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## Mindset Matters: Measuring Anxiety Mindsets

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Mindset Matters: Measuring Anxiety Mindsets

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### Abstract

Considerable research supports Dweck's (2006) theory of mindsets, yet few researchers have studied mental health mindset. The current study explores this link through developing a measure that applies Dweck's dimensions of fixed vs. growth mindset to appraisals of anxiety while also assessing beliefs about strategies for managing anxiety. In Studies 1-4, we develop this measure and report the correlations among the four scales - Fixed, Growth, Acceptance, and Change - as well as the correlations between these scales and various measures of wellbeing in both undergraduate and high school samples. Study 5 builds on and extends this research by using an education paradigm to teach participants about either an acceptance or change approach to anxiety and measuring the effects of this training. Implications of the results and ideas for the future use of this measure are discussed.

Carol Dweck's theory of mindset is centered on the idea that personal beliefs can influence how one responds to challenging situations, often in the academic domain. These appraisals of the self have been dubbed mindsets (Dweck, 2006), and refer to individual differences in attribution or implicit theories of intelligence (Hong, Chiu, & Dweck, 1999). Those with growth mindsets (also known as incremental mindsets) believe their intelligence can be developed. As a result, people with this mindset embrace challenges, persevere when faced with obstacles, put a great deal of effort into their tasks, value criticism and feedback, and try to learn from the successes of others. In contrast, those with fixed mindsets (also known as entity mindsets) believe that people are born with a set amount of intelligence and avoid challenging situations that might reveal academic limitations. Individuals with fixed mindsets, therefore, have the desire to appear intelligent, often give up, do not put effort into their tasks, do not value feedback, and feel threatened by the success of others (Dweck, 2006).

Numerous studies demonstrate that these mindsets reliably predict differential responses to success and failure in the academic domain (Dweck & Bempechat, 1983; Dweck, Mangel, & Good, 2004; Licht & Dweck, 1984; Smiley & Dweck, 1994). These findings reveal that expectations and beliefs have a powerful role in shaping responses (Dweck, 1975; Dweck & Gilliard, 1975; Dweck & Goetz, 1978). For example, take fifth grade students who were asked to work on puzzles, a task that they all enjoyed (Mueller & Dweck, 1998). As the puzzles became more difficult, however, the children with fixed mindsets were less likely to enjoy the puzzles and want to practice them at home, whereas the children with growth

mindsets worked harder in an attempt to solve them and showed more interest in continuing to work on the puzzles. Pre-med students showed a similar pattern during their first semester enrolled in general chemistry (Grant & Dweck, 2003). Although all students started the course fairly interested in the topic, students with fixed mindsets only stayed interested when they succeeded, whereas students with growth mindsets maintained interest despite their level of success in the course. These results have been supported in several other studies, demonstrating the significance, as well as the many applications, of this topic.

Mindset typically refers to beliefs about intelligence, but mindsets have been studied in a wide variety of domains, such as business (Kray & Haselhuhn, 2007; Wood and Bandura, 1989), sports (Ommundsen, 2001; Sarrazin et al., 1996), relationships (Knee, 1998; Rudolph, 2009), and social categorizations based on race or personality (Haslam, Bastian, Bain, & Kashima, 2006). For example, Rudolph (2009) found that children who had an entity view of peer relationships were more likely to think of social goals in terms of performance and to think negatively about themselves when their peers did not approve of them. These children were also more likely to react with depression and aggression when they were victimized. Children who held incremental mindsets, on the other hand, focused more on developing relational competence and successful relationships, thus demonstrating another one of the positive consequences associated with having a growth mindset. Whether talking about business success, athletic achievement, relational competence, or interpersonal behavior, the results of the studies are consistent: a growth mindset is much more advantageous than a fixed mindset.

Researchers have begun to explore how mindsets pertain to more personal characteristics and traits such as weight (Burnette, 2010) and shyness (Beer, 2002). Burnette (2010) studied the effects of mindset on responses to dieting failure. Participants who viewed body weight as fixed (fixed mindset) were more likely to engage in avoidant coping processes and less likely to persist on future diets following the failure than those who viewed weight as something that could change (growth mindset). Just as these mindsets affect the responses to dieting failures, so too do they affect the way shy people respond to social interaction. Using a combination of self-report measures, hypothetical situations, and actual social interactions, Beer (2002) concluded that shyness negatively affected the social interactions of people who had fixed mindsets about being shy but not the interactions of people with growth mindsets about being shy. Shy participants with growth mindsets were also more likely to view social interactions as an opportunity to learn and were less likely to try to avoid these interactions. Further, the participants with growth mindsets were more sociable and likable and were viewed as more socially skilled than shy people with fixed mindsets. These mindsets can also play a role in the ways that personality is interpreted and understood. Chiu, Hong, and Dweck (1997), for instance, demonstrated that people who viewed personal qualities as unchangeable (fixed mindset) relied more heavily on information about personal traits to make future predictions about behavior than people who view personal qualities as changeable (growth mindset).

Emotions are yet another personal trait that has been studied in relation to mindsets (De Castella, Goldin, Jazaieri, Ziv, Dweck, & Gross, 2013; De Castella,

Goldin, Jazaieri, Ziv, Heimberg, & Gross, 2014). In their 2013 study, De Castella and her colleagues concluded that beliefs about emotions, whether people believe that emotions are fixed (fixed mindset) or that emotions can be changed (growth mindset), are associated with differing outcomes. Participants identified as having growth mindsets were found to have a stronger sense of wellbeing and less psychological distress when compared to their fixed mindset counterparts just as has been found in other domains.

### **Anxiety**

Anxiety is yet another domain to which mindset has been applied. This domain is the basis of the current studies, and therefore a complete understanding of anxiety is essential for understanding this research. Anxiety refers to feelings of worry (Twenge, 2000) as well as fear, panic, and apprehension (Barlow, 1988). These feelings are often future oriented and associated with impending negative events (Barlow, 2002), and they can have many negative effects, especially on college students. College students with heightened levels of anxiety have worse relationships with faculty and peers, less engagement in campus activities, and lower grade point averages than students without these levels of anxiety (Regehr, Glancy, & Pitts, 2013), thus demonstrating the detrimental effects of anxiety on everyday functioning in college students.

These detrimental effects are especially worrisome given the high prevalence of anxiety in college students. A survey conducted by the Association for University and College Counseling Center Directors revealed that anxiety is the top presenting mental health concern for college students (46.2%) (Reetz, Barr, & Krylowicz,

2014). Many studies have reinforced this idea, demonstrating that college students feel overwhelming levels of anxiety (Lanau, 2012), with these scores rising throughout their college career to levels much higher than pre-admission (Bewick, Koutsopoulou, Miles, Sias, & Barkham, 2010).

The studies described above address everyday anxiety, but once the levels of anxiety meet certain criteria and thresholds or cause significant impairment, they may qualify as clinical disorders. Anxiety disorders cause people to feel excessive levels of distress and fear in circumstances where others are not likely to experience these emotions (National Alliance on Mental Health, 2012).

Whether people simply struggle with everyday anxiety or have diagnosable disorders, treatment can offer relief. The form of treatment used, however, depends on the nature of this anxiety. Whereas clinical anxiety disorders are often treated using both cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT), there are also simpler treatment options for everyday anxiety that do not involve psychotherapy. Mindfulness, being conscious of and aware of one's levels of anxiety, is one such strategy that has been effective in reducing levels of everyday anxiety (Woodruff, Arnkoff, Glass, & Hindman, 2014).

### **Acceptance and Change**

The literature on fixed versus growth mindsets previously described has a key underlying idea: that of change. According to this body of research, in order for people to be successful, regardless of the domain, they must believe in the potential for change. Growth mindsets, clearly the preferable option, stress the importance of

the belief that people can change their basic qualities, but what if this is not always the best or most appropriate approach?

Consistent with growth mindset, cognitive behavioral therapy (CBT), the dominant approach to treatments, focuses on the ideas of change in behavioral response (Craske, 1999). Multiple meta-analyses have demonstrated that CBT is an effective method for treating anxiety disorders such as generalized anxiety disorder, social anxiety disorder, and specific phobias (Hoffman & Smits, 2008; Norton & Price, 2007). Much like the growth mindset, this approach advocates that clients engage in cognitive restructuring processes in order to challenge, and ultimately change, their maladaptive ideas and beliefs (Arch & Craske, 2008). Using an array of strategies, such as discussion, questioning, and behavioral experiments (Hoffman & Asmundson, 2008), CBT attempts to help clients live more satisfying lives by ridding themselves of the problems and difficulties that have been brought about as a result of their mental health condition. CBT, therefore, champions processes of change, believing that if people are able to change the way their conditions affect them on a day-to-day basis, many of the problems associated with these conditions will disappear.

As its name suggests, ACT emphasizes acceptance. Thus, ACT does not focus on cognitive restructuring and ridding oneself of maladaptive thoughts, but instead on holding and experiencing one's thoughts of the present moment (Orisillo, Roemer, Block-Lerner, LeJune, & Herbert, 2005). Cognitive diffusion, distancing oneself from thoughts in order to view them in a nonjudgmental way (Arch et al., 2012; Davies, Niles, Pittig, Arch, & Craske, 2015), is also key to ACT. Other key tenets

of ACT include: mindful self-observance, creative hopelessness, the realization that past efforts to change have been unsuccessful, and recognizing the importance of one's own values (Eifert & Forysth, 2005).

Many researchers are interested in the consequences of either an acceptance or change-based approach to anxiety. In fact, a substantial number of studies have inquired as to whether CBT or ACT leads to more favorable outcomes for clients. Studies contrasting the efficacy and effectiveness of ACT versus CBT have produced inconsistent results, likely due to mismatched samples and differing study designs (Gaudio, 2009), but most of the research agrees that ACT is just as effective as CBT, if not more so. In a study comparing ACT and CBT for participants with mixed anxiety disorders, Arch and her colleagues found that ACT and CBT produced similar overall improvements on various measures of anxiety and worry (Arch et al., 2012). When mindfulness and acceptance based group therapy was compared to traditional cognitive behavioral group therapy for participants with Social Anxiety Disorder, ACT and CBT also led to equivalent levels of symptom reduction both during treatment and at a three-month follow-up (Kocovski, Fleming, Hawley, Huta, & Antony, 2015), demonstrating that both ACT and CBT are acceptable and reliable forms of treatment.

Some studies have found that ACT and CBT produce different results, however. In a study measuring the effectiveness of these approaches, 28 clients were randomly assigned to participate in either ACT or CBT (Lappalainen et al., 2007). Clients who engaged in ACT showed more symptom improvement and acceptance, whereas clients treated with CBT showed quicker improvements on

other dimensions such as self-confidence. These results demonstrate that clients' choices to participate in either ACT or CBT can lead to differences in the initial outcomes of therapy. Despite these differences, clients overall had higher levels of symptom reduction and social functioning after participating in ACT, indicating that ACT produced better and more successful results. This idea is one that is currently trending in the ACT versus CBT literature.

These results have been replicated more broadly. Multiple meta-analyses have provided similar results, confirming the belief that ACT is the superior form of treatment for anxiety disorders alone (Ruiz, 2012; Swain, Hancock, Hainsworth, & Bowman, 2013), as well as anxiety comorbid with mood disorders (Wolitzky-Taylor, Arch, Rosenfield, & Craske, 2012) and for depression (Zettle, Rains, & Hayes, 2011). When Ruiz conducted a meta-analysis of 16 studies comparing ACT and CBT, for example, he concluded that ACT outperformed CBT and produced better results for clients who engaged in this treatment process. Through analyzing 38 studies on ACT, Swain and her colleagues reached similar conclusions supporting the effectiveness of ACT. Thus, relying on acceptance of one's situation rather than trying to change it, as the ideas of CBT and of a growth mindset suggest, appears to be the optimal approach to anxiety for those people who are struggling.

### **Anxiety Mindset**

Mindset theory provides a valuable lens for conceptualizing the distinction between acceptance and change approaches to anxiety. To date, however, only one

study has examined anxiety mindset<sup>1</sup>, and that study did not explore the acceptance/change dimension. In this study, Schroder and his colleagues studied the relationship between mindsets and symptoms of anxiety and depression (Schroder, Dawood, Yalch, Donnellan, & Moser, 2014). Using three discrete scales to measure implicit theories of intelligence, implicit theories of emotion, and implicit theories of anxiety, they hypothesized that believing personal attributes can change would be beneficial in the realm of mental health. Their predictions were supported, as participants with growth mindsets in these three areas displayed fewer mental health symptoms such as lower levels of worry, general depression, and perfectionism. Participants who held growth mindsets were also more likely to use cognitive reappraisal strategies (efforts to reinterpret a negative situation) and were more likely to select individual therapy over medication for a potential treatment choice. Thus Schroder and colleagues' results support the value of a change mindset. They did not, however, examine potential positive aspects of accepting one's anxiety. The present study sought to fill this gap.

### **The Current Research**

The current research sought to extend and deepen past research on anxiety mindsets by assessing fixed and growth mindsets as well as two new mindsets derived from the ACT and CBT literature: acceptance and change. In a series of five studies, we hoped to ultimately answer questions about the most beneficial ways to

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<sup>1</sup> Crum and her colleagues developed a measure that they refer to as the "Stress Mindset Measure" (Crum, Salovey & Achor, 2013). Although this measure has the word "mindset" in its name, these mindsets look at something entirely different than the mindsets studied by Schroder and his colleagues (2014). Rather than looking at how people approach their stress and anxiety itself, this measure looks at whether people view the effects of their stress as either enhancing or debilitating.

approach anxiety in a nonclinical sample. Through the development of the Anxiety Mindset Measure in Study 1 and Study 2, as well as the use of this measure with a high school sample in Study 3, the test-retest reliability of the measure in Study 4, and, ultimately, an attempt to manipulate the concepts in a brief intervention in Study 5, the current research hoped to learn more about the ways that people approached their anxiety and the effects of these approaches.

### **Study 1**

Although the advantages of a growth mindset and the disadvantages of a fixed mindset have been established through a substantial body of literature, the ways to measure these mindsets are not quite as clear. In fact, little consensus exists about how mindsets should be measured. Many different measures and scales exist, and their psychometric properties vary. Researchers agree, however, that implicit theories are domain specific (Chiu, Hong, & Dweck, 1997; Dweck, Chiu, & Hong, 1995). For example, someone can hold a growth mindset about intelligence, and therefore believe that intelligence can change, even though they hold a fixed mindset about personality, and therefore believe that personality is static.

Most research on mindset thus far has been conducted using self-report measures, although there are some exceptions (Baer, Grant, & Dweck, 2005; Spangler, 1992). Not only are many of these self-report measures difficult to obtain, but they also differ from one another in several key aspects. One major difference lies in the number and type of items. Many of these measures include similar statements such as, "You have a certain amount of intelligence and cannot do much to change it," (Blackwell, Trzesniewski, & Dweck, 2007; Dweck & Henderson, 1988)

and “No matter who you are, you can significantly change your intelligence” (Dweck, 1999; Levy & Dweck, 1997), but some include as few as three items (Chiu, Hong, & Dweck, 1997) whereas others have as many as eighteen items (Grant & Dweck, 2003). Blackwell and her colleagues (2007), for example, used six items to measure mindset, whereas Levy and Dweck (1997) used eight items; in both cases, the content of the items was virtually identical, essentially rewording the same concept.

A more conceptually interesting question involves the types of items that should be included in the measures. Some measures, such as Dweck’s (1999) Implicit Theories of Intelligence Scale ( $\alpha = .82$  to  $.97$ ) or the Implicit Theory of Emotion Scale ( $\alpha = .75$ ; Tamir, John, Srivastava, & Gross, 2007) include items that depict mindset as something that can be either fixed or growth. These scales ask participants to rate the extent of their agreement with items on both a fixed and a growth subscale, demonstrating the different types of mindsets that people can have through these multiple perspectives. These studies are supported by research demonstrating that although fixed and growth mindsets are negatively correlated, they are independent scales, and therefore both fixed and growth items should be included in the measures (Karwowski, 2014).

Other studies, however, have demonstrated that participants are more likely to agree with items depicting growth mindsets when given an option between the two (Boyum, 1988; Legett, 1985). Therefore, several measures take the approach of only including items that endorse fixed mindsets (Chiu, Hong, & Dweck, 1997; Dweck & Henderson, 1988; Rattan, Good, & Dweck, 2012; Schroder, Dawood, Yalch, & Moser, 2014). Just as the scales discussed above demonstrated good internal

consistency, so too do these scales, with Cronbach's alpha levels ranging from .73 to .98. The mindset measure used by Rattan and her colleagues included four statements that depicted math ability through a fixed mindset. These statements included, "You have a certain amount of math intelligence and cannot do much to change it," and "People in my Calculus class believe that people have a certain amount of math intelligence and cannot do much to change it."

Thus, the measurement of mindset is extremely complicated and is still developing. While the literature on the measurement of academic mindset is more developed, the measurement of mindset in other areas such as anxiety is still being established. In fact, only one assessment effort has been published in this domain: the anxiety mindset measure developed by Schroder and his colleagues (2012). Because little research exists on measuring mindset in this domain and because only one 3-item measure of this phenomenon exists, the current study sought to build on and extend upon this anxiety mindset measure. Thus, the main purpose of this study was to begin the development of a more comprehensive measure of anxiety mindset. In addition to the fixed and growth dimensions of anxiety, this new measure included statements about the acceptance and change dimensions of how people approached anxiety based in the literature on acceptance and commitment therapy and cognitive behavioral therapy. Study 1 was a pilot investigation with a small sample meant to test in a rudimentary way the reliability and validity of this new measure, the Anxiety Mindset Measure (AMM).

## **Method**

### **Participants**

Sixty students at Macalester College participated in a study entitled “Miscellaneous Surveys.” Of the 60 participants, 41 (68.3%) identified as female, 16 (26.7%) identified as male, 1 (1.7%) identified as non-binary, 1 (1.7%) identified as agender, and 1 (1.7%) chose not to answer. The sample consisted of 42 (70%) participants who identified as White or Caucasian, 14 (23%) participants who identified as Asian, 2 (3.3%) participants who identified as Hispanic or Latino, 1 (1.7%) participant who identified as Black, and 1 (1.7%) participant who chose not to answer.

Participants were students from Introduction to Psychology courses who participated in exchange for course credit.

### **Measures**

The Miscellaneous Survey study was primarily intended to screen students from the Introduction to Psychology participant pool for involvement in future studies in the department, and it thus included a wide variety of measures that were not directly related to the current study. Participants completed a demographic questionnaire that included questions on gender, age, and race/ethnicity, the Dutch Eating Behavior Questionnaire (Van Strien, Frijters, Bergers, & Defares, 1986), the Center for Epidemiologic Studies – Depression Scale- Revised (Eaton, Muntaner, Smith, Tien, & Ybarra, 2004), and questions developed by Macalester faculty and students regarding disability and identity. Students also completed surveys on comfort levels around potentially triggering topics and experiences at the gym in

addition to the measures specific to this study. Students first completed questions regarding disability status and attitudes about potentially triggering topics. The remaining measures were presented in a random order.

