfectionistic Standards tended to show increases in mindfulness scores, but this change was not statistically significant.

The final factorial analyses tested whether maladaptive perfectionism and treatment group influenced pre-post changes in total mindfulness scores. Results again showed there was a significant increase in pre-post mindfulness scores across all levels of the independent variables.

While there was a significant increase in mindfulness scores, there was not a significant difference between those who presented higher versus lower levels of maladaptive perfectionism nor the treatment condition. Ultimately, all participants (including those in the control group) displayed significantly higher levels of mindfulness scores from pre to post-test.

### **Secondary Analyses**

Post-hoc tests were used to explore a third aspect of perfectionism, Order, which was not included in the main hypotheses and analyses due to its less reliable scale. This subscale consists of 4 questions on the APS-R that measure an individual's preference for order and predictability in everyday life. In line with previous analysis, there was a significant decrease in pre-post stress scores, regardless of scores on Order perfectionism or treatment condition,  $F(1, 59) = 54.47, p < .001, \eta_p^2 = 0.48$ . Results also showed that while scores on Order perfectionism and treatment condition tended to influence changes in pre-post stress scores, this analysis was not statistically significant. There was a trend for participants with high Order perfectionism to show the most stress reduction following the journaling condition.

### **Discussion**

The purpose of these studies was to investigate relationships among perfectionism, stress, and mindfulness. Pilot data supported the predictions that mindfulness would be negatively correlated to perfectionistic tendencies and to stress experiences. The main study sought to experimentally test the effects of perfectionism and mindfulness-based interventions for stress reduction. The most consistent finding was that all types of treatment activity reduced stress and increased mindfulness from pre to post tests. Predictions about the influences of two subtypes of

perfectionism (Standards and Maladaptive) and intervention conditions (journaling, art, and control) were largely unsupported.

The use of the ‘aptitude test’ to induce stress among participants appeared to be effective. Data from the manipulation check confirmed that the majority of participants across all groups reported they had experienced stress after completing the fabricated test. This finding confirms that all participants were experiencing similar levels of stress prior to random assignment to one of the three mindfulness interventions.

The administration of mindfulness interventions was associated with decreased levels of perceived stress, across all conditions. Findings also showed no differences between perfectionistic and non-perfectionistic students in their pre-post treatment stress scores. However, there was a significant interaction between those with low perfectionism and treatment condition, indicating that those with low Standards perfectionism experienced the greatest stress reduction from the mindful Art condition. A similar trend was found for those with low maladaptive perfectionism who also reported the greatest stress reduction following the mindful art condition. However, this was simply a trend, perhaps attributable to the relatively low *N* in the current study. Future studies that include more participants may reveal statistically significant differences.

People with high Standards perfectionism experienced the most stress reduction following the mindful journaling condition. However, participants with high Standards perfectionism who engaged in the control condition also displayed a reduction in stress levels. This could potentially be attributed to the distracting nature of the control condition. Previous research suggests that the act of loading working memory may halt mood congruent processing,

and thereby distracts from experiencing negative moods (Dillen & Koole, 2007). Both the journaling condition and the control condition offered participants a tangible and concrete experience, meeting perfectionistic demands for higher standards of control. This group may otherwise find discomfort in engagements requiring creativity and abstract thought beyond their immediate control as presented in the mindful art-making intervention. Additionally, the activity of the control condition itself--doing puzzles--may have required more cognitive engagement from participants than was intended for a control condition.

In regards to state mindfulness, levels were found to increase from pre-post tests regardless of the type of perfectionism or specific mindfulness intervention. Thus, this hypothesis was not supported. It is acknowledged that participants in the control condition also displayed the same pre-post increase in mindfulness scores as the journaling and art conditions, creating ambiguity to the efficacy of our mindful conditions. This increase in state mindfulness across all conditions could be attributable to the journaling and art activities, as well as to the possibility of the control condition allowing participants to become engaged in task, since leisurely puzzles require a degree of mindful attention to complete.

While not statistically significant, a trend emerged as pre-post mindfulness changes were higher for those who presented with low levels of Standards perfectionism, aligning with our initial predictions. As supported by previous research, those with perfectionistic concerns have the tendency to trigger heightened maladaptive responses to stressful situations. Ruminative tendencies leave perfectionists more vulnerable to cognitive intrusions (Flett et al., 1998). Hence, rumination may hinder a perfectionist's ability to attune to the present moment compared to

non-perfectionists. However, to further support this notion our study would have required more participants to reject this null hypothesis.

### **Limitations**

Unfortunately, we were met with an abrupt halt in our data collection due to the unprecedented Corona pandemic, necessitating that University of Tampa close campus facilities. It would be ideal to continue data collection Fall of 2020, which would enable us to induct additional participants for each condition.

Our conditions were designed to meet a logistically sound time frame for undergraduates to incorporate within their busy schedules. Should we revise our study going forward, it would be beneficial to expand the experimental conditions from a one-time exposure to daily implementation over the course of a month, to go beyond short-term application and begin to gage the long-term effects of mindful engagement as a training based discipline with development in time and practice. Additionally, it is possible that our control condition allowed participants to become mindfully engaged, as leisurely puzzles may have necessitated a degree of mindful attention. Finally, while unlikely, it is also possible that students were told about the fraudulent nature of the aptitude test by peers who previously participated and were debriefed about the nature of the study.

### **Impact**

The study of how perfectionism may be related to mindfulness is an emerging area of research. For example, due to the rigidity of perfectionistic thought patterns, it's imperative to explore the relationship between one's "need" for control and one's potential to surrender to the present moment. Development of interventions to increase wellness amongst our rising



generation is necessary, particularly amongst perfectionistic students prone to maladaptive thoughts.