Students completed a questionnaire developed by the researchers (see Appendix) to examine mindsets regarding anxiety. This measure characterized feelings towards anxiety as either fixed or growth and approaches to anxiety as either acceptance or change-based. Students were asked to rate the extent to which they agreed or disagreed with eight statements in each domain using a seven-point Likert scale. The items used in this measure were developed based on the literature on academic mindset, anxiety mindset, cognitive behavioral therapy, and acceptance and commitment therapy.

Participants also completed the Satisfaction with Life Scale (see Appendix; Diener, Emmons, Larsen, & Griffin, 1985) and the Brief Resilience Scale (see Appendix; Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008), two commonly used and well validated instruments, in order to provide rudimentary construct validity information. When the Satisfaction with Life Scale was developed by Diener and his colleagues it had a Cronbach's alpha of .87, and in the current study it had an alpha level of .83. Research has shown that the Brief Resilience Scale has good internal consistency as well, with Cronbach's alpha ranging from .81-.91. In the current study, this measure had a Cronbach's alpha level of .87.

## **Results**

This study began the process of developing the Anxiety Mindset Measure. Thus, reliability analyses were computed for the four subscales of this measure.

Additionally, correlations among the different subscales and between the subscales and various wellbeing measures were computed to establish the measure's construct validity.

### **Reliability**

Cronbach's alpha was computed for the four subscales of the mindset measure. The 8-item Fixed subscale had a Cronbach's alpha level of .52. To improve internal coherence, items 2,4, 5, 6, and 7 were removed from the subscale. The remaining three items yielded a Cronbach's alpha level of .70. The original Cronbach's alpha for the 8-item Growth subscale was .69 but when items 2,4,5, and 7 were removed, the alpha climbed to .75. These changes also ensured that the Fixed and Growth subscales were negatively correlated, as expected by the basis of mindset theory.

Cronbach's alpha was also computed for the 8-item Acceptance ( $\alpha = .65$ ) and Change ( $\alpha = .62$ ) subscales. Again, items were removed to improve internal coherence. Item 4 was removed from the Acceptance subscale, raising the alpha to .66. Item 4 was also removed from the Change subscale, bringing Cronbach's alpha up to .70.

### **Correlations**

To establish construct validity, we calculated correlations among the most internally consistent version of the subscales of the Anxiety Mindset Measure (see Table 1). As expected, the Fixed and Growth subscales of this measure were negatively correlated  $r(58) = -.28, p = .029$ . The Fixed subscale was also negatively correlated with the Change subscale,  $r(58) = -.34, p = .009$ , and the Change subscale

was positively correlated with the Growth subscale,  $r(58)=.50, p<.001$ . The Acceptance subscale was not significantly correlated with any of the other subscales of this mindset measure.

Correlations were also computed between the different mindset subscales and the wellbeing measures (see Table 1). Subjective wellbeing was negatively correlated with a fixed mindset,  $r(58)=-.44, p<.001$  and positively correlated with a change mindset,  $r(58)=.39, p=.002$ , Resilience was negatively correlated with a fixed mindset,  $r(58)=-.38, p=.003$ , positively correlated with a growth mindset,  $r(58)=.31, p=.017$ , and positively correlated with a change mindset,  $r(58)=.30, p=.020$ .

### **Discussion**

By determining reliability for each of the four subscales of the AMM, as well as computing correlations between the four subscales and the wellbeing variables, this study yielded information crucial to the further validation of this measure.

The reliability analyses indicated that each of the subscales included items that depressed the subscales' internal coherence. Once these items were removed, the Cronbach's alphas reached acceptable levels, thus suggesting that the subscales had at least rudimentary reliability. After items were removed from each of the scales to achieve optimal internal coherence, correlations were computed. The results of these correlations were consistent with the literature on mindset and with our predictions. Participants' scores on the Fixed and Growth subscales were negatively correlated, fixed mindsets were negatively correlated with change mindsets, and growth mindsets were positively correlated with change mindsets.

The subscales were also correlated with relevant wellbeing questionnaires in a predictable way, suggesting their validity. Also consistent with the literature, fixed mindsets were negatively correlated with wellbeing, and growth and change mindsets were positively correlated with wellbeing. Acceptance was not significantly correlated with life satisfaction or with resilience. This pattern of results likely occurred because the idea of approaching anxiety through an acceptance mindset is counterintuitive. Most people believe that anxiety should be managed, suppressed, and controlled, even though empirical evidence on the treatment for anxiety demonstrates different results. Thus, although research has demonstrated that acceptance is a beneficial approach to anxiety, *believing* that acceptance works may require education. This speculation is at the heart of Study 5.

Study 1 was the first step in the development of a measure of anxiety mindsets and provided important information in terms of both reliability and validity. Overall, the results of this study were encouraging. The pattern of results present for the Fixed and Growth subscales mirrored the pattern found by Schroder and his colleagues. Additionally, the Acceptance and Growth subscales, both mindsets that have not been measured before, showed promising patterns. Having shown initial promise in this pilot study, the Anxiety Mindset Measure was ready for further validation through a second, larger sample. Study 2 was designed to address this goal. Study 2 also took important steps in considering the ways that other factors, such as participants' trait levels of anxiety or their trait levels of mindfulness, were associated with the ways that they responded to the Anxiety Mindset Measure.

## Study 2

This study continued the process of developing the Anxiety Mindset Measure. It sought to determine the reliability of the four subscales and to examine patterns of association among the subscales and between the subscales and different aspects of wellbeing using a larger sample. This study also included two measures that were not a part of the pilot study: trait anxiety and trait mindfulness.

By including a measure of trait anxiety, the current study sought to understand whether the patterns seen in Study 1 differed based on participants' anxiety levels. ACT and CBT were developed as treatments for people struggling with high levels of anxiety, and the concepts of acceptance and change may vary as a function of participants' experiences with this mood state. Thus, the current study recognized the potential moderating role of trait anxiety.

Study 2 also introduced a new conceptual dimension: mindfulness. Mindfulness refers to the practice of being aware of one's thoughts and approaching them in a manner free of judgment (Roemer & Orsillo, 2002). Thus, the idea of mindfulness is very similar to that of acceptance. Interest in mindfulness has skyrocketed in recent years, especially as it relates to various mental health conditions. Considerable research supports the therapeutic impact of Mindfulness-Based Cognitive Therapy (MBCT), an approach that combines the CBT approach to treatment, that of giving clients strategies to help them change their levels of anxiety, with the idea of mindfulness (Evans et al., 2008). Adding mindfulness to the practice of CBT has proven to be quite successful. Participants in MBCT studies have shown significant reductions in anxiety symptoms (Evans et al., 2008). Further, this

therapeutic approach was beneficial to clients before, during, and after stressful experiences (Kavaini, Javaheri, & Hatami, 2011).

Although acceptance is not a natural approach to anxiety, the idea of mindfulness more generally is gaining popularity. Thus, this study hypothesized that although an acceptance mindset may not be related to the wellbeing measures, mindfulness might be. The current study hypothesized that there would also be positive correlations between mindfulness and acceptance. If all of these correlations held true, these results would further support the benefits of an acceptance mindset and could serve as a useful marker of openness to the ideology of ACT.

## **Method**

### **Participants**

One hundred eighty three people participated in an online study entitled, “Beliefs about Emotions.” Of the 183 participants, 32 were excluded because they were not college students. Of the 151 college students who participated, 134 (88.7%) identified as female, 13 (9.7%) identified as male, and 4 (2.6%) identified as non-binary. The sample consisted of 129 (85.4%) participants who identified as White or Caucasian, 11 (7.3%) participants who identified as Asian, 5 (3.3%) participants who identified as Hispanic or Latino, 3 (2%) participants who identified as mixed race or multiracial, 2 (1.1%) participant who identified as Black or African American, and 1 (.7%) participant who identified as other.

Participants were recruited via Facebook and word of mouth.

## Measures

Participants first responded to demographic questions about their age, gender, and their race/ethnicity. Next, participants completed a variety of measures, all of which were presented in a randomized order and had their item order randomized as well.

Participants completed the 25-item Anxiety Mindset Measure, a revised version of the measure that researchers began to develop in Study 1 (see Appendix). Items that had notably depressed the subscales' internal coherence in Study 1 were removed from the measure for this revised version. Participants also responded to the 7-item Toronto Mindfulness Scale- Trait Version- Decentering Subscale (see Appendix; Davis, Karen, & Cairns, 2009). This scale was used in order to measure the correlations between participants' beliefs about acceptance and their experiences with mindfulness. This measure has a reported Cronbach's alpha level of .85, and has been used to measure mindfulness in the contexts of wellbeing (Brown & Ryan, 2003) and spirituality (Carmody, Reed, Kristeller, & Merriam, 2008). The Toronto Mindfulness Scale's alpha in the present study was .58.

Wellbeing was assessed using two well-validated instruments. Participants completed three 9-item subscales from the Ryff Scale of Psychological Well-Being (see Appendix; Ryff, 1989). These 27 items make up the Autonomy (reported  $\alpha$  for the 14-item version =.83), Personal Growth (reported  $\alpha$  for the 14-item version =.85), and Self-Acceptance (reported  $\alpha$  for the 14-item version =.91) subscales of this measure. In the present study, the Autonomy subscale had an alpha of .79, the Personal Growth subscale had an alpha of .79, and the Self-Acceptance subscale had

an alpha of .90. In past studies, these measures were correlated with many other facets of wellbeing including measures of life satisfaction and self-esteem (Ryff, 2014).

Participants also completed the Brief Resilience Scale (see Appendix; Smith et al., 2008), a 6-item measure of resilience also used in Study 1. This measure has good internal consistency as well, with Cronbach's alpha ranging from .81-.91 in the literature. In the current study, the Brief Resilience Scale had a Cronbach's alpha of .86. Scores on this scale are positively correlated with positive affect and negatively correlated with negative outcomes including physical symptoms such as headaches or dizziness and perceived stress (Smith, Tooley, Christopher, & Kay, 2010).

Before finishing the survey, participants completed the CAT-PD: Anxiousness IPIP scale (see Appendix; Goldberg et al., 2006). This 7-item measure asked participants about their trait levels of anxiety. Alpha levels for this measure ranged from .83 to .85. In this study, the CAT-PD: Anxiousness had a Cronbach's alpha level of .88.

Participants were then debriefed before concluding the survey.

## **Results**

This study sought to validate the revised version of the Anxiety Mindset Measure. We thus computed the Cronbach's alpha levels of the various subscales as well as correlations among the mindset measure's subscales and between those subscales and other measures of wellbeing in order to determine reliability and construct validity. We also conducted repeated measures ANOVAs in order to determine the most strongly endorsed mindsets within the sample.

### **Reliability**

Cronbach's alpha was computed for each subscale of the anxiety mindset measure. The 5-item Fixed subscale of this measure had a Cronbach's alpha level of .70. The 5-item Growth subscale of this measure had a Cronbach's alpha level of .64. To improve internal coherence, item 2 from the Growth subscale ("when you're anxious, asking others for help can be beneficial") was removed, bringing alpha up to .70. The 8-item Acceptance subscale had a Cronbach's alpha level of .63. Item 2 ("when you feel anxious you should try and think about and understand those feelings") was removed, and Cronbach's alpha rose to .65. The Cronbach's alpha level for the 7-item Change subscale of this measure was .69. After removing items 5 ("There are many strategies that you can use to control your anxiety") and 7 ("allowing yourself to give into anxiety is usually a mistake"), the alpha level rose to .71.

### **Correlations**

After computing the reliability analyses for the measures used, and adapting three of the anxiety-mindset subscales in order to improve this reliability, the correlations among the different scales and between the subscales and wellbeing measures were computed (see Table 2). Consistent with the hypotheses, fixed and growth anxiety mindsets were negatively correlated  $r(149)=-.33, p<.001$ . As expected, seeing anxiety through a fixed mindset was also negatively correlated with the measures of wellbeing and resilience. Significant relationships were found between fixed anxiety mindsets and all three subscales of the Ryff Scale of Psychological Well-Being,  $r(148)=-.33, p<.001$  for Personal Growth,  $r(148)=-.25,$

$p=.002$  for Self-Acceptance, and  $r(148)=-.16$ ,  $p=.050$  for Autonomy. Fixed anxiety mindsets were also negatively correlated with scores on the Brief Resilience Scale,  $r(149)=-.20$ ,  $p=.016$ , and positively correlated with scores on the CAT-PD: Anxiousness,  $r(148)=.39$ ,  $p=.001$ .

In contrast, growth anxiety mindsets were not significantly correlated with any of the wellbeing measures described above, nor were they significantly correlated with participants CAT-PD: Anxiousness scores. These mindsets, however, were significantly correlated with both acceptance mindsets,  $r(149)=.19$ ,  $p=.020$ , and change mindsets,  $r(149)=.33$ ,  $p<.001$ , towards anxiety.

A similar pattern was seen with the change mindset subscale, as it was not significantly correlated with any of the wellbeing measures or trait anxiety levels. The change mindset subscale, however, was negatively correlated with the acceptance subscale of the mindset measure,  $r(148)=-.18$ ,  $p=.028$ . As was hypothesized, the acceptance subscale was not significantly correlated with the wellbeing measures, but this subscale was significantly correlated with the Toronto Mindfulness Scale,  $r(148)=.16$ ,  $p=.048$ .

### **Exploratory Analyses**

**Most Strongly Endorsed Mindsets.** We ran repeated measures ANOVAs to examine what mindsets were most strongly endorsed within the sample using participants' AMM scores. In this sample, participants endorsed the four mindsets at significantly different levels,  $F(3, 147)= 93.75$ ,  $p<.001$ . Pairwise comparisons revealed that acceptance was the most highly endorsed mindset ( $M=4.73$ ,  $SD= .06$ ),

followed by change ( $M=4.45$ ,  $SD= .07$ ), fixed ( $M=3.95$ ,  $SD= .07$ ), and growth (3.61,  $SD= .08$ ).

**Median split.** Next, exploratory analyses were performed using participants' scores on the CAT-PD: Anxiousness. Because people vary in their levels of trait anxiety, and because treatments like ACT and CBT were developed to help people with high levels of anxiety, we divided our sample using a median split (median=3.14). Correlations were once again computed in order to determine whether different correlational patterns emerged based on trait anxiety levels (see Tables 3 & 4)

For participants with low levels of anxiety, having a fixed anxiety mindset was still negatively correlated with having a growth anxiety mindset,  $r(75)=-.25$ ,  $p=.026$ . Fixed anxiety mindsets were also negatively correlated with scores on the Personal Growth subscale of the Ryff Scale of Psychological Well-Being,  $r(74)=-.33$ ,  $p=.004$ .

In addition to being negatively correlated with fixed mindsets, growth mindsets were positively correlated with change mindsets,  $r(75)=.35$ ,  $p=.002$  among those with low levels of anxiety . When levels of anxiety were considered, growth mindsets were no longer significantly correlated with acceptance mindsets for participants with low levels of anxiety. For these participants, growth mindsets also showed no significant correlations with the wellbeing measures, but the correlation between growth mindsets and scores on Self-Acceptance subscale of the Ryff Scale of Psychological Well-Being were marginally significant,  $r(74)=.20$ ,  $p=.079$ .

The Acceptance and Change subscales of the Anxiety Mindset Measure were negatively correlated for participants with low levels of anxiety,  $r(75)=-.25, p=.031$ . Both of these subscales did not show significant correlations with the wellbeing measures or levels of anxiety for participants in the bottom half of the median split.

For participants with high levels of anxiety, the Fixed subscale was still negatively correlated with the Growth subscale,  $r(71)=-.36, p=.002$ . Fixed mindsets were also negatively correlated with both the Self-Acceptance,  $r(71)=-.24, p=.038$ , and the Personal Growth,  $r(71)=-.35, p=.003$ , subscales of the Ryff Scale of Psychological Well-Being.

Growth mindsets were significantly correlated with change mindsets,  $r(71)=.34, p=.003$ , with the Growth mindset subscale being the only measure that change was significantly correlated with for high anxiety participants. The Growth subscale also showed marginally significant correlations with acceptance mindsets,  $r(71)=.21, p=.077$ . Acceptance mindsets, were in turn, significantly correlated with mindfulness scores,  $r(71)=.26, p=.029$ , and showed marginally significant correlations with scores on the Brief Resilience Scale,  $r(71)=.20, p=.096$ .

Thus, for participants with both low and high levels of anxiety, a fixed anxiety mindset is correlated with lower levels of wellbeing. Although no mindset was significantly correlated with wellbeing for either the low or high anxiety groups, there were marginally significant correlations between a growth mindset and one of the wellbeing measures for those low in anxiety and marginally significant correlations with an acceptance mindset and one of the wellbeing measures for those high in anxiety. For participants low in anxiety, acceptance and growth were

also significantly correlated, a pattern that was not the case for participants high in anxiety.

**Reliability analyses.** Because the scores of people high and low in trait anxiety produced different patterns of correlations, reliability analyses were rerun in order to determine whether the scale's internal consistency varied as a function of trait anxiety. The Fixed mindset subscale had a Cronbach's alpha of .65 for participants with low levels of anxiety, whereas it had a Cronbach's alpha of .72 for participants high in anxiety. The Growth subscale showed similar patterns, with a Cronbach's alpha of .66 for participants low in anxiety and .73 for participants high in anxiety. For the Acceptance subscale, Cronbach's alpha was .60 for participants low in anxiety and .70 for participants high in anxiety. Lastly, for the Change subscale of this measure, Cronbach's alpha was .65 for participants with low levels of anxiety and .76 for participants with high levels of anxiety. These results suggest that the scale is somewhat more reliable for people high in anxiety than for people low in anxiety.

**Comparisons based on trait anxiety.** Independent samples t-tests demonstrated significant differences between those high and low in trait anxiety with regard to the Fixed subscale,  $t(148)=-3.08, p=.003$ . Differences also emerged on mindfulness scores,  $t(147)=3.08, p=.002$ , Self-Acceptance scores,  $t(147)=4.26, p<.001$ , Personal Growth scores,  $t(147)=2.25, p=.026$ , and scores on the Brief Resilience Scale,  $t(148)=5.04, p<.001$ . Participants high in anxiety endorsed a fixed mindset more fully and also reported less mindfulness, self-acceptance, personal growth, and resilience.

## Discussion

The main goal of this study was to continue the evaluation of the Anxiety Mindset Measure. First, reliability and correlation calculations were computed for the overall participant pool to determine internal coherence and construct validity. Because the ultimate goal of the AMM is to help people who struggle with anxiety, and because two of the four subscales of the AMM were derived from evidenced based treatments for clients with high levels of anxiety, this study also sought to examine differences between participants with high and low levels of trait anxiety.

For the overall sample, fixed and growth mindsets were negatively correlated, providing evidence for the validity of the measure. Given the present study's goal of continuing to validate and develop the AMM, this correlation was important.

Consistent with past research on mindsets, fixed mindsets were negatively correlated with the measures of wellbeing and resilience. These results indicate that fixed mindsets continued to be associated with lower levels of wellbeing. Contrary to the ideas put forward by the large body of literature on mindset, growth mindsets and change mindsets were not positively correlated with the wellbeing measures.

For the overall sample, correlations with the Acceptance subscale followed the hypothesized pattern; this subscale was not correlated with the wellbeing measures. Acceptance was, however, correlated with mindfulness, which was in turn correlated with resilience. Acceptance, therefore, was linked to promising results according to these data. When mindfulness serves as a bridge between the two, beliefs in acceptance are linked to higher levels of resilience. Participants who

endorsed higher levels of acceptance also endorsed higher levels of mindfulness, and participants who endorsed higher levels of mindfulness endorsed higher levels of resilience, demonstrating a possible link between the concepts of acceptance and resilience in this data.

The pattern of the most strongly endorsed mindsets with these participants was intriguing. We did not expect growth mindsets to be endorsed at such a low level and acceptance mindsets to be endorsed at such a high level. We will have to see if this pattern holds going forward in order to truly understand its meaning.

Considering the high and low trait anxious participants separately shed further light on this pattern of association. The links between acceptance, mindfulness, and resilience were unique to high anxiety participants. For these participants, acceptance was once again correlated with mindfulness (and mindfulness was once again correlated with resilience), and it also was marginally significantly correlated with resilience itself. Further, acceptance was the only mindset subscale that had even marginally significant positive correlations with the measures of wellbeing and resilience. Change and growth, the two variables most commonly accepted as “healthy” and beneficial were not even marginally associated with wellbeing for the high anxiety participants. While the effect is subtle and requires validation due to the findings being only marginally significant, these results further support the promise of an acceptance mindset for people with high levels of anxiety.

This pattern of results was not produced, however, with the low anxiety participants. For these participants, an acceptance mindset was not even marginally

linked to the wellbeing measures, nor was it significantly correlated with mindfulness. While these results are somewhat perplexing upon first glance, they may reflect important differences. For the low anxiety group -- a group who likely has not had much experience with anxiety -- an acceptance mindset may seem counterintuitive; if anxiety rarely interferes with your daily life, you might view it as an easily managed emotional state and not something to be embraced. The high anxiety group, however -- a group that has grappled with anxiety more frequently and likely had less success -- may not have seen this idea as counterintuitive. Although this study originally hypothesized that participants would not be aware of the benefits of an acceptance mindset unless they were educated on this topic, the results suggest that the high anxiety participants who hold accepting views of their anxiety benefit from this perspective. Given their experiences, the high anxiety group may have come across the ideas put forward by the acceptance mindset in a way that people who have not truly experienced anxiety have not.

The AMM was correlated with different subscales depending on whether participants were in the low or high anxiety groups. For participants with low levels of anxiety, the acceptance mindset was positively correlated with the change mindset. While neither acceptance nor change was correlated with any of the other measure for this group, this positive correlation is somewhat puzzling given that these two subscales measured opposing ideas. This pattern was not apparent, however, for the participants with high levels of anxiety. For these participants, the acceptance mindset stood on its own, as it was not correlated with any of the other subscales. This pattern of results may be a consequence of a similar idea to that

described above, the idea that participants who have not truly experienced anxiety do not fully understand how to respond to this measure or fully understand the differences between these anxiety mindsets. These results indicate that the construct of anxiety may vary based on past experiences and additional research is necessary in order to understand whether this scale and these concepts are useful for people low in trait anxiety.

Additional reliability analyses provide further evidence that trait anxiety may moderate the experience of anxiety mindsets. Each subscale of the Anxiety Mindset Measure had higher alpha levels for participants with high levels of trait anxiety than for participants with low levels of trait anxiety. Given the study's ultimate goal of finding the ideal and most beneficial mindset for people who struggle with anxiety, these results are encouraging.

Studies 1 and 2 worked to develop the Anxiety Mindset Measure through providing information on its reliability and construct validity, and it is now the task of future research to make use of this measure. Aside from using this measure in order to determine participants' mindsets, future research should consider the effects of each of these mindsets rather than simply determining the factors with which they are correlated.

### **Study 3**

After examining the AMM and its properties within an undergraduate sample, we sought to understand how this measure would work with another age group. In Study 3, we used a high school student sample to assess the internal stability and concurrent validity of the AMM within a younger demographic.

The research on fixed and growth mindsets is mainly rooted in child development. Herbert and Dweck (reviewed in Dweck, 1991) have studied this concept with children as young as four years old. Mindset continues to apply to decisions throughout childhood (Dweck & Bempechat, 1983) and persists into adolescence (Blackwell, Trzesniewski & Dweck, 2007; Yeager, Johnson, Spitzer, & Dweck, 2012), as well as the college years (Grant & Dweck, 2003).

Although the developmental consistency of the academic mindset is well established, the developmental trends for other domains remain uncertain. The anxiety mindset that Schroder and his colleagues tested, for example, was only studied within an undergraduate sample. Further, while cognitive behavioral therapy has been studied with both children (Jónsson, Thastum, Arendt, & Juul-Sørensen, 2015; Lundkvist-Houndoumadi & Thastum, 2013) and adolescents (Kendall & Peterman, 2015), the research on acceptance and commitment therapy with these age groups is much more limited. In one study that used ACT with anxious adolescents (Livheim et al., 2015), participants showed significantly lower levels of stress, but the decreases in anxiety were only marginally significant. Given the minimal research on anxiety mindsets and anxiety treatments with children and adolescents, it is difficult to know whether anxiety mindset, like academic mindset, is developmentally consistent. The present study hoped to begin the process of answering this question.

The current study sought to establish reliability of the AMM with a high school sample (via alpha) and look at validity (via correlations with relevant

variables). We hoped that the measure would retain its psychometric properties in this younger sample.

## **Method**

### **Participants**

A convenience sample of 103 participants from a public high school on the East Coast participated in the study. Of the 103 participants, 39 (37.9%) were freshman, 19 (18.4%) were sophomores, 24 (23.3%) were juniors, and 21 were seniors (20.4%). Participants' ages ranged from 14-18 ( $M=15.38$ ,  $SD=1.20$ ).

Of the 103 participants, 65 identified as female (63.1%), 35 identified as male (34%), 1 (.97%) identified as agender, 1 (.97%) identified as gender fluid, and 1 (.97%) identified as other. The sample consisted of 34 (33%) participants who identified as White or Caucasian, 28 (27.1%) who identified as Hispanic or Latino, 16 (15.5%) who identified as African American or Black, 11 (10.7%) who identified as Asian, 4 (3.9%) who identified as biracial or multiracial, 9 (8.7%) who identified as "other," and 1 (.97%) who chose not to answer.

### **Measures**

In this study, participants completed the same measures that were completed by the undergraduate sample in Study 2 with a few minor changes.

Parents provided consent to participate in this study, and students provided assent before beginning. Participants first completed demographic questions about their age, grade, gender, and their race/ethnicity. Next, participants completed a variety of measures presented in a randomized order; item order was randomized as well.

Next, participants completed a 26-item Anxiety Mindset Measure (see Appendix). This version of the measure added one Growth scale item that had worked well in Study 1 but had not been included in Study 2 (“Anyone can overcome anxiety”).

Participants also completed the 7-item Toronto Mindfulness Scale- Trait Version- Decentering Subscale (see Appendix; Davis et al., 2009). This scale was used to measure the correlations between participants’ beliefs about acceptance and their experiences with mindfulness. This measure has a reported Cronbach’s alpha level of .85 in adults, but has not been normed with adolescents. The Toronto Mindfulness Scale has been used to measure mindfulness in the contexts of wellbeing (Brown & Ryan, 2003) and spirituality (Carmody et al., 2008). The Toronto Mindfulness Scale’s alpha in the present study was .50.

Wellbeing was assessed using two well-validated instruments. Participants completed three 9-item subscales from the Ryff Scale of Psychological Well-Being (see Appendix; Ryff, 1989). These 27 items make up the Autonomy (alpha for the 14-item version = .83), Personal Growth (alpha for the 14-item version = .85), and Self-Acceptance (alpha for the 14-item version = .91) subscales of this measure. Again, this measure has been normed with adults, but not with adolescents. In the present study, the Autonomy subscale had an alpha of .84, the Personal Growth subscale had an alpha of .70, and the Self-Acceptance subscale had an alpha of .85. In past studies, these measures were correlated with many other facets of wellbeing including measures of life satisfaction and self-esteem (Ryff, 2014)

Participants also completed the Brief Resilience Scale (see Appendix; Smith et al., 2008), a 6-item measure of resilience. This measure has good internal consistency as well, with Cronbach's alpha ranging from .81-.91 in the literature with adult participants. In the current study, the Brief Resilience Scale had a Cronbach's alpha of .78. Scores on this scale are positively correlated with positive affect and negatively correlated with negative outcomes including physical symptoms such as headaches or dizziness and perceived stress (Smith et al., 2010)

Before finishing the survey, participants completed the CAT-PD: Anxiousness IPIP scale (see Appendix; Goldberg et al., 2006). This 7-item measure asked participants about their trait levels of anxiety. Alpha levels for this measure ranged from .83 to .85 in past research with adults. In this study, the CAT-PD: Anxiousness had a Cronbach's alpha level of .79.

Participants were then debriefed.

## **Results**

This study sought to understand whether the revised version of the Anxiety Mindset Measure could be used in a high school population. We thus computed the Cronbach's alpha levels of the various subscales as well as correlations among the mindset measure's subscales and between those subscales and other measures of wellbeing in order to determine reliability and construct validity.

### **Reliability**

Cronbach's alpha was computed for each subscale of the anxiety mindset measure. The 5-item Fixed subscale of this measure had a Cronbach's alpha level of .63. To improve internal coherence, items 2 ("People have different levels of anxiety

and that is just the way they are born”) and 4 (“Anxious people will always be affected by their anxiety”) were removed, bringing alpha up to .65. The 6-item Growth subscale of this measure had a Cronbach’s alpha level of .48. Items 6 (“Anyone can overcome anxiety”), 2 (“When you are anxious, asking others for help can be beneficial”), and 3 (“When you feel anxious, it is a signal to try harder”) were removed, raising alpha to .68. The 8-item Acceptance subscale had a Cronbach’s alpha level of .46. Items 6 (“When you feel anxious, you should just try and take your anxiety for what it is”), 8 (“Accepting anxiety is better than fighting it”), 1 (“When you feel anxious, you should try and accept your initial response before moving on”), and 3 (“You shouldn’t worry about the fact that you get anxious”) were removed, and alpha rose to .53. The Cronbach’s alpha level for the 7-item Change subscale of this measure was .64. After removing items 6 (“One of the best ways to handle anxiety is to control it”) 1 (“When you feel anxious, you should try to change your response”), and 7 (“Allowing yourself to give in to anxiety is usually a mistake”), the alpha level rose to .67.

### **Correlations**

Using the most internally consistent configuration of the AMM scales, we computed their intercorrelations, as well as the correlations between the subscales and wellbeing measures (see Table 5). Consistent with the hypotheses, fixed and growth anxiety mindsets were negatively correlated,  $r(101)=-.35, p<.001$ . Fixed mindsets were also negatively correlated with change mindsets,  $r(101)=-.35, p<.001$  and positively correlated with acceptance mindsets,  $r(101)=.25, p=.010$ . Participants who were more likely to see their anxiety as fixed were also more likely to endorse

acceptance mindsets. Although fixed and acceptance mindsets endorse different ideas, believing that one's anxiety is fixed may well be connected with viewing it as natural and tolerable. For this sample, seeing anxiety through a fixed mindset was negatively correlated with only one measure of wellbeing, the Self-Acceptance subscale of the Ryff Scale of Psychological Well-being,  $r(94)=-.23, p=.025$ . Fixed anxiety mindsets were also positively correlated with scores on the CAT-PD: Anxiousness,  $r(90)=.33, p=.001$ .

Growth anxiety mindsets demonstrated positive correlations with both the Self-Acceptance Subscales of the Ryff Scale of Psychological Well-Being,  $r(94)=.22, p=.033$ , and the Brief Resilience Scale,  $r(96)=.24, p=.019$ . This subscale was also negatively correlated with participants' CAT-PD: Anxiousness scores,  $r(90)=-.25, p=.018$ . Additionally, these mindsets were significantly correlated with the Change subscale of this measure,  $r(100)=.39, p<.001$ .

Change-based anxiety mindsets were significantly correlated with two of the four wellbeing measures, the Personal Growth,  $r(93)=.37, p<.001$ , and the Self-Acceptance,  $r(93)=.24, p=.019$ , subscales of the Ryff Scale of Psychological Well-Being. As expected, the Acceptance subscale was not significantly correlated with the wellbeing measures, but this subscale was significantly correlated with participants' mindfulness scores,  $r(99)=.25, p=.010$ .

### **Exploratory Analyses**

**Most Strongly Endorsed Mindsets.** We ran repeated measures ANOVAs to examine what mindsets were most strongly endorsed within the sample using participants' AMM scores. In this sample, participants endorsed the four mindsets at

significantly different levels,  $F(3,99) = 22.98, p < .001$ . Pairwise comparisons revealed that change was the most highly endorsed mindset ( $M = 4.95, SD = .09$ ), followed by growth ( $M = 4.51, SD = .11$ ), acceptance ( $M = 3.96, SD = .09$ ), and fixed ( $M = 3.55, SD = .12$ ).

### Discussion

Study 3 attempted to understand whether the Anxiety Mindset Measure could be used with a new demographic, a different demographic than it was originally developed for. Because the academic mindset research suggests developmental consistency in this phenomenon, we wondered whether the AMM could be used to establish a similar consistency with regard to anxiety.

The evidence for the AMM's psychometric robustness was mixed and different patterns emerged for the high school students than for the college students in some cases. Different items were needed in order to achieve the most reliable scales, and even these scales did not reach ideal alpha levels. While the Fixed subscale and the Growth subscale were correlated with many of the items we expected them to be correlated with in the expected directions, these subscales did not display all of the hypothesized correlations. Similarly, the Acceptance and Change subscales did not always follow the expected results. Change mindsets were correlated with some, but not all, of the wellbeing measures, and acceptance showed no significant correlations with these measures.

In contrast to what we found in Study 2, the Growth mindset was highly endorsed, as were change mindsets. These results were more in line with the expected patterns, but given the differences between the high school and

undergraduate samples, it will be necessary to continue looking at these patterns within other samples.

At this point in the research the AMM is not ready for a younger population. All four subscales of the AMM in this population were below .7- the convention for acceptable reliability- and the acceptance scale was quite a bit lower. There are multiple reasons that we may see this pattern of results. Given the high alphas on the established measures used in this study, it is clear that participants were paying attention and invested in the measure. The low alphas here therefore appear to be a problem with the measure or concept itself rather than with the sample used. There is likely an impact of age and stage in life on the ways that people understand anxiety, and thus the high school students may have approached this measure in a different way than the undergraduate students. Future research is necessary to understand whether there is an impact of development on responding to this measure. If there were in fact an impact, it would be possible to adapt this measure in order to make it meaningful for a younger population. It is also possible that high school students do not have a deep enough understanding of their own anxiety or of what is meant by the term 'anxiety' to be able to respond to this measure. Future research is necessary to determine which, if any, of these possibilities is correct.

Unfortunately, the high school and undergraduate samples cannot be compared in this study due to the differences in the items needed to achieve reliability. Future research should also attempt to directly compare these age groups. A developmental comparison of this measure would shed light onto the

most prevalent anxiety mindsets at different developmental stages, as well as how these mindsets may shift over time.

#### **Study 4**

In Studies 1, 2, and 3, we assessed the internal consistency and concurrent validity of the AMM. In this study, we sought to assess the temporal stability of the measure. By testing the same sample twice, we were able to determine the AMM's test-retest reliability over a 12-day period.

#### **Method**

##### **Participants**

Sixty-two students from a psychology class at Macalester College (Distress, Dysfunction, Disorder) completed the measure at Time 1. Participation was voluntary and took place during class time; the testing occurred prior to the anxiety unit of the course. Although nearly all of the students took the retest at Time 2, about one third of the participants could not recall their ID numbers. Pairing pre and posttest for this portion of the sample was therefore challenging, and retest results were only possible for 40 of the participants.

##### **Measures**

At Time 1, participants completed the same version of the Anxiety Mindset Measure that participants had completed in Study 2, with one slight change (see Appendix). Item 2 ("When you're anxious, asking others for help can be beneficial") was removed from the Growth Scale as the results of previous studies demonstrated that this item was decreasing the scale's alpha levels. In place of this item, an item

that had worked well in Study 1 but had not been included in Study 2 was added to the scale (“Anyone can overcome anxiety”).

At Time 2, 12 days later, the AMM was administered once again. This administration also took place before the course unit on anxiety.

## **Results**

The main purpose of this study was to assess the test-retest reliability of the Anxiety Mindset Measure over a 12-day period. First, we computed Cronbach’s alphas to ensure internal reliability. For these calculations, we used the same scales that had been used in Study 2 in order to easily compare the data from these two studies. Next, correlations were computed between participants’ Time 1 and Time 2 scores. The Time 1 data from this study were also combined with the data from Study 2, given the similar population, to yield a dataset large enough to perform an exploratory factor analysis.

### **Reliability**

Cronbach’s alpha was computed for each of the scales at both Time 1 and Time 2 using the items from the Study 2 subscales. The Fixed scale had an alpha of .52 at Time 1 and an alpha of .61 at Time 2. The Growth Subscale had an alpha of .79 at Time 1 and an alpha of .64 at Time 2. The Acceptance scale had an alpha of .62 at Time 1 and an alpha of .79 at Time 2. The Change scale had an alpha of .50 at Time 1 and an alpha of .64 at Time 2.

### **Correlations**

Correlations were also computed between Time 1 and Time 2 data for each scale and revealed adequate but not impressive temporal stability (for fixed

mindsets,  $r(38)=.58, p<.001$ ; for growth mindsets,  $r(38)=.66, p<.001$ ; for acceptance mindsets,  $r(38)=.68, p<.001$ ; and for change mindsets,  $r(38)=.62, p<.001$ ).

### **Factor Analysis**

We have calculated internal consistency for the AMM's four *a priori* subscales in four independent samples, and the results have been promising but inconsistent (see Appendix). To determine whether the inconsistencies and limitations might be explained by a latent dimensional structure, we conducted an exploratory factor analysis on the 151 participants from Study 2 and the 60 Time 1 participants from Study 4. A principal component analysis with varimax rotation yielded 7 factors with eigenvalues greater than 1.0 (See Table 6). A scree plot (see Figure 1) revealed a drop in the eigenvalues after the fourth factor, suggesting the AMM likely comprises four underlying dimensions. The factor loadings for the rotated solution appear in Table 7. We identified all items having loadings of .5 or greater; no items cross-loaded on more than one factor.

Factor 1 included Growth item 1 ("If you try hard enough, you can change how much anxiety you experience"), Growth item 3 ("With enough effort, people don't have to let their anxiety affect them"), and Growth item 5 ("You can change how much anxiety you experience if you try hard enough"). The Cronbach's alpha for this scale was .65. Factor 2 included Acceptance item 2 ("When you feel anxious you should try and think about and understand those feelings"), Change item 1 ("When you feel anxious, you should try to change your response"), Change item 3 ("When you feel anxious, you should take action to try and rid yourself of those feelings"), and Change item 4 ("When you are anxious, you should stop and think

about why you are anxious and how to change that feeling”). The Cronbach’s alpha for this scale was .69. Factor 3 included Fixed item 1 (“You have a certain amount of anxiety and cannot do much to change that”), Fixed item 3 (“Even if you try you can’t change how much anxiety you experience”), Fixed item 4 (“Anxious people will always be affected by their anxiety”), and Fixed item 5 (“You can’t change how much anxiety you experience even if you try”). The Cronbach’s alpha for this scale was .75. Factor 4 included Acceptance item 3 (“You shouldn’t worry about the fact that you get anxious”), Acceptance item 4 (“Having experiences where you feel anxious is a natural part of life”), and Acceptance item 5 (“Even when it is uncomfortable, feeling anxious is okay”). The Cronbach’s alpha for this scale was .57.