Mindfulness research is still developing, slowed perhaps by the many ways in which mindfulness is defined and practiced. There is an extensive demand for evidence-based findings on mindfulness outcomes in order to apply them in educational and community settings or with specific types of people, like perfectionists. In the future it will be useful to know if mindfulness exercises, requiring acts of undoing interferences from thinking, judging, associating, planning, imagining, and wishing (Bodhi, 1994 as cited in Dhiman, 2009) help to lower the ruminative experiences that perfectionists often report. While many of the hypotheses in this study were not statistically supported, the data trends may assist future researchers in studying the efficacy of mindful art expression and mindful journaling among perfectionistic people.

### **Acknowledgements**

I have received tremendous support from the psychology department throughout the course of my undergraduate studies at the University of Tampa, which has allowed me to undertake this senior honors thesis project. Therefore, I wish to express my deepest gratitude to my supervisor, Dr. Michael Stasio, as well as my research assistant, Catherine Rutstein for their instrumental assistance throughout the course of this research study. Finally, I would also like to thank the University of Tampa for their financial support towards research expenditures inclusive of supplies and travel.

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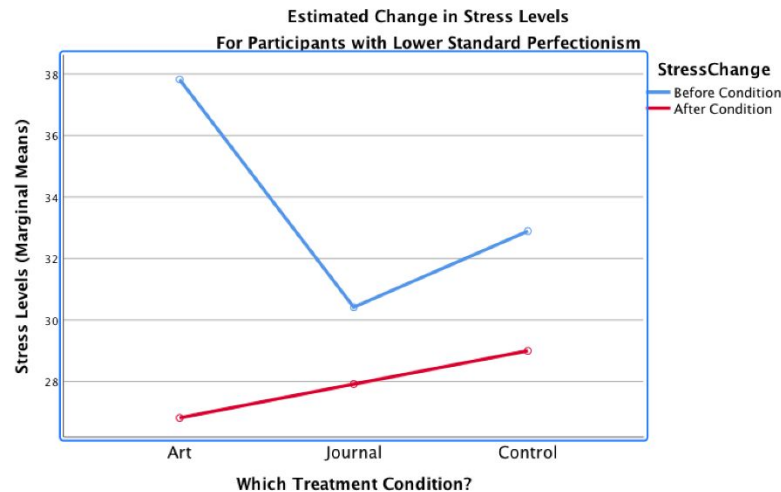
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**Figure 1**

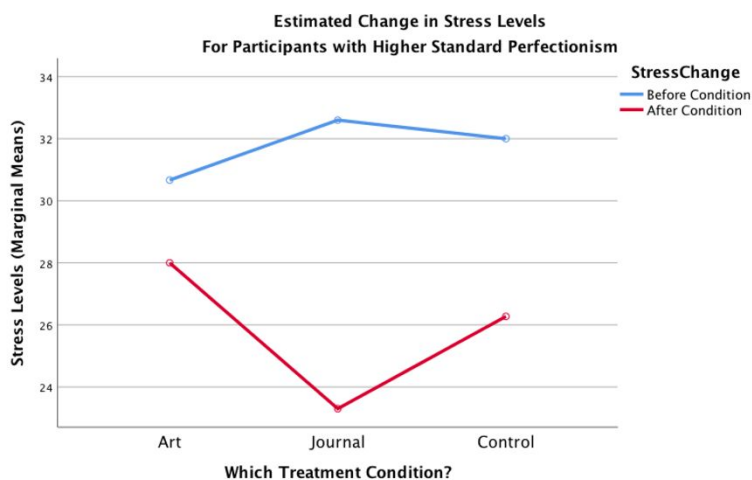
*Graph Depicting the Changes in Stress Levels Before and After Conditions For Participants With Lower Levels of Standard Perfectionism*



*Note.* Significant stress reduction following the art condition.

**Figure 2**

*Graph Depicting the Changes in Stress Levels Before and After Conditions For Participants With Higher Levels of Standard Perfectionism*

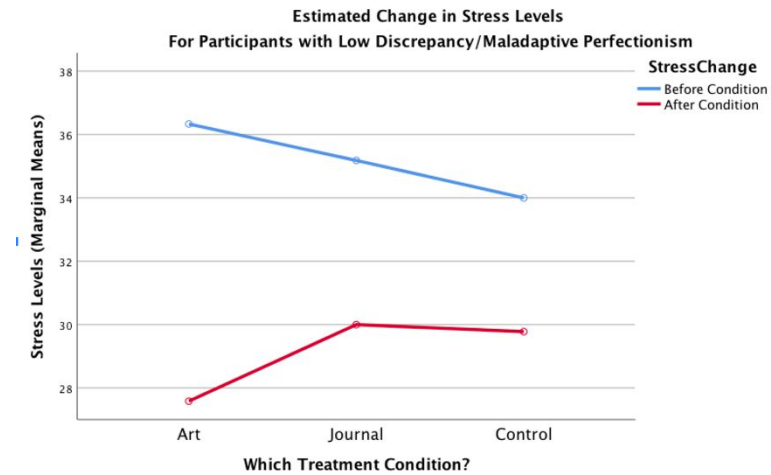


*Note.* Significant stress reduction following the journal condition.



**Figure 3**

*Graph Depicting the Changes in Stress Levels Before and After Conditions For Participants With Lower Levels of Maladaptive Perfectionism*



*Note.* Highest stress reduction following the art condition.