### **Exploratory Analyses**

**Most Strongly Endorsed Mindsets.** We ran repeated measures ANOVAs to examine what mindsets were most strongly endorsed within the sample using participants’ AMM scores based on *a priori* scales from Time 1. For this sample, all mindsets significantly differed from each other, with the exception of acceptance and change, which were not significantly different,  $F(3, 59) = 77.73, p < .001$ . Pairwise comparisons revealed that change was the most highly endorsed mindset ( $M = 4.74, SE = .09$ ), followed by acceptance ( $M = 4.69, SD = .09$ ), growth ( $M = 4.04, SD = .14$ ), and fixed ( $M = 3.10, SD = .09$ ).

### **Discussion**

The consistency in AMM scores, as indicated by the test-retest correlation levels, suggests the constructs measured by the AMM remain constant, at least to some extent, over time. Although the correlations were adequate, they were not

ideal. Higher correlations in this study would have indicated higher stability of the concept over time. Higher correlations- greater than .7- would have supported the theory that mindsets are more of a trait than a state.

The subpar reliability coefficients could be due to a number of factors. Participants were undergraduate students, and thus could have been influenced by the time in the semester and their different amounts of coursework at Time 1 and Time 2. Although this factor should not influence *beliefs* about anxiety, it is possible that it did. Future research could test this by asking participants about their workload or state anxiety levels at both Time 1 and Time 2. It is also possible that participants were in a rush to finish the surveys at the end of class and therefore responded less thoughtfully.

Future research should also investigate why the combination of items that had been most successful in Study 2 did not lend itself to similar alpha levels in this sample. Both samples were undergraduate students and thus we expected them to produce similar results, but such was not the case. Similarly, this research should examine the various factors that may have led to the large differences between alpha levels at Time 1 and Time 2 despite the scale's adequate reliability over this time. Were these changes in alpha a result of the same factors that may have depressed the test-retest reliability, or were there different factors at play that led to these discrepancies?

This study was limited in its small sample size due in part to a large number of participants forgetting their ID numbers. Future research should measure the test-retest reliability of this measure with a larger sample. These future studies

should also consider testing the test-retest reliability over longer periods of time to reduce participants' recollection of the measure and their answers and ensure that Time 2 responses are not influenced by these memories.

Like in Study 3, change mindsets were the most highly endorsed. These results were in line with our original predictions. Somewhat surprisingly, however, acceptance mindsets were more strongly endorsed than growth mindsets.

The factor analysis provides some support for the underlying model guiding the present research. This procedure suggested that there are four discrete factors within the data, factors that can be mapped fairly easily onto the fixed, growth, acceptance, and change domains. While most factors comprised items from the a priori scales, there was one divergence. Item 2 from the Acceptance subscale ("When you feel anxious, you should think about and try and understand those feelings") mapped onto Factor 2, the change factor, rather than Factor 4, the acceptance factor. Item 2 from the Acceptance subscale was consistently the first item removed to increase alpha with the undergraduate samples and therefore did not seem to be measuring acceptance, the construct that it had been intended to measure. The results of this factor analysis demonstrate why this item consistently lowered the alpha of the Acceptance subscale; this item was in fact measuring an entirely different concept, that of change. After re-reading the item with this knowledge, the implicit change philosophy in this item became apparent.

The factor analysis and internal reliability analyses were used to develop a revised version of the AMM, one that we hope will benefit from improved psychometric properties. Having tried to establish a robust measure through these

four studies, we now asked whether mindsets can be transformed by a brief educational intervention. Future research should also seek to understand whether mindsets can be taught or changed. Is there a way to shift anxiety mindset in order to allow people to flourish in the face of anxiety? Study 5 begins the process of answering these questions through the use of this revised measure.

### **Study 5**

In addition to studying the nature of these mindsets and the best ways to measure them, researchers have also asked questions regarding the malleability of these mindsets. Is having a certain type of mindset a state or a trait? Whereas a state refers to a characteristic that is temporary or only experienced at a certain point in time, a trait is an enduring or permanent characteristic (Chaplin, John, & Goldberg, 1988). Given that some dimensions of mindset appear to be more stable, while others appear to change over time, mindset could be either state or trait characteristic, and perhaps it could be both. One of the best ways to determine the malleability of mindsets is to manipulate them.

The present study hoped to do exactly that, manipulate mindsets through a brief intervention. In addition to examining the possibility of a manipulation for anxiety mindsets, this pilot study also continued the process of assessing the Anxiety Mindset Measure developed in Studies 1-4. We hoped to see whether the AMM could be used to track changes in mindset in addition to measuring participants' more general mindsets.

Most of the research on manipulating mindsets falls in the academic domain. These studies demonstrate that mindset can be changed, and therefore that it can

be, or is, in part a state. One such intervention program is Mindset Workshops (Blackwell, Dweck, & Trezsneiwski, 2007). Through articles, activities, and discussions, public school students in seventh grade who participated in the workshop were given the opportunity to learn about the ways that intelligence can change, an idea that is key to the growth mindset. After this eight-week intervention, participants held stronger growth mindsets and were more likely to believe in the malleable nature of intelligence. Following the intervention, the students' teachers also saw the children who participated in the workshop as being more highly motivated. These changes in the students' mindsets and actions following a short intervention demonstrate that one's academic mindset is malleable, thus demonstrating its state-like quality.

Brainology, a computer based program designed to teach children about fixed and growth mindsets yielded similar results (Donohoe, Topping, & Hannah, 2012). Like Mindset Works, Brainology takes an approach that teaches students about brain functioning and the ways that brain processes can be controlled, as well as how they can apply these lessons to academic situations. After participating in the Brainology program, students' mindsets scores increased significantly, demonstrating that their mindsets had become more growth-oriented through the program. Again, simply taking part in an intervention program was able to change these students' mindsets, demonstrating the malleability of mindsets overall.

Very brief interventions have also been used to manipulate mindsets. Reading articles is a quick approach to shifting implicit beliefs (Hong, Chiu, Dweck, Lin, & Wan, 1999; Rattan, Good, & Dweck, 2012; Sevincer, Kluge, & Oettingen, 2014).

These articles present intelligence as either being mainly determined by genetics (fixed approach) or as mainly being determined by environmental factors and an individual's willingness to develop it (growth approach). When asked about their "personal views" about intelligence following these mindset inductions, participants responded in a manner congruent with the articles that they had read. These results demonstrate not only that mindset can be successfully manipulated, but also that it can be changed in even a short period of time, further demonstrating the state-like quality of mindsets.

Miu and Yeager (2015) sought to change mindsets in the field of mental health. They hypothesized that the increase in depressive symptoms during high school resulted from a belief about the fixed nature of personality and personal traits. Students nearing the end of their first year of high school were randomly assigned to participate either in a computer-based intervention project that presented ideas on the malleable nature of personality or in a control group for one class period. This intervention program presented information geared specifically to the age group, addressing issues such as bullies and victims and the ways that neither of these positions is due to fixed personality characteristics. Participants also read a neuroscientific study on the malleability of the brain and the effects of neuroscience on behaviors. To further reinforce their commitment to the incremental mindset, students then wrote their own paper on this topic. Through the educational aspects, both general and scientific, as well as the "saying is believing" activity, this intervention reduced depressive symptoms in the sample.

Mindsets, therefore, appear to be open to adjustment in both the academic and mental health domains. The current study builds upon this extensive body of research by combining it with the ideas of acceptance and change in the context of an intervention. Although past research has found both cognitive behavioral therapy and acceptance and commitment therapy to be effective, few studies have treated acceptance and change as mindsets that can be changed in a short period of time. This pilot study, therefore, is a preliminary attempt to answer this question by educating participants about either an acceptance or change-based approach to anxiety. Further, we hope to determine whether the AMM is sensitive to experimental manipulations aimed at changing mindsets, a question that can be answered by comparing participants' AMM scores before and after the intervention.

## **Method**

### **Participants**

Thirty-nine students at Macalester College were recruited via Introduction to Psychology courses, the Macalester College daily newsletter, or by word of mouth. Of the 39 participants, 12 (30.7%) were freshman, 10 (25.6%) were sophomores, 7 (18%) were juniors, and 10 (25.6%) were seniors. Participants' ages ranged from 18-22 ( $M=19.9$ ,  $SD=1.45$ ). Of the 39 participants, 28 (72%) participants identified as female, 10 (25.6%) identified as male, and 1 (2.6%) identified as gender queer. The sample consisted of 24 (61.5%) participants who identified as White or Caucasian, 9 (23.1%) participants who identified as Asian, 3 (7.7%) participants who identified as biracial or mixed race, 2 (5.1%) participants who identified as Hispanic or Latino, and 1 (2.6%) participant who identified as Black.

These students participated in a study entitled “Approaching Stress.” The students who were participating in the study through class received course credit, and those who were recruited elsewhere were compensated \$5 for their time.

### **Measures**

Participants first answered demographic questions about their age, gender, and their race/ethnicity and then completed a variety of measures, all of which had their item order randomized.

Next, participants completed a 17-item version of the AMM (see Appendix). They rated the extent to which they agreed or disagreed with 3 statements in the growth domain, 4 items the fixed and change domains, and 6 items in the acceptance domain. The Fixed, Growth, and Change subscales were made up of the items from the factor analysis conducted in Study 4. For the Acceptance subscale, we ultimately used the version of this subscale with the highest alpha in our research thus far.

Participants then completed the CAT-PD: Anxiousness IPIP scale (see Appendix; Goldberg et al., 2006). This 7-item measure asked participants about their current levels of anxiety (See Appendix B). This measure had an alpha of .90 in the current study. This measure was not included in final analyses because the sample size was too small, but if the study had continued we would have used these scores to run a median split between low and high anxiety participants.

Following the CAT-PD: Anxiousness, participants were randomly assigned to either the change or acceptance condition. Twenty were placed into the change condition and 19 were placed in the acceptance condition. These groups read about

their respective approaches towards anxiety and then participated in an activity relating these ideas to their own stressful situations (see Appendix).

This portion of the intervention was followed by an interactive discussion between the participant and the researcher. In this discussion, the researcher asked participants an array of questions regarding the activity that they had just completed in order to ensure that the participants fully understood the approach to stress that they were being educated about (for full list of questions see Appendix)

Participants then answered five questions about their beliefs about the efficacy and effectiveness of the specific approach about which they were educated using a 7-point Likert scale (see Appendix). These items had an alpha of .87. We therefore took the mean of these items and created one general efficacy item.

Next, all participants completed an emotion measure developed by Folkman and Lazarus (1985; see Appendix). The participants rated the extent to which they had felt various emotions over the past week. These emotions fell within 4 categories: threat, challenge, harm, and benefit; we computed the mean of the items within each of these categories. The threat emotions (worried, fearful, and anxious) had an alpha of .76 at Time 1 and .77 at Time 2, the challenge emotions (confident, hopeful, eager) had an alpha of .66 at Time 1 and at .75 Time 2, the harm emotions (angry, sad, disappointed, guilty, and disgusted) had an alpha of .76 at Time 1 and of .70 at Time 2, and the benefit emotions (exhilarated, pleased, happy, and relieved) had an alpha of .75 at Time 1 and of .78 at Time 2.

Participants filled out the AMM a second time before being debriefed.

The AMM, as well as the emotion questions, were filled out again one week after participation by 34 of the participants. At this time, participants also answered 5 questions about their general utilization of the approach throughout the week (see Appendix) before receiving a more detailed debriefing form. These items had an alpha of .75. We therefore took the mean of these items and created one general item.

### **Results**

The current study served as a preliminary investigation to determine whether it was possible to change anxiety mindsets in the context of a brief intervention and whether the AMM is sensitive to changes following a brief intervention. First, we computed the Cronbach's alpha levels for each of the AMM subscales to assess reliability. After these analyses, we sought to answer the study's main research question of whether the brief intervention had been effective in changing participants' mindsets using repeated measures ANOVAs. We then performed additional ANOVAs to see whether participants' mindsets had shifted over the one-week period throughout which they were asked to use the method they had learned. At this point, we also performed ANOVAs to see whether there had been changes in participants' emotions after using either an acceptance or change mindset throughout the week. We then ran independent samples t-tests to examine whether the condition that participants had been assigned to had affected their efficacy about using the approach or their general usage of the approach throughout the week. We ended by looking at the correlations between participants' scores on the measure at different time points, as well as examining the correlations among

various measures in the dataset and running a series of repeated measures ANOVAs in order to examine which mindsets were most strongly endorsed within the sample.

### **Reliability**

Cronbach's alpha was computed for each subscale of the AMM both before and after the brief intervention, as well as one week later. The 4-item Fixed subscale had an alpha of .70 when participants first completed this measure, of .80 following the intervention, and of .69 at the one-week follow-up. The 3-item Growth subscale had an alpha of .66 when participants first completed this measure, of .72 following the intervention, and of .87 at the one-week follow-up. This 3-item Acceptance subscale had an alpha of .77 when participants first completed the measure, of .86 following the intervention, and of .84 at the one-week follow-up. The 4-item Change subscale had an alpha of .53 when participants first completed this measure, of .67 following the intervention, and of .64 at the one-week follow-up.

Each of the four subscales had higher alpha levels when they were completed directly after the intervention than when they were first completed. These results indicate that internal coherence increased as participants understood more about these ideas.

### **Effects of the Intervention on AMM Scores**

Next, we ran a series of 2 (time: initial testing, after intervention) X 2 (condition) repeated measures ANOVAs to determine whether there had been an effect of the brief intervention on AMM. As expected, for fixed mindset there was no significant effect for time,  $F(1,33)=.53, n.s.$  and no significant time x condition

interaction,  $F(1,33)=1.04$ , *n.s.* There was, however, a significant effect of time on the Growth subscale,  $F(1,33)=4.35$ ,  $p=.045$  and a significant time x condition interaction,  $F(1,33)=6.88$ ,  $p=.013$  (see Figure 2). After completing the change intervention, participants' growth mindset scores were significantly higher ( $M=5.13$ ,  $SD=.74$ ) than they had been before completing the intervention ( $M=4.44$ ,  $SD=.86$ ),  $t(17)=-3.51$ ,  $p=.003$ . After completing the acceptance intervention, however, participants' growth mindset scores did not significantly differ ( $M=4.37$ ,  $SD=1.26$ ) from their scores before completing the intervention ( $M=4.45$ ,  $SD=1.43$ ),  $t(16)=-.362$ , *n.s.* There was also a significant main effect of time on the Acceptance subscale,  $F(1,33)=10.56$ ,  $p=.003$  and a significant time x condition interaction on acceptance,  $F(1,33)=11.42$ ,  $p=.002$  (see Figure 3). After completing the acceptance intervention, participants' acceptance mindset scores were significantly higher ( $M=5.27$ ,  $SD=.90$ ) than they had been before completing the intervention ( $M=4.33$ ,  $SD=.93$ ),  $t(16)=-4.32$ ,  $p=.001$ . After completing the change intervention, however, participants' acceptance scores did not significantly differ ( $M=4.13$ ,  $SD=1.58$ ) from their scores before completing the intervention ( $M=4.15$ ,  $SD=1.47$ ),  $t(17)=.101$ , *n.s.* There was no significant main effect of time on the Change subscale,  $F(1,33)=.92$ , *n.s.* and there was no significant time x condition interaction,  $F(1,33)=.540$ , *n.s.*

We also ran 2 (time: initial testing, follow-up testing) x 2 (condition) ANOVAs to determine the longevity of the effects created by the intervention. There was no significant main effect of time on the Fixed subscale,  $F(1,32)=.10$ , *n.s.* but there was a significant time x condition interaction,  $F(1,32)=5.56$ ,  $p=.025$  (see Figure 4). Post-hoc tests did not reveal any significant differences. There was no significant main

effect of time on the Growth scale,  $F(1,32)=1.71$ , *n.s.* but there was a significant time x condition interaction,  $F(1,33)=6.01$ ,  $p=.019$  (see Figure 5). After one week of using change-based strategies, participants' growth mindset scores were significantly higher ( $M=5.68$ ,  $SD=.64$ ) than they were before participating in the intervention ( $M=5.15$ ,  $SD=.90$ ),  $t(15)=-3.85$ ,  $p=.002$ . After one week of using acceptance-based strategies, however, participants' growth mindset scores did not significantly differ ( $M=4.82$ ,  $SD=.87$ ) from their scores before completing the intervention ( $M=4.95$ ,  $SD=.95$ ). There was a significant main effect of time on the Acceptance scale,  $F(1,32)=11.02$ ,  $p=.002$ , as well as a significant time x condition interaction,  $F(1,32)=6.74$ ,  $p=.014$  (see Figure 6). After one week of using the acceptance-based strategies, participant's acceptance scores were significantly higher ( $M=5.48$ ,  $SD=1.11$ ) than they were before participating in the intervention ( $M=4.42$ ,  $SD=.88$ ),  $t(15)=-4.11$ ,  $p=.001$ . After one week of participating in the change-based strategies, however, participants' scores were not significantly different ( $M=3.93$ ,  $SD=1.13$ ) than they were before participating in the intervention ( $M=3.79$ ,  $SD=1.25$ ),  $t(17)=-.52$ , *n.s.* There was also a significant main effect of time on the Change subscale,  $F(1,32)=5.03$ ,  $p=.032$ , as well as a significant time x condition interaction,  $F(1,32)=8.11$ ,  $p=.008$  (see Figure 7). After one week of using change-based strategies, participants' change scores were significantly higher ( $M=5.59$ ,  $SD=.65$ ) than they were before participating in the intervention ( $M=4.93$ ,  $SD=.77$ ),  $t(17)=-3.81$ ,  $p=.001$ . After one week of participating in the acceptance-based strategies, however, participants' change scores were not significantly different ( $M=4.92$ ,  $SD=.85$ ) than they were before participating in the intervention ( $M=5.00$ ,  $SD=.96$ ).

Next, we ran exploratory analyses in order to examine whether the effects of the intervention had persisted throughout the week. There was no significant effect of time on fixed mindsets,  $F(1,38) = .38$ , *n.s.* but there was a significant time x condition interaction,  $F(1,28) = 4.41$ ,  $p = .045$  (see Figure 8). Participants who had been a part of the change intervention reported significantly lower fixed mindset scores ( $M = 2.92$ ,  $SD = .96$ ) one week later than they had directly following the intervention ( $M = 3.28$ ,  $SD = .93$ ),  $t(15) = 2.16$ ,  $p = .047$ . The fixed mindset scores of participants who had been a part of the acceptance intervention were not significantly different one week later ( $M = 3.59$ ,  $SD = .85$ ) than they had been directly following the intervention ( $M = 3.39$ ,  $SD = .86$ ),  $t(13) = -.94$ , *n.s.* There was no significant effect of time on the Growth scale,  $F(1,28) = .11$ , *n.s.* nor was there a significant time x condition interaction,  $F(1,28) = .001$ , *n.s.* There was also no significant main effect of time on the Acceptance scale,  $F(1,28) = .024$ , *n.s.* nor a significant time x condition interaction for this scale,  $F(1,28) = .549$ , *n.s.* There was, however, a significant main effect of time on change mindsets,  $F(1,28) = 5.15$ ,  $p = .031$  as well as a significant time x condition interaction,  $F(1,28) = 13.70$ ,  $p = .001$  (see Figure 9). Participants in the change intervention reported significantly higher change mindsets ( $M = 5.68$ ,  $SD = .64$ ) one week later than they had directly following the intervention ( $M = 5.16$ ,  $SD = .90$ ),  $t(15) = -3.85$ ,  $p = .002$ . The change mindsets of participants in the acceptance intervention were not significantly different ( $M = 4.82$ ,  $SD = .87$ ) than their change mindset scores directly following the intervention ( $M = 4.95$ ,  $SD = .95$ ). Thus, while there were effects of the condition on each mindset, it

was the effects of the change condition that were significantly strengthened throughout the week.

### **Effects of the Intervention on Wellbeing**

In order to measure the effects of each condition on participants' wellbeing, we ran a series of 2 (time: after intervention, one week follow-up) x 2 (condition) ANOVAs with their reported emotions at Time 1 and at Time 2. There was a marginally significant main effect of time on threat emotions,  $F(1,32)= 4.11, p=. 051$  and no significant time x condition interaction  $F(1,32)= .57, n.s$  (See Figure 10). Although it was only marginally significant, participants across both conditions reported lower levels of threat emotions after one week ( $M=2.95, SD= .13$ ) than they had directly after participating in the intervention ( $M=3.21, SD=.16$ ). There was no significant main effect of time on challenge emotions,  $F(1,32)= .82, n.s$  nor was there a significant time x condition interaction for these emotions,  $F(1,32)= .000, n.s$ . There was a significant main effect of time on harm emotions,  $F(1,32)= 16.25, p<. 001$ , as well as a marginally significant time x condition interaction,  $F(1,32)= 4.02, p=. 054$  (see Figure 11). Participants reported significantly lower levels of harm after participating in both conditions. In the acceptance condition, participants' average harm score directly following the intervention was 2.64 ( $SD= .19$ ) and dropped to 2.01 ( $SD= .16$ ) after using the intervention for a week. In the change condition, participants' average harm score was 2.45 ( $SD= .17$ ) directly after completing the intervention and 2.24 ( $SD= .15$ ) after using the intervention for a week. There was no significant main effect of time on benefit emotions,  $F(1,32)= .83, n.s$  nor was there a significant time x condition interaction,  $F(1,32)= 1.58, n.s$ . In

summary, engaging in acceptance and change strategies during the week after the study decreased negative emotions, as reflected in the threat and harm scores but did not reflect positive emotions as reflected in the challenge and benefit scores.

### **Efficacy and Utilization**

To examine whether there had been an impact of condition on participants' beliefs about the efficacy of the intervention or about their actual intervention utilization, we ran independent samples t-tests. There was no significant effect of condition on efficacy,  $t(37) = .23$ , *n.s.* nor was there a significant effect of condition on utilization,  $t(32) = .96$ , *n.s.* There was also no significant effect of condition on the number of times that participants used the method that they were taught,  $t(32) = -.322$ , *n.s.*

### **Correlations**

Next, we calculated the correlations between participants' AMM scores following the intervention and their AMM scores at the one-week follow-up (see Table 8). When participants were asked to actively think about their mindsets and use a certain strategy throughout the week, their responses were highly correlated (for fixed mindsets,  $r(28) = .66$ ,  $p < .001$ ; for growth mindsets,  $r(28) = .86$ ,  $p < .001$ ; for acceptance,  $r(28) = .91$ ,  $p < .001$ , for change,  $r(28) = .79$ ,  $p < .001$ ). These results further demonstrate the persistence of the mindsets inoculated in this study.

We also examined the relationship between participants' Time 1 efficacy scores and their Time 2 utilization scores. These two items were significantly correlated  $r(32) = .74$   $p = .005$ , suggesting that participants who felt more confident in

the efficacy of the intervention strategies at Time 1 were more willing to use the strategies and to see their benefit throughout the week.

### **Exploratory Analyses**

#### **Most Strongly Endorsed Mindsets**

We ran repeated measures ANOVAs to examine what mindsets were most strongly endorsed within the sample using participants' AMM scores from Time 1 before participants were introduced to the acceptance or change conditions. In this sample, all mindsets significantly differed from each other, with the exception of growth and acceptance, which did not significantly differ from one another,  $F(3,36) = 19.56, p < .001$ . Pairwise comparisons revealed that change was the most highly endorsed mindset ( $M = 5.00, SE = .13$ ), followed by growth ( $M = 4.41, SE = .185$ ), acceptance ( $M = 4.15, SE = .19$ ), and fixed ( $M = 3.46, SE = .17$ ).

### **Discussion**

Overall, despite its small scale, the results of this pilot study are promising as both the acceptance and change interventions had an impact on AMM subscales. After participating in the Change intervention, participants' growth mindset scores were significantly higher, and after participating in the acceptance intervention, participants' acceptance mindset scores were significantly higher. These results confirm that the AMM was a successful measure in this intervention study.

The acceptance condition, therefore, had a direct effect on the mindset that it was intended to change. Following a brief intervention on the nature and importance of acceptance, participants were more likely to endorse the idea that it is important to accept anxiety rather than fight it. While the change intervention did

not impact change mindset scores, and therefore participants were not significantly more likely to believe that they should change their response to anxiety following the brief intervention, this intervention did have a significant influence on participants' growth mindset scores. Thus, after completing the change intervention, participants were more likely to endorse the idea that with enough effort they could adjust their levels of anxiety or have their anxiety no longer affect them.

There are several possible reasons for the influence of the change intervention on growth, rather than change, mindset scores. Although this intervention was adapted from a cognitive behavioral therapy exercise, and therefore advocated a specific strategy for managing anxiety, the intervention may have indirectly inculcated a belief in growth. Indeed, growth and change are related; the Growth and Change subscales were significantly intercorrelated in studies 1-3. The growth mindset conveys the optimistic message that change is possible, while the change mindset indicated that change is not just possible, but recommended. The concept of change is at the heart of both of these mindsets, and the intervention, because of its brevity, may have communicated the possibility, but not the desirability, of change technologies. Future research is necessary in order to clarify the relationship between these two dimensions as well as understand the ways that interventions can target these two mindsets independently.

The follow-up data allowed us to analyze the ways that the two interventions continued to impact participants' mindsets throughout the week. After being introduced to these approaches and using them throughout the week, participants in the change intervention had lower fixed mindsets, higher growth mindsets, and

higher change mindsets than they had when they first completed the AMM at Time 1. Those in the acceptance condition had changes in their acceptance mindset scores. Thus, not only did these interventions have a direct effect, but the effects continued to be present, or even to grow in the case of change mindsets, one week later. The fact that these results are present following a small pilot study is very promising for the fields of acceptance and change, as well as for the field of anxiety mindsets overall. It is possible to change mindsets following a brief intervention, and it is possible to allow this change in mindset to persist with simple strategies.

Although not significant, these data reveal an interesting connection between the fixed and acceptance mindsets. Although fixed mindsets decreased in the change group, fixed mindset scores increased in the acceptance group. By encouraging participants to accept their anxiety rather than try to change it, anxiety's possible intractability was acknowledged as well -- that anxiety is what it is and there is not much that can change. Acceptance, however, still had many positive consequences in this data set, demonstrating that it is not a negative idea, and perhaps neither are fixed mindsets. Despite the universal negativity associated with fixed mindsets throughout the published literature, this study suggests a need to disaggregate two components of the mindset: a sense of despair and helplessness and recognition that life sometimes involves unpleasant situations. Only the former may be deleterious to wellbeing.

Both the acceptance and change conditions decreased levels of negative emotions but did not significantly impact the positive emotions that were being tested. Thus, while these interventions might be useful to make people who are

feeling bad feel better, they do not necessarily serve a purpose when it comes to increasing positive emotions. Given that anxiety is a negative feeling and is often associated with negative, rather than positive, emotions, these results are promising.

The pattern of mindsets most highly endorsed in this sample mirrored those of Study 3. Consistent with our original predictions, in this sample the change and growth mindsets were most strongly endorsed.

Although the acceptance intervention performed well in this study, the acceptance mindset continues to be one of the lesser-endorsed mindsets within our sample. Participants were much more likely to report a change or growth mindset than an acceptance or fixed mindset. While there is likely an effect of self-report bias in these results, these results may also be a product of socialization; if the dominant cultural message is that one should always try to banish one's anxiety, then an acceptance mindset will be less common.

Despite this pilot study's strengths, certain limitations constrain its conclusions. As noted earlier, the intervention was brief and the sample was small. There may have also been a response bias in participants' Time 2 AMM scores, as they knew how they were supposed to feel about these mindsets. In addition, because of the small sample size and time constraints we could not include a control group.

Future research should also consider adding a control group to this design. We had originally planned to include such a group in the present study, but due to the low number of students in Introduction to Psychology courses, as well as the

high cost of running participants and a lack of time, we chose to eliminate this group and run this study as a pilot instead. The addition of a control group would ensure that the results were purely a result of the condition that participants were placed in rather than another factor such as simply learning a new technique regardless of what that technique was.

This study was limited in that the emotion questions were asked following the brief intervention rather than before; participants' emotion scores were not recorded at baseline. Even though the measure asked participants to retrospect about their mood states over the preceding week, we cannot know whether the intervention influenced this retrospection. Future studies should therefore ensure a more careful baseline assessment.

Although the present study attempted to make the acceptance and change interventions equal in terms of the activities participants completed and the time spent on those activities, it is possible that the two interventions were not as equal as we had originally hoped. Given that the change intervention was taken directly from a CBT exercise while the researchers developed the acceptance intervention on their own based on the ACT literature, it is possible that the change intervention was more structured and clear. These differences may be the reason why the effects of the change intervention persisted throughout the week while the effects of the acceptance condition did not -- because participants were better able to understand the ideas of change. Based on this concern, future research should attempt to equalize these two conditions on all dimensions in order to ensure that participants in both conditions have similar educational experiences.

Overall, these results demonstrate that it is possible to shift mindsets in the context of a brief intervention and to allow those shifts to persist, or even grow, over a short period of time. Further, the data reveal that acceptance, as well as fixed, mindsets may be more powerful than one would originally think. Not only can mindsets be changed to be more beneficial, but there are also many ways to achieve these benefits, a very encouraging idea.

### **General Discussion**

While the concept of fixed and growth academic mindsets has been described in an extensive body of research, the concept of anxiety mindset is still nascent. The present research therefore hoped to learn more about this mindset and its different components. Unfortunately, there was little information available on the measurement of these anxiety mindsets, and thus exploring anxiety mindsets necessitated developing a method to assess this concept.

The Anxiety Mindset Measure includes four dimensions of anxiety mindsets: fixed, growth, acceptance, and change. We thoroughly reviewed the scholarship regarding academic mindset, acceptance and commitment therapy, and cognitive behavioral therapy to develop a full understanding of each of these dimensions and their expected outcomes. While the fixed/growth extension was relatively easy and built directly on the work of others (e.g., Schroder et al., 2015), the acceptance/change extension was more challenging. Because this dimension was a novel idea, its conceptualization was more difficult and its development required more consideration. It is therefore not a surprise that while the fixed/growth dimension of anxiety mindset yielded clear and straightforward results, the

acceptance/change dimension proved more complicated. These results required more active interpretation on the part of the researchers and reveal that this dimension is in need of further development before broad claims about its nature and possible uses can be made.

Through a series of five studies, we refined the measure to optimize its reliability and validity. Over these studies and through many iterations of the scale, we saw that the subscales hung together fairly well, were often correlated with the other measures that they were expected to correlate with, and had adequate levels of consistency over a 12-day period. We also observed hints of validity and reliability within a high school sample, and the scale proved sensitive to changes associated with a brief educational intervention. All of these results demonstrate that, although future research on this measure is necessary, the AMM as it currently exists shows potential.

This future research should focus on fully addressing which items should make up the various subscales, as well as ensuring that each subscale measures the concept that it was originally intended to measure. Given the results of Study 5, where the change intervention showed increases in the Growth rather than the Change subscale, these measurement questions are important to address.

Future research on measurement should also ask questions about the types of items that are a part of each measure. Many of the past mindset measures essentially ask the same questions again and again (e.g., “You have a certain amount of anxiety and you really cannot do much to change it” and “No matter how hard you try, you can’t really change the level of anxiety you have,” Schroder et al., 2015),

something we chose not to do when constructing this measure. By essentially using a single item to define these phenomena, these measures are suggesting that these concepts and dimensions do not have much depth to them and are comprised of mainly one idea. The results of these five studies, however, suggest that these concepts may warrant a more subtle and detailed operationalization; past research may have achieved reliability at the expense of depth. We believe, therefore, that future studies should plumb the related facets within each of these dimensions, in order to ensure that participants are being asked *all* of the relevant questions for each mindset.

In addition to asking questions about the specific items that make up each subscale and the types of items within these subscales, future research should also consider the effects of phrasing. One example would be the ambiguity of the word “anxiety”. In the development of the Anxiety Mindset Measure, we chose to use the word “anxiety” rather than stress, as it was a more all-encompassing term. While the all-encompassing nature of this term may have been beneficial in allowing participants to understand the measure more broadly, it also may have also been limiting in that there are many ways to understand this term. Since the word “anxiety” can refer to either everyday or clinical levels of anxiety, participants may have understood this term differently when responding to the measure.

This future research should also consider the effects of the population responding to the measure, as well as the contexts that participants may be thinking about as they respond. In the present studies the majority of the respondents were females. It is possible that people may respond to this measure differently based on

their gender, as people of different genders may view anxiety in different ways due to various factors such as social pressures or past experiences. Unfortunately, this question is one that we were not able to explore due to the gender skew, but it is one that would be very interesting to study in future research.

Because the present studies asked about anxiety more broadly rather than asking participants to focus on anxieties in a specific domain, it is possible that participants were thinking about anxiety in different domains when they responded to this measure. While one participant may have been thinking about class, another may have been thinking about a job, and this discrepancy may have contributed to the lower alphas on some of the subscales. It would therefore be interesting to see how the reliability and construct validity may differ if people are given a specific situation or context to think of when responding to this measure. It is very likely that anxiety mindsets may differ based on the situations that participants are thinking of, and thus specifying the context that participants should think about or asking them what situation they thought of might be essential to a complete understanding of this measure and this concept. Alternatively, the AMM could be used in specific contexts (i.e., a hospital or a school), thus ensuring that participants were all thinking of the same situation or responding to the measure in a similar way. In this way, participants' responses may be more authentic as they would truly be in the situation that they were responding to rather than simply thinking about how they might feel.

What can we say about the four subscales of the AMM in light of these five studies? The fixed mindset appears to be entirely different from the growth,

acceptance, and change mindsets; it alone focuses on the concept of helplessness and is negatively correlated with measures of wellbeing. In contrast, the other three dimensions of anxiety mindset seem to be connected. Based on the correlations and results observed, both acceptance and change mindsets may serve as pathways to a growth mindset. As they are described in the academic mindset literature, growth mindsets are the most advantageous, and it is therefore important to acknowledge the various strategies by which growth mindsets can be achieved.

Both the growth and change mindsets focus on the idea of altering levels of anxiety. While the growth mindset conveys the potential for transformation, the change mindset extends on this idea by fully advocating for this approach. Thus, although their ultimate recommendations may differ, the idea of change is at the heart of both of these mindsets.

Considering acceptance within the mindset tradition, especially as a possible way of achieving growth mindsets, is a novel idea. Growth mindsets imply effort and change when they are discussed, but the actual language of the items implies optimism and resilience (e.g., “With enough effort, people don’t have to let their anxiety affect them” and “You can change how much anxiety you experience if you try hard enough”); optimism and resilience can also be fostered through an acceptance mindset. Perhaps the issue, whether with anxiety mindsets or academic mindsets, isn’t whether you are fixed in your mindset, but, rather, whether you feel helpless and ineffective. Acceptance mindsets ensure that these feelings do not ensue, permitting an outlook that admits what can’t be changed but nonetheless is optimistic and health-oriented. A vicious cycle can ensue when one tries too hard to

manage negative emotions, but by accepting adverse situations and experiences with equanimity, wellbeing is fostered.

Some mental health phenomena run counter to a growth mindset. Evidence suggests that people *do* differ in their proclivity for anxiety as a result of many factors such as temperament, genetics, and past experience. Anxiety is not always mutable and believing it to be within your control can be a pathway to misery and disappointment. Anxiety may actually be fixed for some people. Proposing that growth mindsets are always the optimal or most advantageous mindset is therefore misaligned with the realities of mental health. Acceptance- especially for those high in trait anxiety- may be a more beneficial approach. Future research, especially with clinical populations for whom anxiety is an impediment to daily living, is necessary to further support these claims.

The results of the analyses ran on participants' strength of endorsement of the four mindsets varied considerably from sample to sample. Given the variability, these patterns are hard to interpret. We had originally hypothesized that growth or change mindsets would be the most strongly endorsed within the sample given their popularity and their desirability. While we often observed these results, growth and change mindsets were not consistently endorsed at the highest levels. Future research is therefore necessary in order to examine how participants may chose what mindsets to endorse and how this endorsement may differ with different populations.

In addition to continuing to refine and study this measure, future research should continue to study the phenomenon of anxiety mindsets as a whole.

Alternative strategies for measuring this concept include interviews and observational studies. Interviewing participants about their anxiety mindsets rather than having them respond to structured rating scales would yield much deeper insights into the nature of each dimension and the correlation of these dimensions in people's lived experiences. Additionally, participants would be able to explain their answers, why they answered in the ways that they did, and their own thoughts on anxiety mindsets. An observation method of data collection could also be beneficial as there is likely a self-report bias in the answers to these questions. People often know the ways that they "should" and "should not" respond to their anxiety, and this knowledge may have influenced their answers. By observing behavior in response to an anxiety-provoking situation, future research would be able to shed new light onto these mindsets.

Overall, the results of these studies are encouraging in that they begin to establish a measure of anxiety mindsets, as well as reexamine the popularized concept of fixed and growth mindsets in an innovative way. The positive consequences of a growth mindset have been well established in an extensive body of research, and these results indicate that there may be multiple ways of achieving these benefits, a powerful idea in and of itself. Anxiety mindsets and their different dimensions can impact everyday functioning and wellbeing, and therefore merit continued investigation.

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## Tables and Figures

*Table 1.* Descriptive statistics and correlations among the four subscales of the Anxiety Mindset Measure and measures of wellbeing in Study 1.

	Fixed	Growth	Acceptance	Change	Subjective Wellbeing	Resilience	M	SD
Fixed	-	-.28*	.07	-.34**	-.44**	-.38**	3.67	1.29
Growth		-	-.05	.50**	.16	.31**	3.76	1.18
Acceptance			-	-.21	-.22	-.17	4.54	.77
Change				-	.39**	.30**	4.81	.78
Subjective Wellbeing					-	.66**	4.74	1.36
Resilience						-	2.97	.85

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

*Table 2.* Descriptive statistics and correlations among the four subscales of the Anxiety Mindset Measure, the measures of wellbeing, and the CAT-PD: Anxiousness for all participants in Study 2.

	Fixed	Growth	Acceptance	Change	Mindfulness	Autonomy	Self-Acceptance	Personal Growth	Resilience	CAT-PD	M	SD
Fixed	-	-.33**	.00	-.023	.012	-.16	-.25**	-.33**	-.20*	.39**	3.93	.93
Growth		-	.19*	.33**	.08	.06	.13	.10	.12	-.13	3.61	1.08
Acceptance			-	-.18*	.16*	.02	.13	.07	.04	-.03	4.73	.74
Change				-	-.07	.053	.01	.00	.00	.03	4.45	.88
Mindfulness					-	.27**	.12	.12	.30**	-.32**	2.73	.55
Autonomy						-	.29**	.27**	.21*	-.21*	3.68	.79
Self-Acceptance							-	.40**	.45**	-.44**	4.10	.98
Personal Growth								-	.20*	-.19*	4.95	.63
Resilience									-	-.53**	3.02	.80
CAT-PD										-	3.05	.98

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\*. Correlation is significant at the 0.01 level (2-tailed)

*Table 3.* Descriptive statistics and correlations among the four subscales of the Anxiety Mindset Measure, the measures of wellbeing, and the CAT-PD: Anxiousness for low anxiety participants in Study 2.

	Fixed	Growth	Acceptance	Change	Mindfulness	Autonomy	Self-Acceptance	Personal Growth	Resilience	CAT-PD	M	SD
Fixed	-	-.25*	.12	-.15	.15	-.03	-.11	-.33**	-.01	.19	3.73	.82
Growth		-	.166	.35**	.10	.04	.20	.15	.08	-.01	3.73	.97
Acceptance			-	-.25*	.04	.03	.09	.10	-.13	.02	4.72	.70
Change				-	.052	-.01	.04	.02	.01	-.04	4.40	.82
Mindfulness					-	.34**	.04	-.019	.20	-.25*	2.86	.49
Autonomy						-	.24*	.21	.28*	-.23*	3.76	.77
Self-Acceptance							-	.37**	.39**	-.37**	4.41	.89
Personal Growth								-	.03	-.06	5.07	.54
Resilience									-	-.47**	3.31	.74
CAT-PD										-	2.26	.57

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

*Table 4.* Descriptive statistics and correlations among the four subscales of the Anxiety Mindset Measure, the measures of wellbeing, and the CAT-PD: Anxiousness for high anxiety participants in Study 2.

	Fixed	Growth	Acceptance	Change	Mindfulness	Autonomy	Self-Acceptance	Personal Growth	Resilience	CAT-PD	M	SD
Fixed	-	-.36**	-.06	-.05	.03	-.17	-.24*	-.35**	-.19	.50**	4.18	.94
Growth		-	.21	.34**	.02	.05	.02	.05	.08	-.10	3.48	1.18
Acceptance			-	-.13	.26*	.00	.18	.07	.20	-.14	4.74	.80
Change				-	-.13	.12	.03	.01	.04	-.03	4.50	.94
Mindfulness					-	.19	.05	.14	.26*	-.19	2.59	.58
Autonomy						-	.28*	.34**	.05	-.19	3.59	.80
Self-Acceptance							-	.38**	.34**	-.26*	3.76	.96
Personal Growth								-	.27*	-.06	4.84	.70
Resilience									-	-.36**	2.70	.73
CAT-PD										-	3.89	.52

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

*Table 5. Descriptive statistics and correlations among the four subscales of the Anxiety Mindset Measure, the measures of wellbeing, and the CAT-PD: Anxiousness in Study 3*

	Fixed	Growth	Acceptance	Change	Mindfulness	Autonomy	Self-Acceptance	Personal Growth	Resilience	CAT-PD	M	SD
Fixed	-	-.35**	.25*	-.35**	.10	-.16	-.23*	-.16	.19	.33**	3.55	1.24
Growth		-	.05	.39**	.08	.04	.22*	.17	.24*	-.25*	4.52	1.15
Acceptance			-	-.19	.25*	.09	.03	-.01	.17	.15	3.97	.95
Change				-	.06	.20	.24*	.37**	.15	-.13	4.95	.93
Mindfulness					-	.06	-.16	-.07	.14	.11	2.94	.56
Autonomy						-	.56**	.43**	.35**	-.39**	4.30	.92
Self-Acceptance							-	.58**	.45**	-.45**	4.31	.97
Personal Growth								-	.26*	-.30**	4.62	.70
Resilience									-	.56**	3.16	.70
CAT-PD										-	2.53	.84

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

*Table 6.* Result of a principal component analysis with varimax rotation ran in Study 4 using data from Study 2 and Study 4 participants.

Component	Total	% of Variance	Cumulative %
1	4.59	19.13	19.13
2	2.58	10.76	29.89
3	2.04	8.49	38.38
4	1.91	7.95	46.33
5	1.32	5.48	51.81
6	1.12	4.68	56.49
7	1.04	4.33	60.82
8	.91	3.81	64.63
9	.88	3.66	68.28
10	.85	3.56	71.84
11	.80	3.31	75.15
12	.69	2.87	78.02
13	.65	2.71	80.73
14	.62	2.58	83.31
15	.57	2.38	85.69
16	.51	2.13	87.82
17	.49	2.01	89.88
18	.43	1.80	91.68
19	.41	1.71	93.38
20	.39	1.63	95.01
21	.38	1.57	96.58
22	.35	1.47	98.05
23	.25	1.03	99.08
24	.22	.92	100.00

*Table 7.* Factor loadings for the rotated solution ran in Study 4 using data from Study 2 and Study 4 participants.

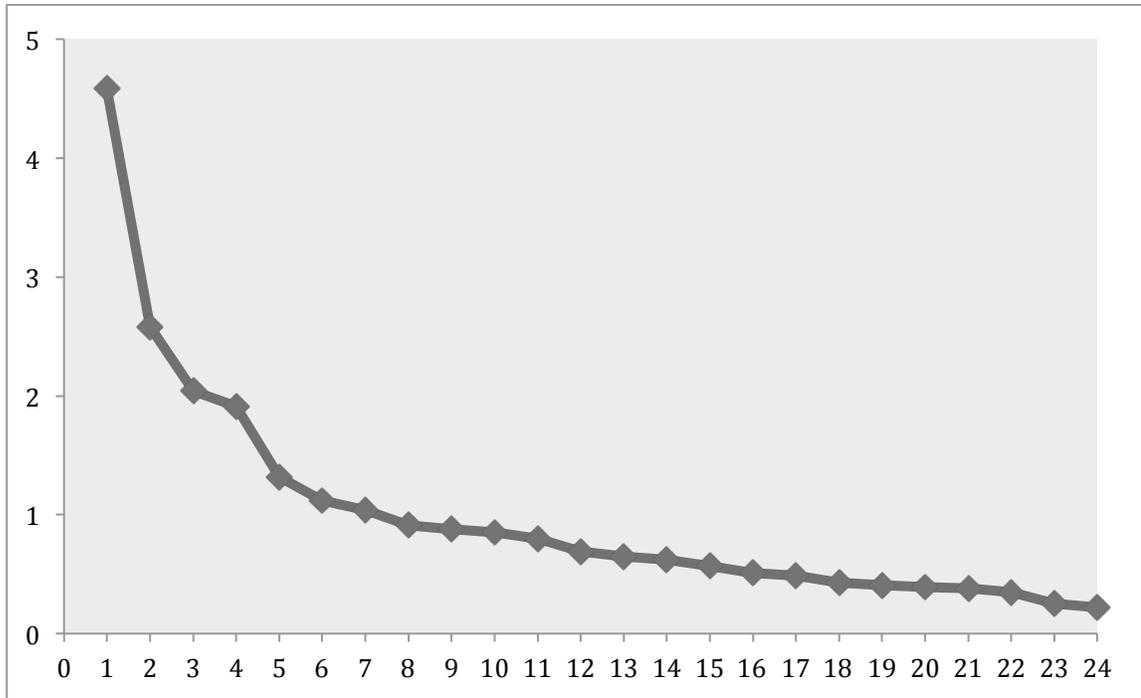
	1	2	3	4
Fixed_1	-.12	-.17	.70	.04
Fixed_2	.02	.09	.18	.00
Fixed_3	-.39	-.04	.61	.01
Fixed_4	-.06	.00	.73	-.19
Fixed_5	-.34	-.14	.69	.13
Growth_1	.80	.10	-.23	.09
Growth_3	.23	-.01	.06	.17
Growth_4	.70	.06	-.12	.21
Growth_5	.81	.14	-.22	.05
Acceptance_1	-.15	.24	.13	.30
Acceptance_2	-.12	.74	-.18	.21
Acceptance_3	.07	.04	-.01	.76
Acceptance_4	.31	.23	.03	.55
Acceptance_5	.12	.03	-.15	.57
Acceptance_6	.09	-.23	.24	.41
Acceptance_7	.16	-.01	-.08	-.08
Acceptance_8	-.12	-.22	.13	.16
Change_1	.33	.51	.02	-.21
Change_2	.09	.31	.41	-.35
Change_3	.16	.66	.05	-.09
Change_4	.17	.77	-.17	.10
Change_5	.30	.42	-.06	.08
Change_6	.46	.41	.03	-.13
Change_7	.22	.09	-.09	-.16

**Table 8.** Descriptive statistics and correlations among participants' AMM scores directly following the intervention and at the one week follow-up in Study 5

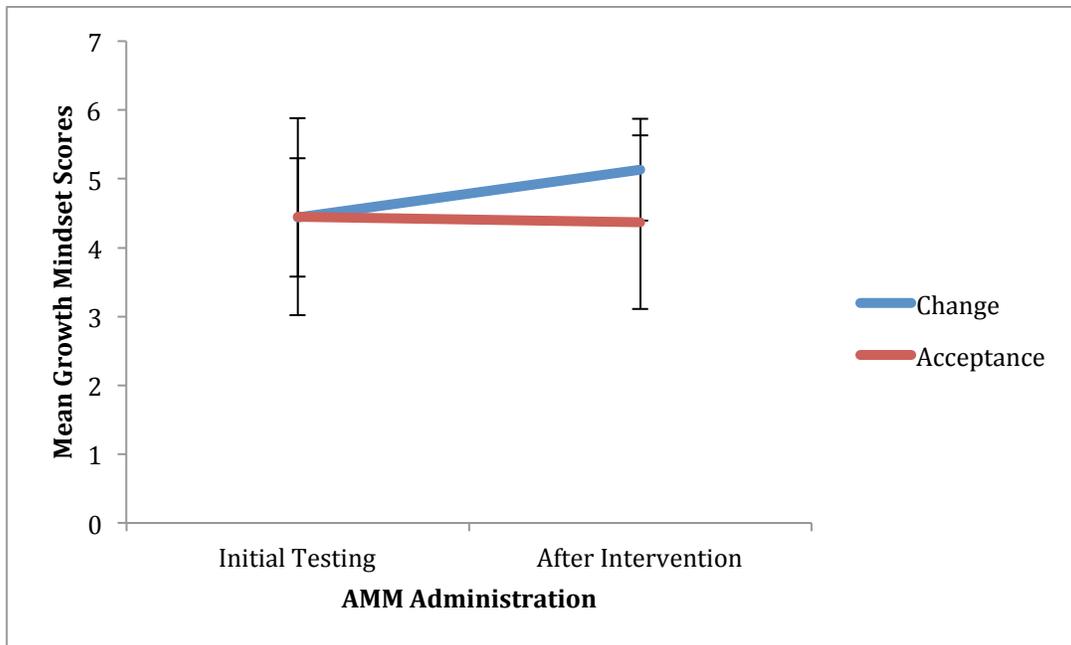
	Fixed After Intervention	Fixed Follow-up	Growth After Intervention	Growth Follow-up	Acceptance After Intervention	Acceptance Follow-up	Change After Intervention	Change Follow-up	M	SD
Fixed After Intervention	-	.66**	-.36*	-.43*	.31	.12	-.15	-.26	3.46	1.08
Fixed Follow- up		-	-.45*	-.49**	.34	.40*	-.22	-.30	3.37	1.00
Growth After Intervention			-	.86**	-.11	-.23	.57**	.67**	4.76	1.08
Growth Follow-up				-	-.08	-.23	.69**	.70**	4.66	1.32
Acceptance After Intervention					-	.91**	.15	-.25	4.69	1.40
Acceptance Follow-up						-	-.06	-.26	4.66	1.35
Change After Intervention							-	.79**	5.17	.93
Change Follow- up								-	5.27	.82

\*. Correlation is significant at the 0.05 level (2-tailed)

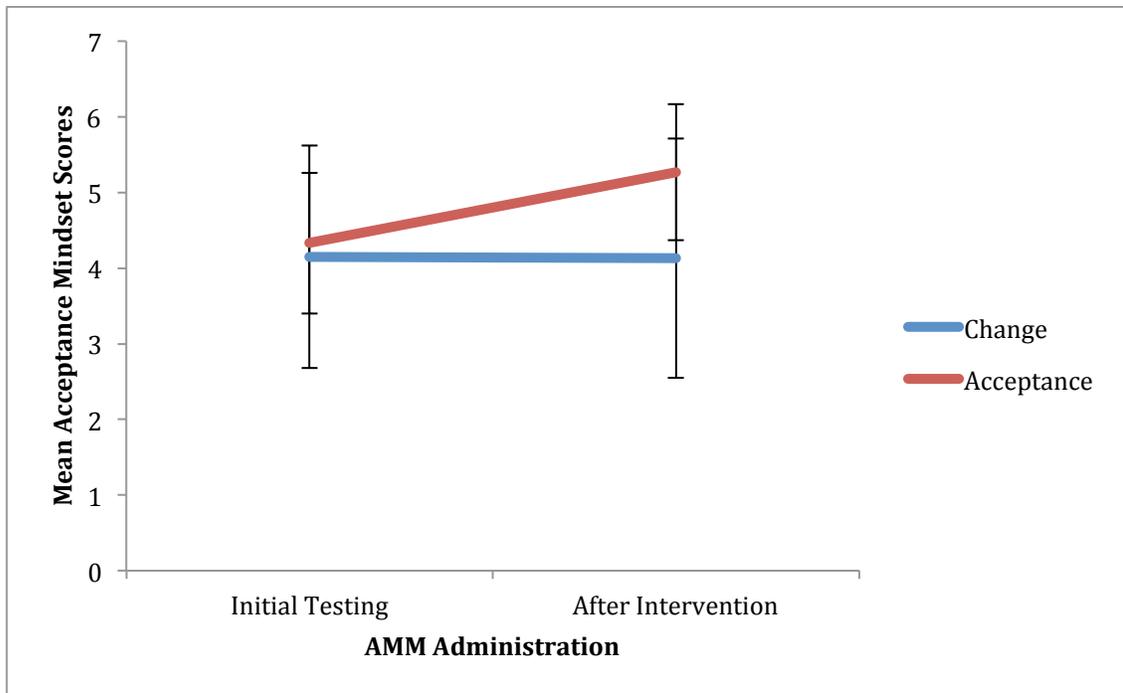
\*\* . Correlation is significant at the 0.01 level (2-tailed)



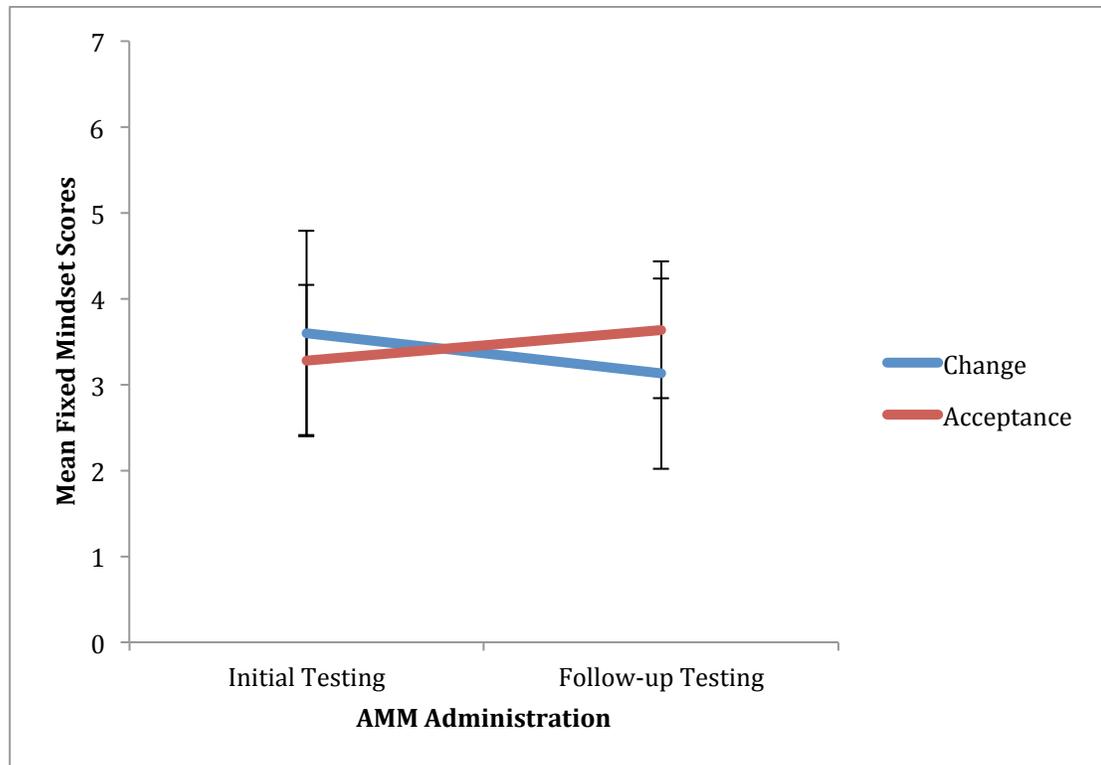
*Figure 1.* Results of the scree plot run in Study 4 using data from Study 2 and Study 4 participants.



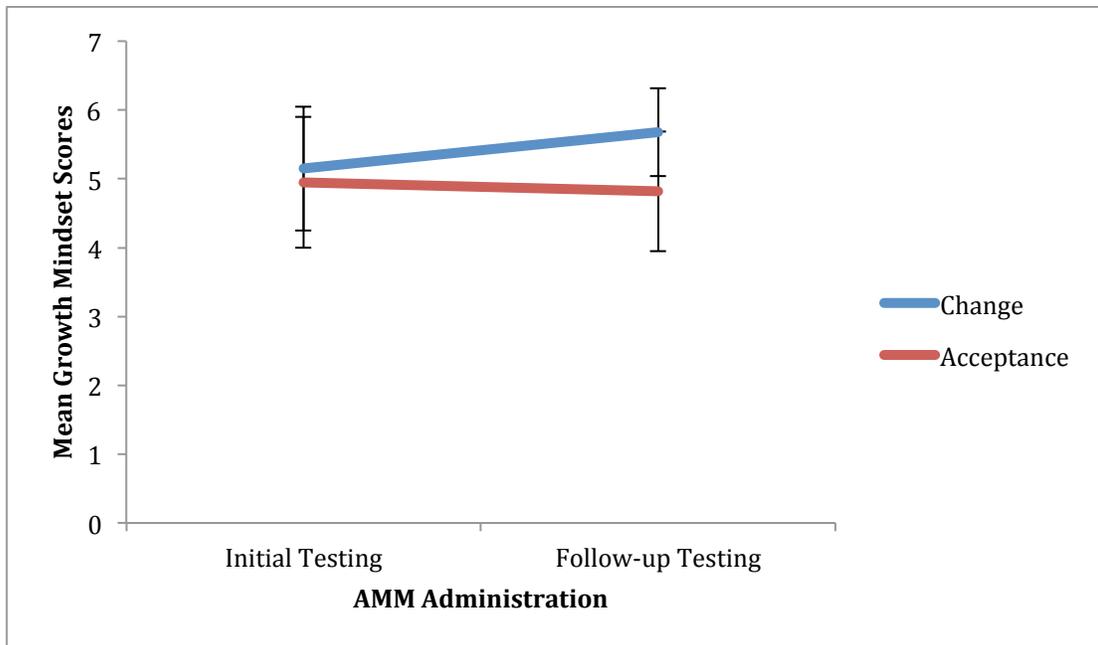
*Figure 2.* Interaction between time (initial testing, after intervention) and condition (change, acceptance) with growth mindset scores as the dependent variable.



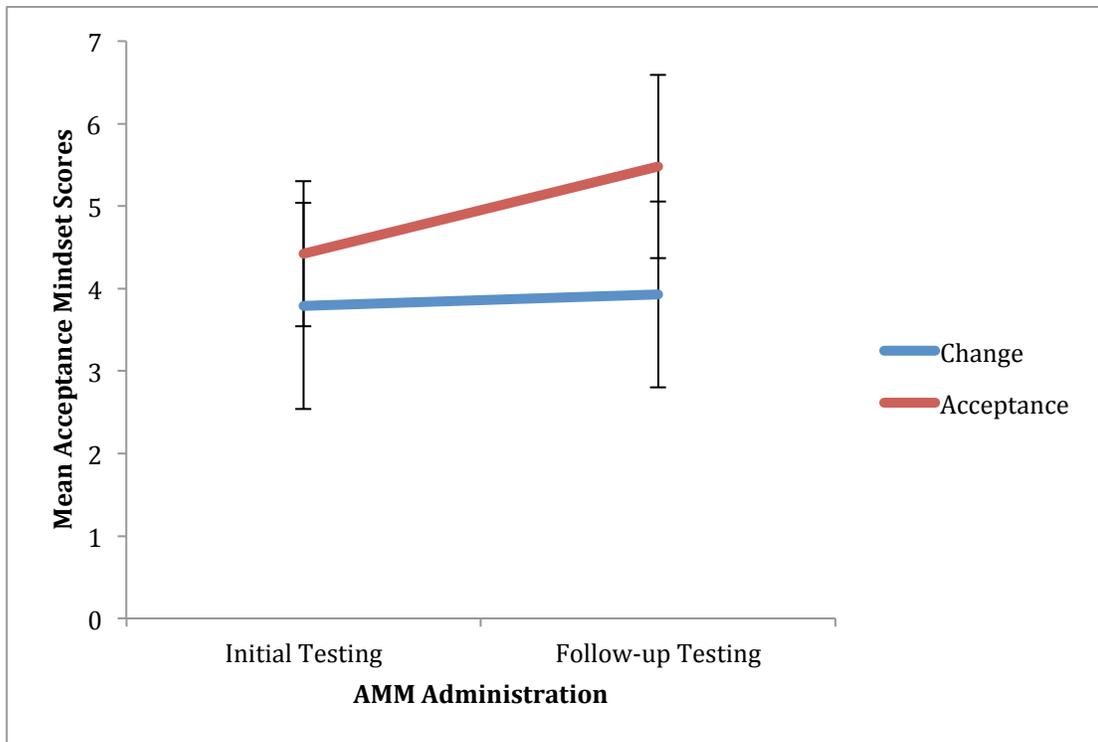
*Figure 3.* Interaction between time (initial testing, after intervention) and condition (change, acceptance) with acceptance mindset scores as the dependent variable.



*Figure 4.* Interaction between time (initial testing, follow-up testing) and condition (change, acceptance) with fixed mindset scores as the dependent variable.



*Figure 5.* Interaction between time (initial testing, follow-up testing) and condition (change, acceptance) with growth mindset scores as the dependent variable.



*Figure 6.* Interaction between time (initial testing, follow-up testing) and condition (change, acceptance) with acceptance mindset scores as the dependent variable.

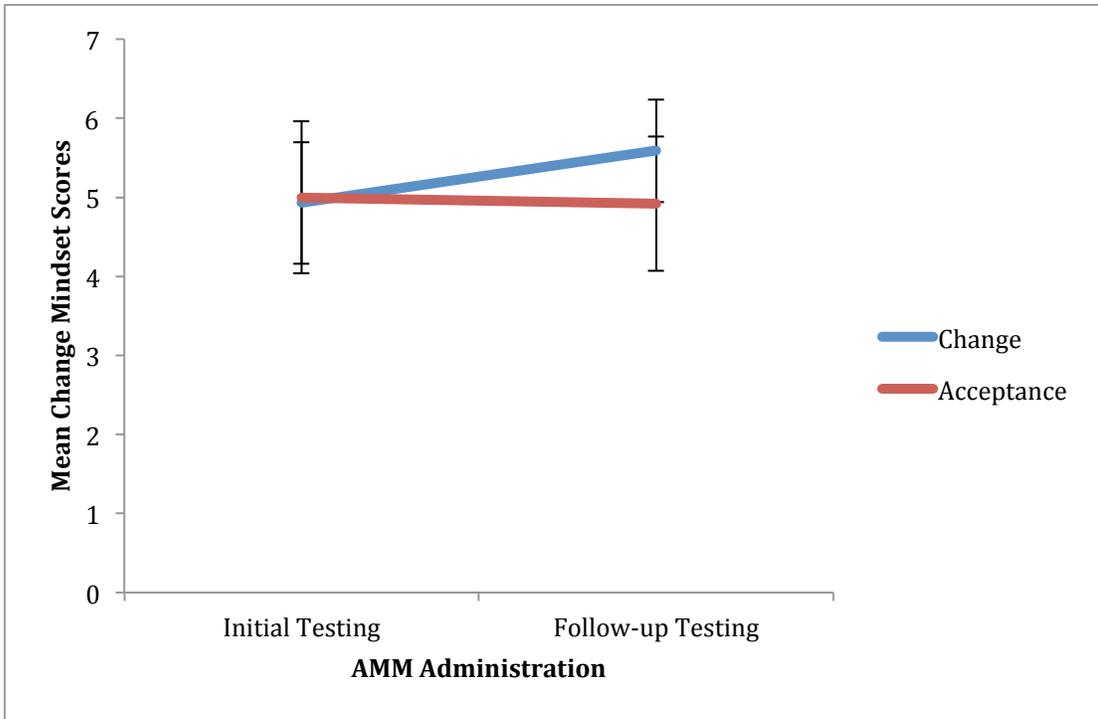
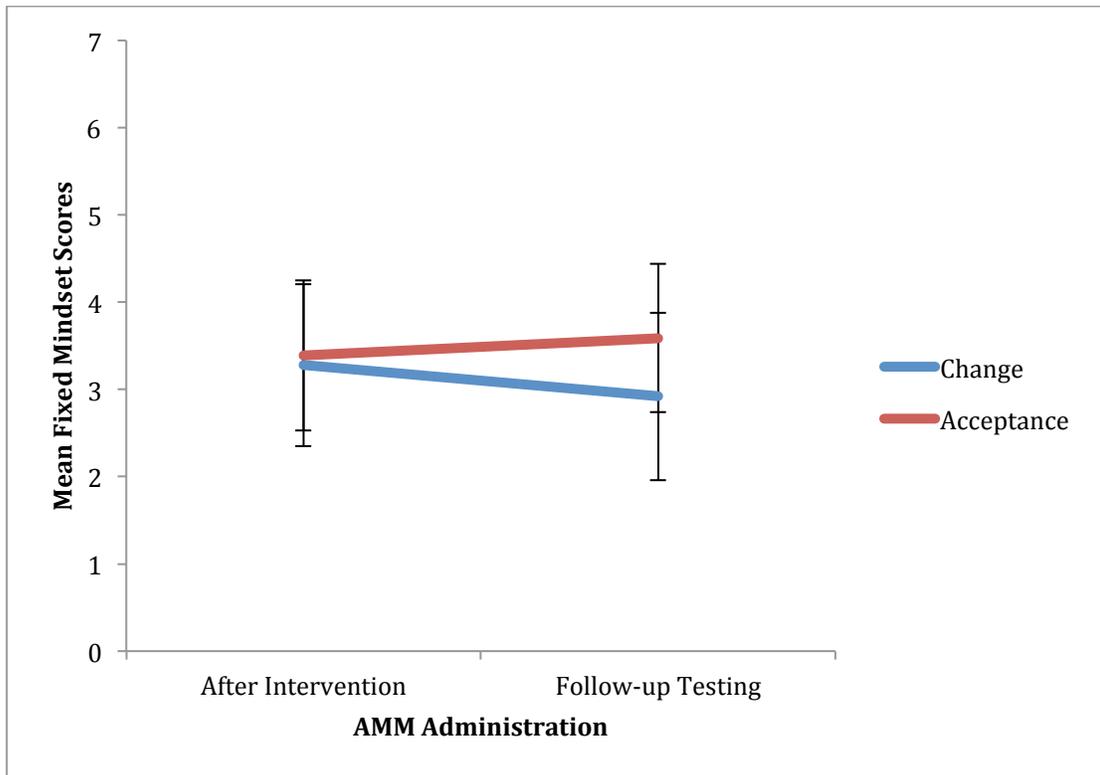
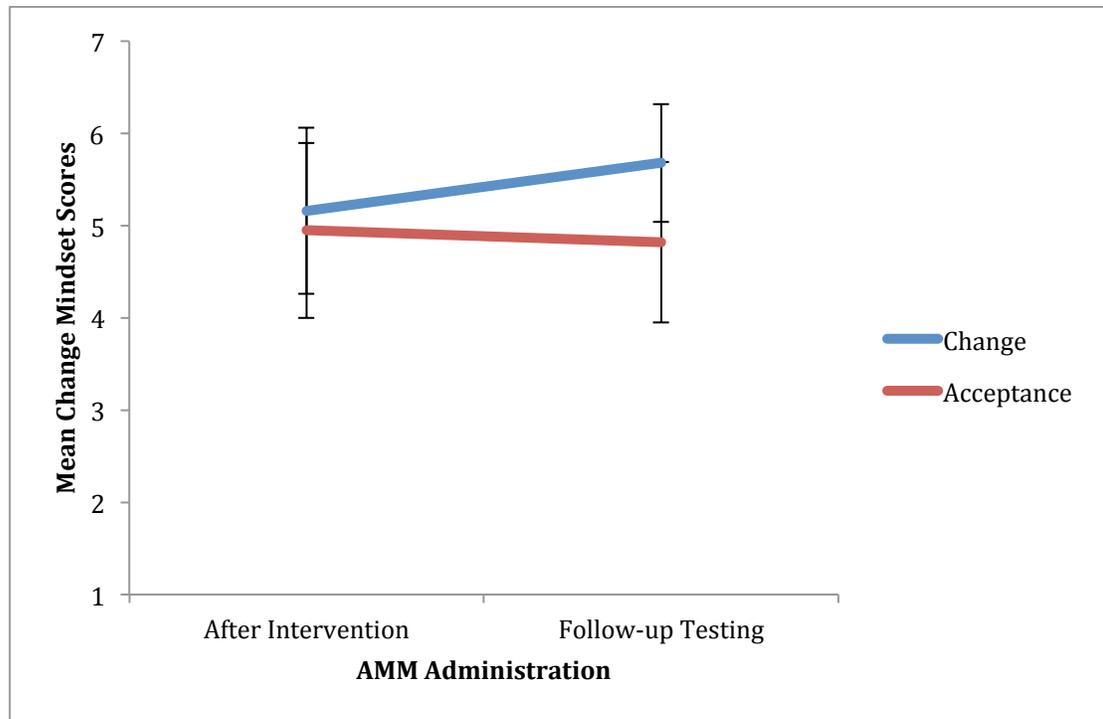


Figure 7. Interaction between time (initial testing, follow-up testing) and condition (change, acceptance) with change mindset scores as the dependent variable.



*Figure 8.* Interaction between time (after intervention, follow-up testing) and condition (change, acceptance) with fixed mindset scores as the dependent variable.



*Figure 9.* Interaction between time (after intervention, follow-up testing) and condition (change, acceptance) with change mindset scores as the dependent variable.

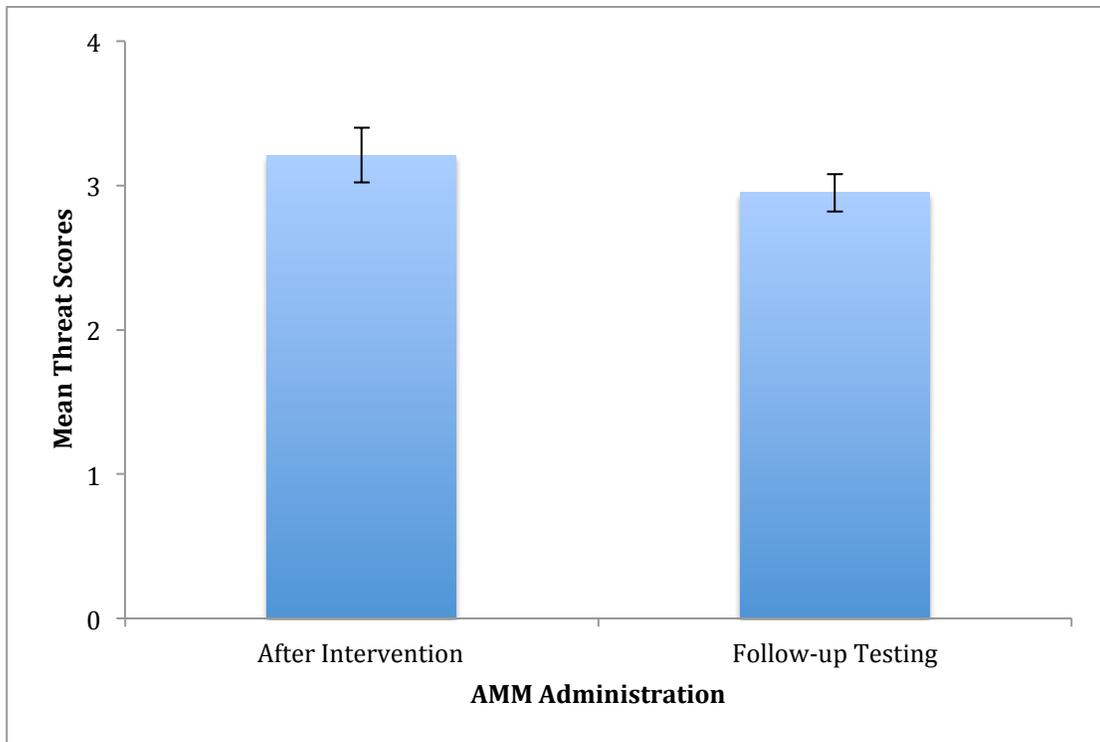


Figure 10. The effects of time on threat scores.

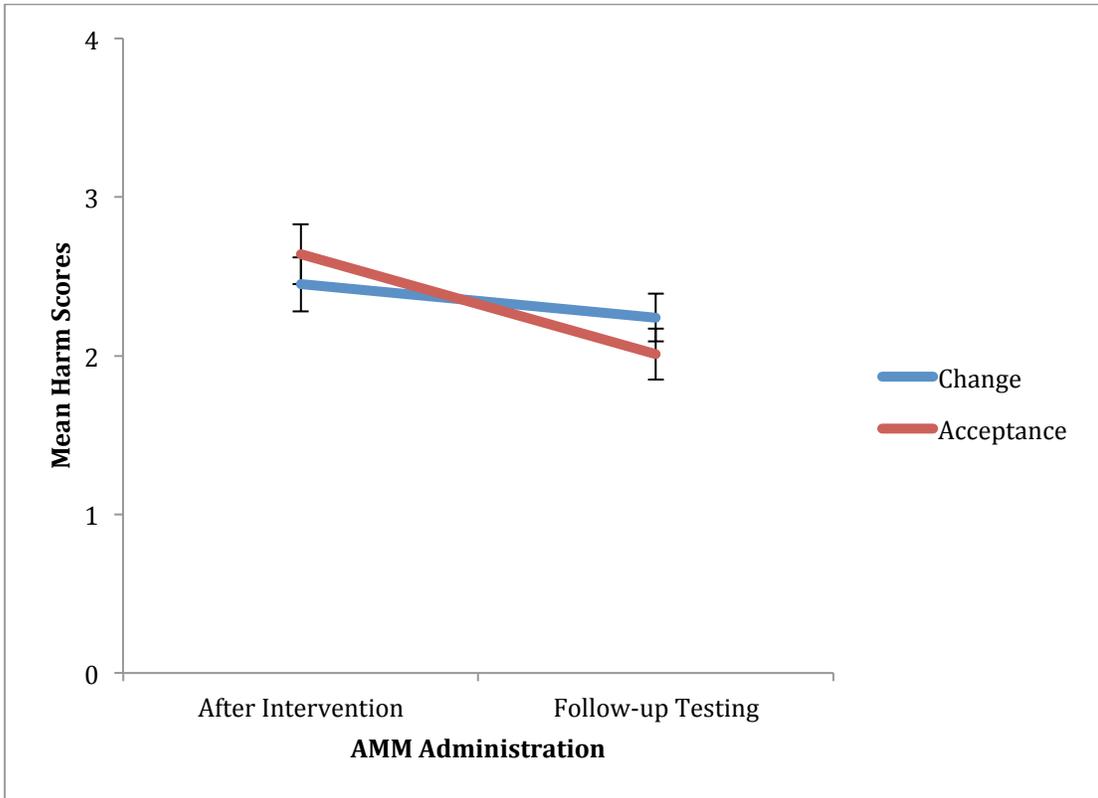


Figure 11. Interaction between time (after intervention, follow-up testing) and condition (change, acceptance) with harm scores as the dependent variable

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## Study 1 Anxiety Mindset Measure

Please indicate the extent to which you agree or disagree with each of the following statements.

- 7- Strongly agree
- 6- Agree
- 5- Slightly agree
- 4- Neither agree nor disagree
- 3- Slightly Disagree
- 2- Disagree
- Strongly Disagree

## Fixed

- 1. You have a certain amount of anxiety and cannot do much to change that.**
2. People have different levels of stress, and that is just the way they were born.
- 3. Even if you try, you can't change how much anxiety you experience.**
4. It is important to not let others know when you are anxious.
5. Your proneness to anxiety undermines your ability to perform.
6. When things don't go the way you hoped, anxiety is usually to blame.
7. Being an anxious person is a sign of weakness.
- 8. Anxious people will always be affected by their anxiety.**

## Growth

1. If you try hard enough, you can change how much anxiety you experience.
2. Your anxiety is largely a product of the situation you are in at the moment.
- 3. Anyone can overcome anxiety.**
4. When you're anxious, asking others for help can be beneficial.
5. When you perform poorly, anxiety is just one reason why.
- 6. When you feel anxious, it is a signal to try harder.**

7. When people don't let their anxiety get to them it is a sign of strength.
- 8. With enough effort, people don't have to let their anxiety affect them.**

#### Acceptance

- 1. When you feel anxious, you should try to accept your initial response to the anxiety before moving on.**
- 2. When you feel anxious, you should try to think about and understand those feelings.**
- 3. You shouldn't worry about the fact that you get anxious.**
4. Having experiences where you feel anxious is a natural part of life.
- 5. Even when it is uncomfortable, feeling anxious is okay.**
- 6. When you feel anxious, you should just try and take your anxiety for what it is.**
- 7. "Leaning in" to anxiety can be beneficial.**
- 8. Accepting anxiety is better than fighting it.**

#### Change

- 1. When you feel anxious, you should try to change your response.**
- 2. Feeling anxious means something needs to change.**
- 3. When you feel anxious, you should take action to try and rid yourself of those feelings.**
4. Life without anxiety would be ideal.
- 5. When you are anxious, you should stop and think about why you are anxious and how to change that feeling.**
- 6. There are many strategies that you can use to control your anxiety.**
- 7. One of the best ways to handle anxiety is to control it.**
- 8. Allowing yourself to give in to anxiety is usually a mistake.**

\*Bolded items were included in final analyses

## Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each of the following items by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7- Strongly agree
- 6- Agree
- 5- Slightly agree
- 4- Neither agree nor disagree
- 3- Slightly Disagree
- 2- Disagree
- 1- Strongly Disagree

1. In most ways, my life is close to ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

## The Brief Resilience Scale

Please indicate the extent to which you agree with each of the following statements by using the following scale:

- 1-strongly disagree
  - 2-disagree
  - 3-neutral
  - 4-agree
  - 5-strongly agree.
1. I tend to bounce back quickly after hard times.
  2. I have a hard time making it through stressful events.
  3. It does not take me long to recover from a stressful event.
  4. It is hard for me to snap back when something bad happens.
  5. I usually come through difficult times with little trouble.
  6. I tend to take a long time to get over set-backs in my life.

## Study 2 Anxiety Mindset Measure

Please indicate the extent to which you agree or disagree with each of the following statements.

- 7- Strongly agree
- 6- Agree
- 5- Slightly agree
- 4- Neither agree nor disagree
- 3- Slightly Disagree
- 2- Disagree
- Strongly Disagree

## Fixed

- 1. You have a certain amount of anxiety and cannot do much to change that.**
- 2. People have different levels of anxiety and that is just the way they were born.**
- 3. Even if you try, you can't change how much anxiety you experience.**
- 4. Anxious people will always be affected by their anxiety.**
- 5. You can't change how much anxiety you experience even if you try.**

## Growth

- 1. If you try hard enough, you can change how much anxiety you experience.**
2. When you're anxious, asking others for help can be beneficial.
- 3. When you feel anxious, it is a signal to try harder.**
- 4. With enough effort, people don't have to let their anxiety affect them.**
- 5. You can change how much anxiety you experience if you try hard enough.**

## Acceptance

- 1. When you feel anxious, you should try to accept your initial response to the anxiety before moving on.**
2. When you feel anxious, you should try to think about and understand those feelings.

3. **You shouldn't worry about the fact that you get anxious.**
4. **Having experiences where you feel anxious is a natural part of life.**
5. **Even when it is uncomfortable, feeling anxious is okay.**
6. **When you feel anxious, you should just try and take your anxiety for what it is.**
7. **"Leaning in" to anxiety can be beneficial.**
8. **Accepting anxiety is better than fighting it.**

Change

1. **When you feel anxious, you should try to change your response.**
2. **Feeling anxious means something needs to change.**
3. **When you feel anxious, you should take action to try and rid yourself of those feelings.**
4. **When you are anxious, you should stop and think about why you are anxious and how to change that feeling.**
5. There are many strategies that you can use to control your anxiety.
6. **One of the best ways to handle anxiety is to control it.**
7. Allowing yourself to give in to anxiety is usually a mistake.

\*Bolded items were included in final analyses.

## Toronto Mindfulness Scale- Trait Version- Decentering Subscale

We are interested in your day-to-day experiences. Below is a list of things that people sometimes experience. Please read each statement. Please indicate the extent to which you agree with each statement. In other words, how well does the statement describe your experience? There are no “right” or “wrong” answers, so please answer in a way that reflects your own experience.

- 0- Not at all
- 1- A little
- 2- Moderately
- 3- Quite a bit
- 4- Very much

1. I experience myself as separate from my changing thoughts and feelings.
2. I am more concerned with being open to my experiences than controlling or changing them.
3. I experience my thoughts more as events in my mind than as a necessarily accurate reflection of the way things ‘really’ are.
4. I am receptive to observing unpleasant thoughts and feelings without interfering with them.
5. I am more invested in just watching my experiences as they arise, than in figuring out what they could mean.
6. I approach each experience by trying to accept it, no matter whether it is pleasant or unpleasant.
7. I am aware of my thoughts and feelings without overidentifying with them.

## Ryff Scale of Psychological Well Being

Please indicate your degree of agreement (using a score ranging from 1-6) to the following sentences.

- 1- Strongly Disagree
- 2- Disagree Somewhat
- 3- Disagree Slightly
- 4- Agree Slightly
- 5- Agree Somewhat
- 6- Strongly Agree

## Autonomy

1. I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.
2. My decisions are not usually influenced by what everyone else is doing.
3. I tend to worry about what other people think of me.
4. Being happy with myself is more important to me than having others approve of me.
5. I tend to be influenced by people with strong opinions.
6. I have confidence in my opinions, even if they are contrary to the general consensus.
7. It's difficult for me to voice my own opinions on controversial matters.
8. I often change my mind about decisions if my friends or family disagree.
9. I judge myself by what I think is important, not by the values of what others think is important.

## Personal Growth

1. I am not interested in activities that will expand my horizons.
2. I don't want to try new ways of doing things--my life is fine the way it is.
3. I think it is important to have new experiences that challenge how you think about yourself and the world.

4. When I think about it, I haven't really improved much as a person over the years.
5. I have the sense that I have developed a lot as a person over time.
6. I do not enjoy being in new situations that require me to change my old familiar ways of doing things.
7. For me, life has been a continuous process of learning, changing, and growth.
8. I gave up trying to make big improvements or changes in my life a long time ago.
9. There is truth to the saying you can't teach an old dog new tricks.

#### Self-Acceptance

1. When I look at the story of my life, I am pleased with how things have turned out.
2. In general, I feel confident and positive about myself.
3. I feel like many of the people I know have gotten more out of life than I have.
4. I like most aspects of my personality.
5. I made some mistakes in the past, but I feel that all in all everything has worked out for the best.
6. In many ways, I feel disappointed about my achievements in life.
7. My attitude about myself is probably not as positive as most people feel about themselves.
8. The past had its ups and downs, but in general, I wouldn't want to change it.
9. When I compare myself to friends and acquaintances, it makes me feel good about who I am.

## CAT-PD: Anxiousness

Below you will find phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes *you*. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. Please read each statement carefully, and then fill in the bubble that corresponds to the number on the scale.

- 1- Very Inaccurate
- 2- Moderately Inaccurate
- 3-Neither Inaccurate nor Accurate
- 4-Moderately Accurate
- 5-Very Accurate

1. I feel my anxiety overwhelms me.
2. I am nervous or tense most of the time.
3. I panic easily.
4. I feel that my worry and anxiety is out of control.
5. I am generally a fearful person.
6. I am easily startled.
7. I rarely worry.

## Study 3 Anxiety Mindset Measure

Please indicate the extent to which you agree or disagree with each of the following statements.

- 7- Strongly agree
- 6- Agree
- 5- Slightly agree
- 4- Neither agree nor disagree
- 3- Slightly Disagree
- 2- Disagree
- Strongly Disagree

## Fixed

1. **You have a certain amount of anxiety and cannot do much to change that.**
2. People have different levels of anxiety and that is just the way they were born.
3. **Even if you try, you can't change how much anxiety you experience.**
4. Anxious people will always be affected by their anxiety.
5. **You can't change how much anxiety you experience even if you try.**

## Growth

1. **If you try hard enough, you can change how much anxiety you experience.**
2. When you're anxious, asking others for help can be beneficial.
3. When you feel anxious, it is a signal to try harder.
4. **With enough effort, people don't have to let their anxiety affect them.**
5. **You can change how much anxiety you experience if you try hard enough.**
6. Anyone can overcome anxiety

## Acceptance

1. When you feel anxious, you should try to accept your initial response to the anxiety before moving on

2. **When you feel anxious, you should try to think about and understand those feelings.**
3. You shouldn't worry about the fact that you get anxious.
4. **Having experiences where you feel anxious is a natural part of life.**
5. **Even when it is uncomfortable, feeling anxious is okay.**
6. When you feel anxious, you should just try and take your anxiety for what it is.
7. **"Leaning in" to anxiety can be beneficial.**
8. Accepting anxiety is better than fighting it.

Change

1. When you feel anxious, you should try to change your response.
2. **Feeling anxious means something needs to change.**
3. **When you feel anxious, you should take action to try and rid yourself of those feelings.**
4. **When you are anxious, you should stop and think about why you are anxious and how to change that feeling.**
5. **There are many strategies that you can use to control your anxiety.**
6. One of the best ways to handle anxiety is to control it.
7. Allowing yourself to give in to anxiety is usually a mistake.

\*Bolded items were included in final analyses.

## Study 4 Anxiety Mindset Measure

Please indicate the extent to which you agree or disagree with each of the following statements.

- 7- Strongly agree
- 6- Agree
- 5- Slightly agree
- 4- Neither agree nor disagree
- 3- Slightly Disagree
- 2- Disagree
- Strongly Disagree

## Fixed

1. You have a certain amount of anxiety and cannot do much to change that.
2. People have different levels of anxiety and that is just the way they were born.
3. Even if you try, you can't change how much anxiety you experience.
4. Anxious people will always be affected by their anxiety.
5. You can't change how much anxiety you experience even if you try.

## Growth

1. If you try hard enough, you can change how much anxiety you experience.
3. When you feel anxious, it is a signal to try harder.\*
4. With enough effort, people don't have to let their anxiety affect them.
5. You can change how much anxiety you experience if you try hard enough.
6. Anyone can overcome anxiety

## Acceptance

1. When you feel anxious, you should try to accept your initial response to the anxiety before moving on
2. When you feel anxious, you should try to think about and understand those feelings.
3. You shouldn't worry about the fact that you get anxious.

4. Having experiences where you feel anxious is a natural part of life.
5. Even when it is uncomfortable, feeling anxious is okay.
6. When you feel anxious, you should just try and take your anxiety for what it is.
7. “Leaning in” to anxiety can be beneficial.
8. Accepting anxiety is better than fighting it.

#### Change

1. When you feel anxious, you should try to change your response.
2. Feeling anxious means something needs to change.
3. When you feel anxious, you should take action to try and rid yourself of those feelings.
4. When you are anxious, you should stop and think about why you are anxious and how to change that feeling.
5. There are many strategies that you can use to control your anxiety.
6. One of the best ways to handle anxiety is to control it.
7. Allowing yourself to give in to anxiety is usually a mistake.

\* Items were renumbered in order to match their numbers in the Study 2 Anxiety Mindset Measure in order to run factor analyses

## Factor Analysis Anxiety Mindset Measure Scales

## Fixed

1. You have a certain amount of anxiety and cannot do much to change that.
2. Even if you try, you can't change how much anxiety you experience.
3. Anxious people will always be affected by their anxiety.
4. You can't change how much anxiety you experience even if you try.

## Growth

1. If you try hard enough, you can change how much anxiety you experience.
2. With enough effort, people don't have to let their anxiety affect them.
3. You can change how much anxiety you experience if you try hard enough.

## Acceptance

1. You shouldn't worry about the fact that you get anxious.
2. Having experiences where you feel anxious is a natural part of life.
3. Even when it is uncomfortable, feeling anxious is okay.

## Change

1. When you feel anxious, you should try to think about and understand those feelings.
2. When you feel anxious, you should try to change your response.
3. When you feel anxious, you should take action to try and rid yourself of those feelings.
4. When you are anxious, you should stop and think about why you are anxious and how to change that feeling.

## Study 5 Anxiety Mindset Measure

Please indicate the extent to which you agree or disagree with each of the following statements.

- 7- Strongly agree
- 6- Agree
- 5- Slightly agree
- 4- Neither agree nor disagree
- 3- Slightly Disagree
- 2- Disagree
- Strongly Disagree

## Fixed

- 1. You have a certain amount of anxiety and cannot do much to change that.**
- 2. Even if you try, you can't change how much anxiety you experience.**
- 3. Anxious people will always be affected by their anxiety.**
- 4. You can't change how much anxiety you experience even if you try.**

## Growth

- 1. If you try hard enough, you can change how much anxiety you experience.**
- 2. With enough effort, people don't have to let their anxiety affect them.**
- 3. You can change how much anxiety you experience if you try hard enough.**

## Acceptance

1. When you feel anxious, you should try to accept your initial response to the anxiety before moving on.
2. You shouldn't worry about the fact that you get anxious.
3. Having experiences where you feel anxious is a natural part of life.
4. Even when it is uncomfortable, feeling anxious is okay.

5. **When you feel anxious, you should just try and take your anxiety for what it is.**
6. **“Leaning in” to anxiety can be beneficial.**
7. **Accepting anxiety is better than fighting it.**

Change

1. **When you feel anxious, you should try to think about and understand those feelings.**
2. **When you feel anxious, you should try to change your response.**
3. **When you feel anxious, you should take action to try and rid yourself of those feelings.**
4. **When you are anxious, you should stop and think about why you are anxious and how to change that feeling.**

\*Bolded items were included in final analyses.

### Change Intervention

Many people struggle with stressors or with anxiety in their lives. Recent psychological research confirms that the most effective way to approach these stressful situations is to change your behavioral response. When confronted with a stressful situation, one of the most effective strategies is trying to change the way that you think about your stress and the situation itself. By challenging the thoughts that you are having, thoughts that might be making something even more stressful, you will likely realize that the situation or event is not as stressful as you had originally thought it would be. When you change the way that you think about stress or approach a stressful situation, you will save the energy that you would have usually spent trapped in your mind frightened by the stressful situation. By changing the way you think about stress rather than struggling with your negative and maladaptive thoughts, you'll have more constructive energy available to focus on dealing with whatever situation you'll face.

Now, please think about your last major academic stressor. Perhaps you had an important exam, a presentation, or even a job interview. Please reflect on how you felt in the time leading up to, during, and following the stressful event. How might you have been able to use the new change-based strategies that you read about in approaching this situation?

Please take a few minutes to think about the different ways of approaching a situation that can make it more or less stressful. You will be asked to think about the event that you just reflected on and why you found this event stressful, as well as different ways that you could have thought about the same event. Please list the worst case-scenario associated with the event or situation that you just reflected on, as well as the best possible scenario and the most realistic scenario. You will then be asked to provide evidence for the worst-case outcome, for the best-case outcome, and for the most realistic outcome.

Please state the catastrophic outcome (worst-case scenario) associated with your anxiety:

Please state the most desirable outcome (best-case scenario) outcome associated with your anxiety:

Please state the most realistic (probable) outcome associated with your anxiety:

Evidence for the Dreaded Outcome (catastrophic view)	Evidence for the Ideal Outcome (most desired goal)	Evidence for the Most Probable Outcome (alternative view)
1.)	1.)	1.)
2.)	2.)	2.)
3.)	3.)	3.)
4.)	4.)	4.)

### Acceptance Intervention

Many people struggle with stressors or with anxiety in their lives, and the typical response is to put all your energy into making the stress go away. Unfortunately, the very strategies that you may be using to try to reduce anxiety may actually be increasing it. The struggle to change your stress, the very idea that stress is harmful and needs to be changed, may be making your overall experiences worse! Take for example a time when you were having trouble falling asleep because you had something important happening the next day - perhaps a test or maybe an interview. As you tossed and turned, you may have kept looking at your clock, calculating how many fewer hours of sleep you could now get- and feeling your stress and insomnia increase as the number of hours left to sleep decreased. You may have looked at the clock in an attempt to *decrease* your stress about what time it was, you likely *increased* your stress levels instead- making it even harder to fall asleep!

Please take the next few minutes to write about another situations where trying to control your stress or emotions was actually more detrimental than beneficial.

Recent psychological research suggests another way to respond to stress and anxiety – a change to your mindset about stress. Rather than viewing stress as harmful and trying to control it, you can simply notice that you are stressed and accept the sensation. The stress can be viewed in a nonjudgmental manner, just as any other thought or feeling might be viewed. In fact, anxiety is often an appropriate response in many situations, and acknowledging the ordinary nature of this response can be quite beneficial. Anxiety is not necessarily a sign of something negative. It could mean that you care about or are invested in a situation. Although this idea may seem counterintuitive, there are many benefits to accepting stress and anxiety. The energy that you save by merely acknowledging rather than battling this stress can now be used in a more productive way. By accepting, rather than struggling, with your anxiety, you'll have more constructive energy available to focus on dealing with whatever situation you'll face.

Now, please think about your last major academic stressor. Perhaps you had an important exam, a presentation, or even a job interview. Please reflect on how you felt in the time leading up to, during, and following the stressful event. How might you have been able to use the new acceptance based strategies that you read about in approaching this situation?

## Interactive Questions

1. What situation did you think of?
2. What do you think are the benefits of taking this approach to stressful situations?
3. What obstacles do you anticipate you might have when trying to use this strategy during a future stressful situation?
4. What did you learn about ways to approach stress or anxiety from this experience?

## Questions on Efficacy and Effectiveness

Please indicate the extent to which you agree or disagree with each of the following statements.

- 7- Strongly agree
  - 6- Agree
  - 5- Slightly agree
  - 4- Neither agree nor disagree
  - 3- Slightly Disagree
  - 2- Disagree
  - 1- Strongly Disagree
1. I believe that this exercise is an effective approach for reducing my anxiety
  2. I could see how participating in this activity could help me manage my anxiety
  3. I can see myself engaging in this activity when I am anxious in the future
  4. I am motivated to engage in this activity when I am anxious in the future
  5. This activity will be beneficial for me when I am anxious

## Emotion Questions

Please rate the extent to which you have felt each of these emotions over the past week (0- not at all; 4- a great deal).

## Threat emotions

1. Worried
2. Fearful
3. Anxious

## Challenge emotions

1. Confident
2. Hopeful
3. Eager

## Harm Emotions

1. Angry
2. Sad
3. Disappointed
4. Guilty
5. Disgusted

## Benefit emotions

1. Exhilarated
2. Pleased
3. Happy
4. Relieved

### Approach Utilization Questions

Please describe the approach that you learned about at your session last week in your own words:

Please indicate the extent to which you agree or disagree with each of the following statements.

- 7- Strongly agree
- 6- Agree
- 5- Slightly agree
- 4- Neither agree nor disagree
- 3- Slightly Disagree
- 2- Disagree
- 1- Strongly Disagree

1. I tried to use the approach that I was taught throughout the week
2. This was the only approach I used when dealing with stressful situations this week
3. I think that using this approach was helpful for me
4. This approach worked for me
5. I am going to use this approach in the future

Please tell us approximately how many times you used the approach that you learned about in the past week: