

SOCIAL ANXIETY INTERVENTIONS: REAPPRAISAL VERSUS ACCEPTANCE AND  
VALUES

A Thesis

by

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This thesis meets the standards for scope and quality of  
Texas A&M University-Corpus Christi and is hereby approved.

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## ABSTRACT

Social anxiety is a prevalent psychological difficulty, and even individuals who do not meet criteria for the diagnosis can demonstrate functional impairment. Cognitive Behavioral Therapy (CBT) has been the most established intervention for the treatment of social anxiety and although it is effective for a number of people, there is still a substantial proportion who fail to benefit or remain in treatment (Barlow, Allen, Chaote, 2016; Foa & Kozak, 1997). As such, Acceptance and Commitment Therapy (ACT) could present an alternative approach. Studies comparing reappraisal and acceptance in helping regulate negative emotions have generally found these to be equivalent or have found reappraisal to be more effective than acceptance (Hofmann, Heering, Sawyer, and Asnaani, 2009; Wolgast, Lundh & Viborg, 2011). However, these comparisons have not included values as the key driver of acceptance, as is consistent with ACT. Participants were randomly assigned to either a brief reappraisal intervention, an acceptance and values intervention, or a control group and they then completed a social stress task. The purpose of the study was to test the effectiveness of these interventions, expecting acceptance and values to have the most successful impact on participant's emotional regulation. Findings did not demonstrate the anticipated results. However, future studies could alter the study protocol to allow for a better understanding of the emotion regulation techniques by participants and include a larger, more diverse sample.

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## INTRODUCTION

Anxiety disorders are one of the most common forms of mental illnesses with the potential for severe functional impairment. According to the National Institute for Mental Health, 28.8% of adults in the US experience an anxiety disorder in their lifetime (National Institute of Mental Health; 2017). Social Anxiety Disorder (SAD) is particularly common: a large study of over 9000 participants demonstrated that it was the fourth most common disorder represented in the sample with a prevalence of 12.1 % (Kessler et al., 2005).

Furthermore, a substantial proportion of the population who are not diagnosable with SAD report struggling with evaluative social situations. According to a large review spanning more than four decades students often refrain from participation in the classroom due to fear of being negatively evaluated by their peers and professors (Rocca, 2010). Similarly, Bowers (1986) found that 56% of college students report that they occasionally avoid participating in the classroom despite of having a potentially useful comment in mind, and 44% report that this happens at least once a week. Moreover, these students reported that they experienced physiological symptoms of anxiety, such as flushing and increased heart rate in these situations. The study highlights that anxiety in social situations is common even among non-clinical samples.

### Conceptualization of Social Anxiety

The DSM-V (American Psychiatric Association, 2013) defines SAD as an individual's disproportionate anxiety regarding social situations, especially during interactions that may include an evaluation of the individual, like presentations or job interviews. Individuals overestimate the possibility of negative evaluation and believe that they will get rejected or humiliated or offend others. To avoid these feared outcomes, individuals may avoid social

situations, which can negatively impact their social and occupational function (American Psychiatric Association, 2013). In addition to the struggle that individuals face due to SAD symptoms, they may experience negative consequences more broadly. SAD has been associated with higher risk of developing substance dependence, depression, and suicidal behavior (Woodward & Fergusson, 2001).

Perceived negative social reactions from others and conceptualization of oneself as socially inept are thought to play a key role in the development and maintenance of SAD. The Rapee-Heimberg model conceptualizes social anxiety as a person's perception of an overly critical audience in social situations and vigilance in response to this perceived threat (Heimberg, Brozovich, & Rapee, 2010). According to this model, individuals are thought to become overly sensitive to social cues and to respond as if faced with a critical audience. A perceived audience can be any member in a social setting: interviewers at a job interview, people listening to one's presentation, potential dating partners, or simply someone they pass on the street. Individuals who struggle with social anxiety mentally construct a distorted representation of themselves in their social situation, believing that they are evaluated negatively. They perceive the situation as threatening due to their overly critical self-image and negative beliefs about their social behavior and how it is perceived by others. Individuals believe that minor deficits in their presentation, like blushing, must be harshly criticized by other people and may underperform socially due to exhausting all their cognitive resources worrying. Thus, the expected negative evaluation leads to cognitive symptoms, such as distorted perceptions, behavioral symptoms such as underperforming, and autonomic arousal symptoms, such as sweating.

Complementary to the Rapee-Heimberg model of SAD, the Triple Vulnerability Theory more broadly conceptualizes the development of anxiety disorders (Heimberg et al., 2010).

According to this theory, individuals are believed to develop anxiety disorders due to a generalized biological vulnerability (inherited tendency to be more sensitive and physiologically reactive) and generalized psychological vulnerability (a sense of uncontrollability), as well as a specific psychological vulnerability pertaining to their particular form of anxiety, such as early experiences of negative evaluation in social contexts through parents or caregivers (Barlow, 2000). Specifically for SAD, this model suggests that these vulnerabilities influence a person's response to a stressor: this can either lead to no alarm, a false alarm (especially in social evaluative situations), or a true alarm due to the direct experience of the threat. Such an inner alarm may be experienced as panic or fear; these negative experiences can lead individuals to experience alarm without the presence of danger (learned alarm). Individuals faced with situations in which they had experienced fear or panic will develop anxious apprehension, viewing these as threatening. If the individual has this experience in a manner that contributes to the specific psychological vulnerability, such as early experiences of negative evaluation in social situations, SAD may develop. In sum, according to this model three vulnerabilities, psychological vulnerability, biological vulnerability, and specific vulnerability, interact and lead to the development of anxiety disorders.

Consistent with this model, emotional states related to uncontrollability are associated with neurobiological mechanisms through the hypothalamic pituitary adrenocortical (HPA) axis (Barlow, 2000). The HPA axis is the biological stress response system of the human body: triggered by a stressor, the hypothalamus increases its production of corticotropin releasing hormone (CRH) and arginine vasopressin (AVP) which it delivers to the anterior pituitary gland. In response, the anterior pituitary gland releases adrenocorticotrophic hormone (ACTH), which in turn promotes the release of glucocorticoids (Johnson, Kamilaris, Chrousos & Gold, 1992;

Tarullo & Gunnar, 2006). Glucocorticoids can impact the function of a variety of physiological systems, influencing cardiovascular function, muscle function, and metabolism (Johnson et al., 1992). Early negative experiences can alter the HPA axis stress response and are thought to lead to chronic exaggerated emotionality due to heightened levels of CRH (Barlow, 2000), indicating that learning impacts physiological reactivity. Greater heart rate reactivity has been demonstrated among individuals with SAD, suggesting that physiological responsiveness may play a role for these difficulties. Consistent with this, Pittig, Arch, Lam, and Craske (2012) found that participants with different anxiety disorders including social anxiety demonstrate lower heart rate during baseline and relaxation and a significantly higher heart rate during a hyperventilation stressor compared to a control group.

In sum, SAD is marked through the unrealistic expectation of negative feedback in social situations, which creates an overly sensitive perception for social cues and triggers a fearfully vigilant state (Heimberg et al., 2010). Individuals with SAD may be inhibited during social situations or avoid them altogether. SAD is thought to develop due to a biological predisposition as well as psychological sensitivities and experiences (Barlow, 2000). Physiologically, social anxiety may be associated with excessive HPA axis reactivity to stress, which causes heightened levels of stress hormones (Barlow, 2000).

#### Treatment of Social Anxiety

Cognitive behavioral therapy (CBT) has been the most extensively studied intervention for social anxiety. As such, CBT combines cognitive restructuring with behavioral components, such as exposure and social skills training (Heimberg & Magee, 2014). CBT views cognitive restructuring, exposure to feared situations, and skills training as the primary treatment components. Among these, cognitive restructuring differentiates this treatment from other

evidence-based interventions (i.e. behavioral exposure treatments and Acceptance and Commitment Therapy). Cognitive restructuring consists of teaching the client to alter their maladaptive anxiety provoking thoughts through Socratic questioning. Thus, a therapist might ask the client to describe an anxiety-provoking situation and, through a series of questions, identify the unrealistic cognition that is at the root of the client's anxiety. The client might then be asked to gather evidence for and against this thought (i.e. past experience, their own perception of others, etc.). This approach is expected to teach the client that their perception of the situation is inaccurate and decrease their anxiety and the avoidance. CBT has been demonstrated to be highly effective: showing significant improvements in three out of four clients (Heimberg & Magee, 2014).

Although, on average, CBT interventions have demonstrated considerable success in the treatment of social anxiety and other difficulties, questions have been raised regarding their efficiency and effectiveness for individual clients. A number of individuals still fail to benefit within CBT trials, and a significant proportion drop out and fail to complete treatment (Barlow et al., 2016; Foa & Kozak, 1997). As such, scholars have been examining other approaches to improve outcomes for these clients. Acceptance and Commitment Therapy (ACT, said as a single word) has emerged as a third wave cognitive behavioral treatment, developed as an extension of B.F. Skinner's work on learning and behavior and its application to language. ACT views psychopathology as stemming from poor psychological flexibility. Psychological flexibility is the ability to act consistent with one's values even during challenging situations. As such, psychological flexibility is determined by acceptance of thoughts and feelings, viewing these as experiences rather than the literal truth (cognitive defusion), responding in the present moment (rather than rumination about the past and future), viewing the self as a stage on which

thoughts and feelings occur, rather than being defined by them (self as context), values, and committed action in pursuit of one's values (Hayes, n.d).

Though ACT and CBT both encourage their clients to alter their relationship with their thoughts, feelings, and behaviors, these treatments differ in their approach. A key difference between ACT and CBT is that in ACT an individual is taught that it is sometimes necessary to accept negative thoughts and feelings, if these can move one closer to pursuit of one's values, whereas in CBT negative thoughts are viewed as irrational and challenged through cognitive restructuring (Arch & Craske, 2008; Hayes, 2004). In the treatment of anxiety, CBT would greatly emphasize cognitive restructuring, having the client analyze the situations that pose a threat and trigger anxiety; however, an ACT stance would aim to accept negative thoughts rather than viewing them as abnormal and focus on motivation for altering behavior in a broader context (e.g., values; Arch & Craske, 2008).

A key component of ACT is that the other processes and skills (i.e., social skills, exposure to the feared stimulus) are taught in the service of helping an individual live a life consistent with their values. According to Luoma, Hayes, and Walser (2007), values are overarching, meaningful, and guide behavior; it is a creation of a desired path in life. Psychopathology driven inaction, impulsivity, or avoidant persistence directly relates to the neglect of these values. A person may set a multitude of temporary goals and lose sight of their values. This impacts a person's behavior as they become less flexible in their choices and do not perceive possibilities to realize their values (Luoma et al., 2007). Therefore, ACT finds that experiential avoidance can be a key problem as it keeps individuals from valued living. For instance, someone suffering from social anxiety may strongly value their career but cannot advance in their field because they avoid leading meetings or presentations due to their anxiety

(Wilson & Murrell, 2004). Moreover, a lack of values or clarity thereof can lead to such experiential avoidance and decreases psychological flexibility as values enable a person to live in a meaningful way (Luoma et al., 2007).

It has been suggested that patients with complex or chronic forms of anxiety may especially benefit from ACT in making lasting changes and achieving life satisfaction (Mennin, 2005). Recent randomized controlled trials support this assertion. For example, Davies and colleagues (2014) found that ACT may be more beneficial than CBT for anxiety patients with high behavioral avoidance. Participants received a 12-week protocol with one hour of therapy per week. CBT focused on cognitive restructuring, exposure, and breathing training. ACT focused on mindfulness, acceptance, cognitive defusion, and values. Behavioral avoidance was measured through participants' willingness to engage in and endure a hyperventilation task. Participants who avoided the hyperventilation task or only briefly endured it at the beginning of treatment showed greater decrease of anxiety symptoms in the ACT treatment condition. These findings suggest that clients with high experiential avoidance may benefit more from ACT.

Another study found that ACT may have more lasting effects than CBT. Clarke, Kingston, James, Bolderston, and Remington (2014) compared treatment as usual through CBT with a group-based ACT intervention in a randomized controlled trial among treatment resistant clients with a variety of difficulties including depression and anxiety. They found that all participants showed improvements in reported general distress, depression, and quality of life, but those in the ACT condition demonstrated longer lasting improvements in symptoms at a six-month follow-up. In sum, ACT offers a promising alternative to more traditional forms of CBT.

## Laboratory Examination of Treatment Components

Laboratory component studies may be useful in helping understand specific components of interventions and explore ways in which treatment could be improved. Such laboratory studies can help test the effectiveness of varied strategies individuals use to deal with negative emotions. Consistent with CBT and ACT, commonly examined strategies in laboratory component studies have been cognitive reappraisal (thinking about a stimulus in a less upsetting fashion) and acceptance (letting thoughts and feelings come as they may rather than fighting them).

Hofmann, Heering, Sawyer, and Asnaani (2009) compared the effectiveness of brief reappraisal, suppression, and acceptance interventions for emotion regulation during a social stressor task among 202 participants. Instructions were as follows: the reappraisal group was asked to remind themselves that there are no personal consequences based on their performance, the suppression group was asked to behave as though they were not anxious or uncomfortable, and the acceptance group was asked to accept their emotions without trying to alter them. Participants were administered a self-report measure of anxiety and provided a physiological measure of heart rate. Anxiety was measured through the State-Trait-Anxiety-Inventory, which was completed at baseline, anticipation of task, after the speech, and during recovery. Participants in the acceptance and reappraisal group were found to be more effective at regulating heart rate compared to the suppression condition and reappraisal was more successful at regulating subjectively experienced anxiety than acceptance and suppression.

Wolgast and colleagues (2011) similarly compared the effects of reappraisal and acceptance compared to a control condition on participant's subjective distress, physiological reaction, and avoidance (willingness to watch a distressing film clip again). Participants were 94 college students who were asked to watch a series of film clips intended to elicit reactions of

either disgust, sadness, or fear, and to fill out brief measures of negative affect between clips; their level of skin conductance and facial electromyography were measured throughout the experiment to interpret participant's level of arousal and valence, respectively. Participants in the reappraisal and acceptance conditions reported lower levels of negative affect, as measured through the Positive and Negative Affect Scale: State Version, compared to the control group, with the exception of the disgust clip, during which only the reappraisal group reported low negative affect. Participants in both reappraisal and acceptance also demonstrated lower avoidance scores than the control group. Wolgast and colleagues' (2011) findings suggested that both acceptance and cognitive reappraisal were associated with greater willingness to engage in an unpleasant task and more successful physiological regulation than the control condition.

Another component study by Campbell-Sills, Barlow, Brown, and Hofmann (2005) presented the participants with audio instructions to either accept their emotions or to suppress them as they were watching film clips. The sample consisted of 60 participants who were previously diagnosed with anxiety disorders and mood disorders such as Social Phobia or Major Depressive Disorder according to DSM-IV criteria. Similar to Wolgast et al. (2011), these researchers selected film clips for their distressing task; the selected film clips in this study successfully triggered negative affect in a previous non-clinical trial (Campbell-Sills et al., 2005). Through the Positive and Negative Affect Scale (PANAS), participants reported their subjective levels of distress. The suppression condition did not lower negative affect during the stressor; however, the acceptance group reported comparable levels of negative distress which may be due to the acceptance instructions to notice and accept feelings which can lead to higher reports of such. However, especially in the period after exposure, participants in the acceptance condition showed greater emotional recovery as they reported significantly lower levels of

negative affect. Furthermore, participants in the acceptance condition had significantly lower heart rates during exposure, which indicates that the acceptance intervention promoted emotional regulation even though it was not reflected in the self-report measure.

In a study by Marcks and Woods (2005), 103 participants were randomly assigned to either suppress intrusive thoughts or to imagine them as signs held by soldiers marching by. The marching soldiers metaphor is an acceptance-based method in which participants are asked to visualize thoughts as passing by, a temporary phenomenon. After an initial battery of surveys to determine how participants naturally dealt with intrusive thoughts, both groups counted how often they encountered their target thought. The initial screening showed that participants who had a natural tendency to suppress thoughts reported higher symptoms for depression and anxiety in self-report measures (Beck Depression Inventory and State and Trait Anxiety Inventory) than those who did not utilize suppression. Furthermore, Marcks and Woods (2005) found that participants in the suppression group experienced the intrusive thoughts as frequently as those in the acceptance group but participants in the acceptance condition reported lower levels of distress. Therefore, the acceptance-based metaphor altered the way distress was experienced but did not affect the frequency intrusive thoughts were experienced.

Eifert and Heffner (2003) studied the effects of acceptance versus control in a high anxiety female sample of 79 college students. Participants were randomly assigned to the acceptance context, control context, or to receive no instructions and, if willing, returned for a one-month follow-up. To induce stress, participants were breathing through a C-Pap mask that supplied either the surrounding air, or 10% carbon dioxide enriched air to them. Similar to Marcks and Woods (2005), the acceptance intervention also included an ACT metaphor: here, participants were taught about the Chinese finger trap metaphor and given a Chinese finger trap

to experience. Participants insert their fingers on either side of the woven tube; if they pull it will tighten around their fingers, but if they push inwards and stop fighting to get out they are able to get their fingers out. Thus, this metaphor teaches participants that trying to control a situation may worsen it, while accepting and observing before they act can resolve the tension. In the control context, participants were taught a ten-minute breathing technique that they were asked to use to control the upcoming situation, and in the no-instruction group participants waited ten minutes by themselves in the testing room. The study found that participants in the acceptance condition reported fewer physiological, cognitive, and fear symptoms and were more likely to volunteer for a follow-up trial.

Similar to the distress task used by Eifert and Heffner (2003), a study by Levitt, Brown, Orsillo, and Barlow (2004) used carbon dioxide enhanced air to test the effectiveness of acceptance versus suppression on 60 adult patients diagnosed with Panic Disorder according to DSM-IV. Participants listened to an audio that either asked them to accept and experience good and bad feelings in the acceptance condition, to try not to feel any upcoming emotions in the suppression condition, or they listened to a recording of an article from National Geographic in the control condition (Levitt et al., 2004). As such, the intervention method is comparable to the component study by Campbell-Sills and colleagues (2005). Participants in the acceptance condition reported less anxiety during the stressor and showed more willingness to return for a follow-up trial while the suppression and control group showed more avoidance toward a possible return (Levitt et al., 2004). However, there was no significant between-group difference in subjective report of panic symptoms or physiological measure (Levitt et al., 2004).

An acceptance component was found to have a positive effect on heart rate habituation after stress in a study in which 85 undergraduate participants were asked to write about a

stressful event (Low, Stanton, & Bower, 2008). They were randomly assigned to one of three conditions. In the acceptance condition, they were asked to face their emotions about the stressful event and to reflect upon their physical experience in an accepting way without negative evaluation, in the evaluation condition they were asked to discuss the appropriateness of their emotions in regard to the situation, and in the control condition they were asked to report the event in an objective manner. Results of the study show that participants in the acceptance condition recovered their base heart rate as fast as those in the control condition while those in the evaluation condition took the longest to recover (Low et al., 2008). Thus, this study shows that the negative evaluation of one's emotions to a stressor slows the adjustment of physiological effects (Low et al., 2008).

In an experiment by Wagener and Zettle (2011) on arachnophobia, an acceptance intervention also yielded positive results. Participants were 42 undergraduate students with midlevel anxiety towards spiders (as determined by Fear of Spiders Questionnaire) who were asked to complete the Perceived-Threat Behavioral Approach Test that presented them with opaque jars in which they had to reach, and as they progressed through the presented jars they were told that the likelihood of encountering a spider increases. Similar to other component studies that used audio interventions (Campbell-Sills et al., 2005, Levitt et al., 2004), they were either assigned to listen to a control-based approach on how to deal with distress, an acceptance-based approach, or an information-based approach; each recording was about 20 minutes long. In the control-based condition, participants were asked to change their thoughts and remember that the spider will not harm them, and they underwent a segment of progressive muscle relaxation to relax their body, thus, this approach was based on CBT techniques of cognitive restructuring (Wagener & Zettle, 2011). The acceptance instructions included a mindfulness activity, defusion

instructions that told participants that they could lessen the impact of negative thoughts by repeating it in a cartoon voice among other strategies of repetition, and they listened to the passengers on a bus metaphor (Wagener & Zettle, 2011). In this metaphor, the individual imagines to be a bus driver and the people on the bus represent different thoughts the individual has including threatening and negative thoughts; thus, the individual is asked to be in control of the bus even if the passengers ask them to go a certain place (Luoma & Hayes, 2009). As such, this is comparable to other acceptance interventions that also used ACT metaphors (Marcks & Woods, 2005; Eifert & Heffner, 2003; Flynn, 2012). The information-based audio provided participants with knowledge about spider's positive functions and information about common myths (Wagener & Zettle, 2011). Participants in the acceptance-based condition completed the most jars during the task and stated the most willingness to repeat the task.

Gregg, Namekata, Louie, and Chancellor-Freeland (2014) conducted research on the impact of a values intervention versus a control group on cortisol reactivity during the Trier Social Stress Test (TSST). In this study, 98 undergraduates were randomly assigned to either the control condition, in which they completed a set of trivia questions, or the values intervention in which participants completed the Bulls Eye Values Survey (BEVS). The BEVS is a worksheet in which individuals plot their values according to how important they are to them and afterwards they were asked talk about an example of how they live in accordance with the value and something they could do in the future that would be consistent with their value. As participants then completed the TSST, their stress levels were measured through their cortisol levels which indicate the biological stress response through the HPA-axis (see previously described conceptualization of SAD). Individuals in the values condition demonstrated significantly lower cortisol levels compared to the control group. This indicates that a values intervention even if it

is kept as general as this one and not task specific, can successfully decrease stress levels during situations that commonly evoke social anxiety.

A study by Flynn (2012) examined the effectiveness of acceptance versus acceptance plus values on 121 undergraduate participants' persistence during and willingness to engage in a difficult task. As acceptance in ACT is typically framed as something done in the service of values, it was expected that the acceptance plus values condition would have a greater impact than acceptance alone. In a non-clinical sample, participants were randomly assigned to condition, given one of the two interventions, and asked to do the mirror tracing task. During this frustration task, participants are asked to trace a star shape on a computer screen, while the cursor moves in the opposite direction of the mouse movement. In this study, Flynn (2012) did not find differences in persistence and reported willingness to repeat the task between groups. However, the artificial nature of the mirror tracing task may have contributed to this null finding. Although this task has been successful in studies of frustration and distress tolerance (for instance in Feldman, Dunn, Stemke, Bell, & Greeson, 2014; Szuhany & Otto, 2015), engagement in a repetitive frustration task may be perceived as more artificial and less relevant to an individual's values. It is possible that examination of behavior in an area, which may be perceived as more relevant to valued living, would demonstrate a greater benefit.

#### Summary of Component Studies

The previously discussed studies examining ACT and/or CBT techniques, differ in the examined components and how they define effectiveness of these interventions. These studies were using acceptance (e.g., Campbell-Sills et al., 2005), values (Gregg et al., 2014), and cognitive reappraisal (e.g., Hofmann et al., 2009) as emotion regulation interventions. Success of the intervention was defined in different ways: some of these studies measured it through

subjectively experienced distress (e. g. Hofmann et al., 2009), others used physiological measures (e. g. Low et al., 2008), some measured success through willingness to repeat a stressful task (Eifert & Heffner, 2003). Willingness to engage in difficult tasks is a main target of ACT as it aligns with acceptance (Hayes, 2004), while the ability to regulate subjective distress is more closely aligned with the goals of reappraisal in CBT (Heimberg & Magee, 2014). These studies used a variety of different stressors to test the effectiveness of these brief interventions, such as a social stress test (Gregg et al., 2014; Hofmann et al., 2009), physiological stressors such as Carbon Dioxide enhanced air (Eifert & Heffner, 2003; Levitt et al., 2004), stressful external stimuli such as film clips (Campbell-Sills, 2005; Wolgast et al., 2011), or tasks that were more aligned with very specific fears or symptoms of psychopathology. As suggested through these studies, the effectiveness of brief component interventions to regulate distress and arousal and increase willingness is seemingly independent from the source of the stressor.

A variety of component studies show that acceptance techniques are a successful tool to promote emotional regulation in clinical as well as non-clinical populations. Research shows that an acceptance intervention before a stressful situation successfully lowers the heart rate as well or better than a reappraisal condition and has a significant effect over control conditions (Hofmann, et al., 2009; Campbell-Sills et al., 2005; Low et al., 2008, Wolgast et al., 2011). Moreover, Campbell-Sills and colleagues (2005) found that participants in the acceptance condition showed faster heart rate recover after the stressor. However, self-report measures yielded mixed results, which may be due to the encouraging instruction to notice and accept feelings of discomfort in acceptance condition. Thus, participants may over-report anxiety during stressful situations. Additionally, it may be that acceptance must be done in the service of values to obtain the full benefit, consistent with the ACT approach. Nonetheless, acceptance

instructions have been found to be related to greater willingness to re-experience stressful tasks, suggesting they can be successful at decreasing avoidance behavior (Eifert & Heffner, 2003; Levitt et al., 2004; Wagener & Zettle, 2011).

In a meta-analysis of laboratory-based component studies, Levin, Hildebrandt, Lillis, and Hayes (2012) compared different ACT components and contextual components of CBT, the nature of the intervention, and their outcomes in 66 studies. The analysis further supports the effectiveness of ACT components such as mindfulness, acceptance, and values and found that especially interventions that used experiential components such as metaphors and exercises were found to have larger effect sizes. Thus, the current study uses an ACT metaphor in the intervention.

In sum, a number of examinations found that acceptance and reappraisal instructions were equivalent in ameliorating participant distress as demonstrated by physiological measures only (Hofmann et al., 2009) or by physiological and self-report measures (Wolgast et al., 2011). However, it is of note that acceptance in ACT is not done in and of itself, but in the service of valued living to increase values-based action (Luoma et al., 2007). As such, extant acceptance versus reappraisal evaluations do not offer adequate examination comparable to that which may occur when the key process of values is added to the acceptance intervention. Additionally, existing studies use distress stimuli (i.e. CO<sub>2</sub> task, as seen in Eifert & Heffner, 2003 or Levitt et al., 2004, a distressing film clip, as seen in Wolgast et al., 2011 or Campbell-Sills et al., 2005), which are less relevant to valued living and may not allow for optimal comparison of ACT and CBT relevant components.

## OBJECTIVES AND HYPOTHESES

The current study seeks to allow for a stronger comparison of the ACT process of acceptance to cognitive reappraisal through inclusion of values and through application to a potentially more relevant stressful situation. An area that is often of importance in assessments of values is relationships with others. Consistent with this, previously mentioned research shows that social apprehension of negative evaluation often causes avoidance in college students to participate in the classroom (Bowers, 1986; Rocca, 2010). Moreover, college counseling center data suggests that social issues are a very common stressor. Intake data from 13,257 clients collected at a counseling center over 13 years found that 46-57% of the clients sought counseling for relationship problems, 36-63% for anxiety and stress, and 32-44% for family issues (Benton, Robertson, Tseng, Newton, & Benton, 2003). Social situations are at the core of these three main reasons that led clients to seek counseling and this again highlights how much people value relationships in their lives. Moreover, this emphasizes the importance for successful anxiety interventions that promote social wellbeing and decrease experiential avoidance in clinical as well as non-clinical individuals. As such, it shows that social concerns are a prevalent and relevant issue to many individuals.

We selected the Trier Social Stress Task (TSST; Kudielka, Hellhammer, Kirschbaum, Harmon-Jones, & Winkielman, 2007), which presents individuals with a challenging social situation (described further in the Method section), to more closely approximate behavior in the service of social aspects of valued living. This task was successfully implemented in previous component studies (Gregg et al., 2014; Hofmann et al., 2009). Although the current study adapts Flynn's (2012) intervention protocol, the stressor task (TSST) will be closer to participant's experienced stressors in daily life, which is expected to increase the relevance of values for

internal motivation. Gregg and colleagues (2014) found that a values intervention successfully lowered cortisol levels during the TSST. Thus, it is our hope in this study that values will be more meaningful for participants during the stressor task and that the stressor is more closely related to participant's real-life stressors.

The purpose of the current study is to add to our understanding of acceptance in the service of values as compared to cognitive reappraisal for dealing with negative affect. Our study builds on existing literature, which compares acceptance with cognitive reappraisal and presents a more ACT consistent version of acceptance because it moves us closer to values. To accomplish this purpose we compared the impact of three sets of instructions on negative affect: acceptance and values, in which participants are instructed to accept negative emotions and remind themselves of overarching goals such as wanting to be successful students, reappraisal, which instructs individuals to logically assess the situation as an experiment that will not have any impact on their social life or college career, and control, which provides information on the history of Texas A&M Corpus Christi. Participants were randomly assigned to one of these three conditions.

It was hypothesized that individuals in the acceptance and values condition would be more successful at their emotional regulation during, and immediately after, the stressor. Thus, we predicted that 1) individuals in the acceptance and values condition would show less increase in Subjective Units of Distress (SUDs) and heart rate during TSST compared to the cognitive reappraisal and control conditions, and 2) acceptance and values participants would show faster recovery of heart rate after the stressor compared to other conditions. Additionally, we explored associations between self-report measures of psychological inflexibility, valued living, symptoms of depression, anxiety, and stress, and general use of emotion regulation strategies.

## METHOD

### Participants

Participants were 49 undergraduates aged 18 to 40 recruited at Texas A&M University-Corpus Christi. Participants were 91.8% female, and 57.1% identified as Hispanic/Latino, 24.5% Caucasian, and 8.2% as African American. The majority of participants, 95.5%, reported that the USA was their country of origin, and the remaining participants were from Central America. Regarding their level of education, 38.8% were freshmen, 24.5% were seniors, and 18.4% were sophomores.

### Self-Report Measures (Appendix I)

#### Demographics Questionnaire

Participants were administered a demographic questionnaire, assessing age, sex, ethnicity, level of education, and major.

#### Health Questionnaire

As is standard in psychophysiological examinations of heart rate reactivity, participants were asked whether they have a heart condition, a pace maker, or take any medication that affects their heart rate. Furthermore, participants were asked to disclose their use of cigarettes, coffee, and alcohol, and the frequency of physical activity. Additionally, the questionnaire asked whether participants were currently using medication or psychotherapy/ counseling services for psychological difficulty and whether they have done so in the past. Items were adapted from Toobert, Hampson, and Glasgow's (2000) revised diabetes self-care activities measure.

## Psychological Process Measures

### Cognitive Emotion Regulation Questionnaire Short Form (CERQ-SF)

To assess participants' predominant preexisting strategies to react to stressful situations and regulate their emotions, they were asked to complete the 18 items of the CERQ-SF. The CERQ-SF is comprised of nine domains that are measured by two items each: self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and blaming others (Garnefski & Kraaij, 2007). Each item contains a possible thought a person may have regarding a difficult or stressful situation such as, "I think that basically the cause must lie within myself," to which the participant responds on a 5-point Likert-type scale (1 = never and 5 = always). This questionnaire has a good reliability with subscale Cronbach's alphas ranging from .68 to .81 and has received convergent validity support (Garnefski & Kraaij, 2007).

### Acceptance and Action Questionnaire (AAQ-II)

The AAQ-II is one of the most widely used measures of psychological inflexibility. It has been related to a range of psychopathology and has demonstrated good validity and internal consistency with Cronbach's  $\alpha = .84$  and test-retest reliability of .81 after three months and .79 after 12 months (Bond et al., 2011; Meyer, Morissette, Kimbrel, Kruse, & Gulliver, 2013). The most current version is comprised of seven items that are answered on a 7-point Likert-type scale ranging from 1 = never true to 7 = always true and include statements such as "Emotions cause problems in my life" (Bond et al., 2011). Low scores on the AAQ-II represent acceptance and psychological flexibility while high scores indicate a lack thereof. Moreover, results of the AAQ-II are relevant to this study as high scores on this questionnaire have been found to be

related to anxiety sensitivity in adults suffering from a DSM-IV anxiety disorder (Berman, Wheaton, McGrath, & Abramowitz, 2009).

### Valuing Questionnaire (VQ)

The Valuing Questionnaire (Smout, Davies, Burns, & Christie, 2014) measures the extent to which a person lived in alignment with their subjective values during the past week.

Responses to ten items that are rated on a 7-point Likert-type scale from 0 = not true at all, to 6 = completely true providing a progress and obstruction subscale. An example item from the progress scale is, “I felt like I had a purpose in life,” and an example from the obstruction scale is, “When things didn’t go according to plan, I gave up easily.” As one of this study’s interventions includes a values component, participant’s valued living could present an interesting factor. This measure was found to have good convergent validity; internal consistency for both scales was  $\alpha = .87$  (Smout et al., 2014).

### Psychological Distress Measures

#### Depression Anxiety and Stress Scales (DASS-21)

DASS-21 is a popular measure of psychological distress with published norms, which allow us to determine the level of distress experienced by our participants (Antony, Bieling, Cox, Enns, & Swinson, 1998). The DASS-21 includes three scales of seven self-report items. For each on which the participants select the severity with which they have experienced each given state, such as “I found it hard to wind down” within the past week on a four-point scale (0 = never to 3 = almost always). It encompasses questions that estimate the participants’ levels of depression, anxiety, and stress (Henry & Crawford, 2005). As such, the DASS-21 taps into common psychological distress domains and provides a measure of the individuals’ recent experience of

distress. This measure has a reliability of  $\alpha = .93$  for the total scale and demonstrates good construct validity, and satisfactory reliability (Henry & Crawford, 2005).

#### Liebowitz Social Anxiety Scale Self-report (LSAS-SR)

The LSAS-SR is a self-report measure of social anxiety that consists of 24 items depicting social situations on which the participant rates their level of fear and their level of avoidance on a four-point scale (0 = no fear to 3 = severe fear; Baker, Heinrichs, Kim, & Hofmann, 2002). Thus, the scale estimates the participants' fear and avoidance in social interactions, such as "meeting strangers" and performance situations, such as "giving a report to a group." This measure has demonstrated a good test-retest reliability in a 12-week timeframe, and good internal consistency with an overall  $\alpha = .95$ . In this study, results from the LSAS-SR are used to estimate participant's preexisting level of social anxiety as especially high anxiety could interfere with the effectiveness of the intervention.

#### Behavioral Task

##### Trier Social Stress Test (TSST)

The TSST is a widely used performance task to induce anxiety in participants. After obtaining informed consent, participants complete an acclimation period of 30- 45 minutes so that the risk that participants are experiencing stress due to exposure previous to the experiment is minimized; thereafter, participants are given the task to prepare a speech to convince a selection committee that the participant is the ideal candidate for a job. Furthermore, they are told that the members of the committee are trained to analyze nonverbal communication and will record the speech and may ask questions. Participants then deliver their prepared speech in front of an audience and are then asked to complete an arithmetic task in which they count backwards

from 2023 in steps of 17. Every time they make a mistake they are instructed to stop and start over at 2023 (Kudielka et al., 2007).

Although this task has been extensively validated (Kudielka et al., 2007), a recent large meta-analysis demonstrated that such a lengthy acclimation period has no significant benefits and a short period (e.g. less than 10 minutes) can be as effective (Goodman, Janson, & Wolf, 2017). As such, this experiment will use a variation of the traditional test protocol (see full set of instructions in Appendix III). Our task differed in that participants did not have a thirty-minute rest period. Participants were asked to prepare a five-minute speech on one of three given controversial topics. They were told the speech would be recorded and shown to a jury panel of three graduate students who will closely evaluate the quality of the speech and nonverbal expressions. Finally, participants were asked to count backwards from 2023 in steps of 17 as fast and accurately as possible. If they made a mistake, they were asked to start over (“Stop. 2023.”); this continued for five minutes (Kirschbaum, Pirke, & Hellhammer, 1993).

#### Task-related Questions and Manipulation Checks

As willingness to engage with difficult thoughts and feelings is key to the ACT model, participants were also asked to rate how willing they would be to engage in the task again on a 0-10 scale (0 = not at all to 10 = extremely willing). Furthermore, participants rated how likely they were to use the emotion regulation method presented to them in the future (0 = not at all to 10 = extremely likely).

#### Dependent Measures

##### Subjective Units of Discomfort (SUDS)

To briefly estimate participants’ discomfort, they were asked to assess their level of discomfort on a scale of 1 to 100, 1 means no discomfort at all and 100 means extreme

discomfort. SUDS are frequently used to gain a subjective estimate of the person's level of distress in similar studies (see Eifert & Heffner, 2003; Flynn, 2012). Furthermore, a significant correlation between physiological measures and participant's SUDS during distress has been confirmed and it demonstrated sufficient validity when compared to different anxiety measures (Kaplan, Smith, & Coons, 1995; Thyer, Papsdorf, Davis, & Vallecorsa, 1984). Thus, SUDS was used to gain insight into participant's subjective distress throughout the experiment (as described in the procedure section).

### Heart Rate

Heart rate was measured using the NeXus 10 system which links participant's electrocardiography (ECG) data to a software called BioTrace+. A positive, a negative, and a neutral electrode were secured on the participant through wrist-to-wrist placement. Attachment sites were cleaned with alcohol wipes and allowed to air dry before electrodes were attached. The software indicated how clear the ECG reading was and electrode placements were readjusted until an adequate reading was indicated. The ECG recorded participant's heart rate throughout the experiment from the point of rest period until conclusion of the experiment. Hence, it tracked changes in arousal within the participants as it recorded the mean frequency of heartbeats.

Experimental periods (5-minute rest, survey completion, instruction period, preparation period, task performance period, final surveys period) were manually marked by the experimenter during the experiment to distinguish different distress phases. The mean heart rate as determined by beats per minute of each experimental period was used for evaluation of interpersonal and intrapersonal changes in physiological reactivity. To avoid habituation effects,

the mean heart rate of only the first minute of each phase was used and for the final heart rate reading, the last full minute of the recording was used.

Heart rate has been proven to be a reliable indicator of participant's distress and arousal during stressful social evaluative tasks such as speech tasks and mental arithmetic tasks and aids in determining the effectiveness of interventions (Hellhammer & Schubert, 2012; Wager et al., 2009)

## Procedure

### Rest Period and Questionnaires

Upon arrival in the lab, participants were given an informed consent sheet. Participants were randomly assigned to a condition (cognitive reappraisal, acceptance plus values, or control) using a random number generator. After giving informed consent, participants were connected to the three electrodes of the heart rate equipment through wrist-to-wrist placement and rested for three minutes. All self-report measures were completed on a computer through Qualtrics software, which required participants to complete each item. The baseline heart rate was determined through the reading of the last three minutes of the survey phase as most participants reached their lowest heart rates at that time. Participants were then asked to complete self-report measures (demographic measure, health survey, DASS-21, SUDS, AAQ-II, VQ, CERQ-SF, LSAS-SR). Participants then provided their first SUDs rating to assess a baseline distress level. Self-report measures took about 25 minutes to complete.

After completion of the questionnaires, participants received the cognitive reappraisal, acceptance plus values, or control instructions (see Appendix II). Instructions were presented on a computer screen and through an audio recording and were read by a person unfamiliar with the background of the study. Instruction presentation took approximately seven minutes. Participants

then provided a SUDs rating, answered a brief questionnaire about their instructions, and proceeded to complete the TSST stressor task (described in Appendix III).

Participants chose one of the three provided speech topics, prepared their speech for three minutes, and then delivered their speech for up to five minutes. Participants provided SUDs ratings after the preparation, after the speech portion of the TSST task, halfway through the math task, and again after the five-minute arithmetic portion to evaluate coping with the stressor.

As a manipulation check, participants answered whether they believed any part of the instructions or explanations given to them were false, whether they felt like the study was about something other than what they were told, and whether they believed that their recorded speech will be evaluated by three graduate students. After this, participants were debriefed and thanked and provided debriefing consent for their data to be used in the study. All participants received extra credit for their participation.

## ANALYSIS AND RESULTS

### Sample Size

Power analysis was conducted using GPower 3.1. Assuming a medium effect size, it was expected that 42 participants were needed to detect a significant time by condition interaction assuming a power of 0.80 and  $p \leq 0.05$ . However, given the potential for random responding, technical difficulties, and other sources of error, data from 50 participants was gathered. One participant, however, was lost due to a fire alarm test during the study period, leaving 49 participants who completed any portion of the study.

### Data Cleaning and Examination

For each scale, univariate outliers were identified on the basis of z scores greater than  $|3.29|$ , ( $p \leq 0.001$ ) and winsorized to the next highest score plus one (see Field, 2009). No

multivariate outliers were identified across all scales using Mahalanobis distance. Skew and kurtosis indices were used to examine the distribution of continuous variables. Skewness for all continuous variables was within less than three standard deviations and only minor kurtosis was identified in two variables. Given the limited presence of kurtosis these remained uncorrected. Missing data was considered ignorable: analysis of all scales, heart rate scores, and SUDS revealed that 5.8% of data was missing. Based on available information, data was considered to be missing at random.

### Testing Group Equivalence

Prior to evaluating the influence of interventions, potential differences between conditions were assessed. Groups were compared via one-way ANOVA for continuous variables and via Chi-square analysis for categorical variables to explore differences between groups. There were no categorical differences in sex ( $\chi^2(2, N = 49) = 2.34, p = .31$ ) and ethnicity ( $\chi^2(2, N = 49) = 11.543, p = .317$ ). Analysis via ANOVA compared intervention groups for base heart rate ( $F(2,37) = 2.718, p = .08$ ), obstruction of values ( $F(2,48) = .337, p = .715$ ), psychological inflexibility ( $F(2,48) = .014, p = .986$ ), social anxiety ( $F(2,48) = 1.402, p = .256$ ), and initial SUDS rating ( $F(2,48) = .079, p = .925$ ) (for further comparisons see Table 1 and Table 2). Differences between intervention groups were not statistically significant; groups were deemed similar enough in these factors to be compared for main effects.

### Exploring Associations Between Variables

Bivariate correlations were used to examine associations between symptom and psychological process measures (correlations presented in Table 3). As expected, psychological inflexibility demonstrated moderate positive correlations with measures of depression, anxiety, stress, and social anxiety. Weak to medium positive relationships between negative emotion

regulation strategies (CERQ-SF self-blame and catastrophizing) and psychological inflexibility (AAQ-II) were also obtained. Additionally, weak positive relationships between valued living (VQ) and use of emotion regulation techniques (CERQ-SF) were obtained. Values progress (living more closely aligned with one's values) was positively related to positive reappraisal and positive refocusing. Values obstruction (living somewhat opposing to one's values) was positively related to catastrophizing and was negatively correlated with positive reappraisal. Consistent with expectations, symptoms of psychopathology (DASS-21 and LSAS-SR) were related to emotion regulation strategies (CERQ-SF). Catastrophizing was positively related to symptoms of depression, stress, anxiety, and social anxiety. Depression was also positively correlated with self-blame. Unexpectedly, no relationships were obtained between rumination and psychopathology.

### Evaluating the Impact of Brief Interventions

To evaluate the impact of condition on participant distress (measured by SUDs) and heart rate response, a repeated measures ANOVA was used. The effect of condition (acceptance plus values, reappraisal, control) by time (post survey SUDs, post speech preparation SUDs, post speech SUDs and mid math SUDs) was examined. Repeated measures ANOVA did not approach significance for the SUDs rating over time when comparing the three different conditions, Wilks' Lambda = .910,  $F(6,78) = .559$ ,  $p = .762$ . Although insignificant, the data trended in the expected manner: Participants in the control condition reported the highest subjective distress. Participants in the intervention conditions reported very similar levels with slightly lower distress in the acceptance plus values condition (for graph see Figure 1).

It was also expected that the heart rate measure would show that the acceptance intervention minimized physiological distress more than the reappraisal intervention and that

there would be the highest distress in the control condition. There was no significant effect of time on distress in the separate interventions, Wilks' Lambda = .793,  $F(8,64) = .984$ ,  $p = .456$ . Looking at the respective graph (see Figure 2), although not statistically significant, there were some differences in base heartrate between participants from the different conditions; when regarding only the actual change over time, there appears to be little to no difference in physiological stress response between conditions.

The second hypothesis was that participants in the acceptance and values condition would have a steeper heart rate recovery after the end of the stress tasks. A repeated measures ANOVA that investigated change of heart rate over time found no significant effect; Wilks' Lambda = .964,  $F(2,32) = .595$ ,  $p = .558$ . Regarding the graph (see Figure 3), it appears that all participants experienced an almost even decrease in heartrate after the math stress task.

Further analysis examined the subjective distress change scores and heart rate change over time based from the base SUDS rating post surveys and base heart rate measure during the last three minutes of the survey phase. For the repeated measures ANOVA investigating subjective distress over time there was no significant effect, Wilks' Lambda = .939,  $F(6,76) = .407$ ,  $p = .873$ . The data trend displayed in the graph (see Figure 4) shows participants in the control condition to have reported the highest distress, and those in the cognitive reappraisal condition to have reported the lowest change in subjective distress ratings. There was also no significant effect of time on heart rate in the separate interventions, Wilks' Lambda = .767,  $F(8,56) = .991$ ,  $p = .453$ . Graphic representation of this repeated measure (see Figure 5) illustrates that there was very little difference between physiological responses between the different conditions.

## DISCUSSION

The present study aimed to investigate the effectiveness of reappraisal and acceptance plus values compared to a control condition during a social stress task. It was hypothesized that participants who received the acceptance plus values intervention would experience lower levels of distress than those who received the reappraisal intervention. These expected relationships were not demonstrated in this study. Data trends indicated that participant distress in the treatment conditions was lower than in the control condition; however, there was little difference between the two treatment conditions. This similarity between the different conditions is consistent with others' findings that acceptance interventions were about as effective as cognitive reappraisal interventions (Hofmann et al., 2009; Levitt et al., 2004; Wolgast et al., 2011). This study hoped to find a stronger effect for the acceptance plus values intervention as the values component was integrated in the acceptance intervention as values are an integral driver of acceptance. Unfortunately, the desired effect was not demonstrated in the current study.

Several possibilities exist for our failure to demonstrate a difference between the intervention conditions and between the interventions and the control group. First, our sample was collected in South Texas and was comprised of a majority of Hispanic participants. Samples in previous component studies had a majority of Caucasian participants and most therapy components and techniques were empirically validated in mostly Caucasian samples. Potentially, our findings suggest that the interventions may be less applicable to individuals of other cultural backgrounds. Cultural considerations represent a substantial concern for applicability of evidence-based treatments more broadly, and the potential need to adapt interventions to groups other than those within which they were developed and validated has been highlighted by a number of scholars (Horrell, 2008; Whaley & Davis, 2007).

Although prior examinations have successfully demonstrated differences in nonclinical samples with varied emotion regulation strategies (Gregg et al., 2014; Hofmann et al., 2009; Low et al., 2008), use of a clinical sample may result in a greater treatment effect. Participants who are experiencing emotional distress may struggle more with social stressor tasks, thus, it is possible that such a sample would have demonstrated a greater difference. Notably, a number of the component studies cited prescreened participants for some experience of associated distress or used clinical populations, potentially suggesting that the impact of the intervention may be more apparent in these participants (Campbell-Sills et al., 2005; Eifert & Heffner, 2003; Levitt et al., 2004; Wagener & Zettle, 2011). As such, individuals who do not experience impairing levels of social anxiety, may not find the intervention to be meaningful in their own lives and could be less motivated to learn and apply the emotion regulation technique. Moreover, as they do not experience clinical distress they likely already use techniques that regulate their distress successfully.

Additionally, we did not replicate physiological differences in heart rate reactivity demonstrated by some component study examinations. Component studies similar to the present study also investigated heart rate and found significant differences between groups, two out of three of those studies found these effects to be in favor of the acceptance condition (Campbell-Sills et al., 2005; Hofmann et al., 2009; Low et al., 2008). These effects were not replicated in the current study. Significant loss of data, and the small sample may partially account for the null findings. Furthermore, heart rate is a relatively broad measure of physiological reactivity, and a closer look at heart rate variability may be beneficial. Relationships between heart rate variability and anxiety disorders and distress have been established in previous research (Alvares et al., 2013; Pittig et al., 2012). Heart rate provides an average of beats per minute whereas heart rate

variability measures the time in between beats and can provide detailed information on high and low frequency; as such, heart rate variability may provide more detailed information of the psychophysiological reaction to stressors (Thayer, Åhs, Fredrikson, Sollers III, & Wager, 2012).

There is also a possibility that our choice of acceptance plus values task was not sufficiently relevant to participants' values. In the current study, participants were given a list of three topics to choose from. These three topics were meant to be controversial enough so that participants could assume a position and formulate arguments. However, the premise of the acceptance plus values intervention was to create acceptance for distress in meaningful tasks. Thus, it is possible that performing well in the speech task or sharing their thoughts on a controversial topic did not align with some participants' values. Consistent with this explanation, a broader values clarification task conducted by Gregg and colleagues (2014) found a decrease in participant physiological cortisol stress response during the TSST.

Finally, it is possible that our hypothesis that the addition of values was necessary for successful coping with stressful situations was incorrect. Potentially, there is no difference between acceptance and acceptance plus values interventions (as demonstrated by Flynn, 2012). However, it is worthwhile to note that our focus on physiological and psychological measures of distress, while commonly used in component studies, may not be the outcomes we may want to focus on. ACT differs from CBT and other more traditional approaches in its emphasis on behaving in an adaptive manner and pursuing the things that are important, rather than distress reduction as its primary goal. Thus, it is possible for an ACT based intervention to be successful in that it enables individuals to engage in important life tasks while experiencing distress, rather than eliminates the experience of distress. A number of ACT scholars take the perspective that

some distress is a normal part of life and the emphasis on reducing it should not be the ultimate goal (Bach & Hayes, 2002; McCracken & Vowles, 2006).

In addition to the examination of intervention impact, the current study explored associations between psychological inflexibility and constructs relevant to anxiety and emotion regulation. As expected small positive relationships were found between psychological inflexibility and catastrophizing and self-blame, consistent with other's findings (Garnefski et al., 2002). However, rumination, a key element of maladaptive cognitions in anxiety, was statistically unrelated to psychological inflexibility in the present study. This could be due to factors such as a lack of sufficient overall psychological distress in the present sample (as DASS-21 scores were in the normal to moderate range), cultural differences, and differential expression of symptoms of anxiety within our primarily Hispanic sample.

### Limitations

#### Sample

A main limitation of this study was the small number of participants; a statistically significant effect may be detected with a larger participant pool. Estimate of number of participants needed was based on previous component studies and studies with a small sample size that still reached significant effects may have skewed the expected sample size. Furthermore, there were very few male participants and all participants were undergraduate students taking psychology classes. Moreover, this was a non-clinical population and none of the participants reported severe symptoms of psychopathology in self-report measures (DASS-21 & LSAS-SR). Therefore, the sample lacked diversity in these respects.

## Dose and Clarity of Intervention

The dose and content of the intervention present another limitation to this study. When asked what the intervention instructed participants to do, a substantial portion of participants did not answer these intervention checks correctly; in fact, over half of the participants in the cognitive reappraisal condition answered at least one of these multiple-choice questions incorrectly. As such, it is possible that the intervention instructions were unclear and should be revised. Moreover, giving participants seven minutes to process a potentially novel approach to emotion regulation and expecting them to apply this technique during an immediately following stressful situation may have been too sudden. Therapy treatment takes place over several weeks and these techniques are embedded in a conceptual framework. Taking these components out of the personalized context may have made it more difficult for participants to comprehend and apply the respective techniques.

## Loss of Data

Other factors that may have contributed to the lack of findings were unforeseen difficulties in the heart rate data collection. The BioTrace+ software experienced a glitch which led to significant data loss. Further data loss was due to a power outage, a fire alarm, participant's skin sensitivity, and a participant's allergic reaction to the heart rate sensors. Missing data further decreases the power of the study and may contribute to the lack of findings in the heart rate measure especially as previous similar component studies have found main effects in heart rate measures (as seen in Campbell-Sills et al., 2005; Hofmann et al., 2009; Low et al., 2008).

## Unforeseen Events

Shortly before the beginning of the study there was a deadly church shooting in a nearby town and during the duration of data collection there was also a school shooting in Florida. One of the speech topics provided to participants related to gun violence and gun legislation. These aforementioned recent events were distressing for the general public and during the study some participants addressed these shootings in their speeches and some even personally knew some of the victims from the nearby church shooting. The stress task was meant to evoke social anxiety in participants. However, given these events, participants who engaged in this speech topic may have felt more distress than anticipated by experimenters.

## Conclusions and Future Directions

The present study tried to implement a component design to identify factors that may relate to the success of either acceptance or reappraisal for anxiety regulation, but unfortunately, no significant results were found. Although many individuals with social anxiety benefit from CBT, it is not effective for everyone (Barlow et al., 2016; Foa & Kozak, 1997) and some evidence suggests that CBT is significantly less effective for individuals with severe symptoms of social anxiety (Acarturk, Cuijpers, van Straten, & de Graaf, 2008). However, CBT is a package containing many components (including those that may be found in behavioral therapy, such as exposure). The key aspect of CBT that differentiates it from many other treatments is cognitive reappraisal, which was compared here to the key distinguishing aspect of ACT, acceptance of difficult thoughts and feelings in the service of values. A better understanding of the components contributing to treatment effectiveness could impact treatment planning and potentially lead to more successful outcomes or shorter treatment durations. Even though we did not find the hypothesized effects, the investigation of variables that facilitate treatment

effectiveness should continue in future research. Based on the findings of this study, some alterations to the study protocol may be warranted.

First, repeating the study with a different sample may yield different results. Although these components we used have yielded effective results in clinical (Campbell-Sills et al., 2005; Eifert & Heffner, 2003; Levitt et al., 2004) as well as nonclinical samples (Gregg et al., 2014; Hofmann et al., 2009; Low et al., 2008; Wolgast et al., 2011), individuals struggling with anxiety may demonstrate a larger intervention impact. Moreover, the sample in this current study lacked diversity in gender, age, and educational background. A larger sample with a more diverse participant pool may obtain different results. Moreover, studies that investigated and identified current evidence-based treatments have used largely Caucasian populations and included very few individuals from cultural minorities (Whaley & Davis, 2007), whereas our sample identified primarily as Latino/Hispanic. Thus, it is unclear whether the treatment components and approaches to teaching these components can be effective in a minority sample and future studies could investigate this further.

In a therapy setting, techniques are explained to the client by a trained clinician. Therefore, the client can ask questions and engage in a personalized dialogue that can add to the understanding of therapy components. In the present study, a significant number of individuals failed to fully understand the instructions. As such, it might be more effective if trained experimenters delivered the intervention in-person rather than providing an audio and text. This would be a more flexible approach to enhance the participant's understanding as instructions can be repeated or explained differently, and the delivery can be slowed down if needed to provide a more engaging approach to the participant.

Although similar component studies found significant results using a variety of stress tasks such as film clips (Campbell-Sills et al., 2005; Wolgast et al., 2011), Carbon Dioxide enriched air (Eifert & Heffner, 2003; Levitt et al., 2004), and the TSST as used in the present study (Gregg et al., 2014; Hofmann et al., 2009), future research could also try to alter the content of the stress task: if participants get to choose their own topic for the speech task, it could enhance the effectiveness of the values intervention. The premise of the values technique is to engage in tasks that are personally meaningful (Hayes, 2004); however, if participants have to pick from a provided topic list, there is a chance that none of the provided issues are meaningful to them. Choosing their own topics gives participants the opportunity to talk about something that is more closely aligned with their values. Additionally, investigation of broader outcomes (willingness to experience distress in the service of values, behavioral approach) may be helpful in future studies, such that the intervention may be evaluated in a manner that is more consistent with the functional impact expected from an ACT based intervention. Potentially these sorts of evaluations may be more adequate in assessing the impact of ACT informed components.

Possibly, it could be more effective to deliver the study in multiple phases: A first phase could prescreen potential participant for anxiety, provide the intervention, and ask them to apply it in their daily lives. A week later or so the next phase of the experiment could occur in which experimenters check on participant's understanding of the content of the given intervention and possibly deliver the intervention again. Then, after time to internalize the intervention techniques, participants could come to the lab to complete the stress test. Thus, individuals would have more time to process the emotion regulation techniques and possibly find them more meaningful as they can apply them to their daily lives before completing a somewhat artificial stress test in the lab.

Finally, although component studies present a feasible approach to testing specific techniques from a therapy package, they are not comparable to full treatment randomized controlled trials. Randomized controlled trials are needed to further substantiate ACT as a treatment for clinical populations with social anxiety (Swain, Hancock, Hainsworth, & Bowman, 2013) and can help identify contextual variables that contribute to the effectiveness of ACT as well as CBT. As such, randomized controlled trials that implement ACT or CBT as a whole treatment over the course of multiple weeks or months could provide further insight into variables affecting treatment effectiveness and can thus support optimization of treatment planning.

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Table 1

*Comparison of Gender and Ethnicity*

	Overall N (percent)	Acceptance plus Values N (percent)	Reappraisal N (percent)	Control N (percent)
Gender				
Male	4 (8.2%)	2 (13.3%)		2 (11.8%)
Female	45 (91.8%)	13(86.7%)	17 (100%)	15 (88.2%)
Ethnicity				
Hispanic	28 (57.1%)	8 (53.3%)	9 (52.9%)	11 (64.7%)
Caucasian	12 (24.5%)	6 (40%)	3 (17.6%)	3 (17.6%)
African American	4 (8.2%)		3 (17.6%)	1 (5.9%)
Other	5 (10.1%)	1 (6.7%)	2 (11.8%)	2 (11.8%)

Table 2

*Comparison of Psychopathology, Baseline Heart Rate, and Baseline SUDS*

	Overall M (SD)	Acceptance plus Values M (SD)	Reappraisal M (SD)	Control M (SD)
DASS-21 Stress	8.04 (4.2)	7.73 (4.46)	7.12 (3.08)	9.24 (4.87)
DASS-21 Anxiety	5.45 (4.31)	6.07 (5.3)	4.06 (3.63)	6.3 (3.85)
DASS-21 Depression	4.82 (4.52)	5.27 (4.38)	3.76 (4.09)	5.47 (5.09)
LSAS-SR Social Anxiety	54.94 (27.97)	53.27 (34.7)	47.82 (19.98)	63.53 (27.56)
Baseline Heart rate	80.6 (10.8)	74.8 (11.6)	81.9 (7.6)	84.7 (11.3)
Baseline SUDS	43.2 (35.3)	40.9 (36.1)	42.5 (35.6)	45.8 (36.2)

Table 3

*Bivariate Correlations*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-														
2	-.38*	-													
3	.70*	-.43*	-												
4	-.11	-.08	-.22	-											
5	.43*	-.28	.18	.25	-										
6	.05	-.15	-.08	.25	.25	-									
7	-.09	.31*	-.09	.22	-.08	-.09	-								
8	-.07	.14	-.02	.15	.11	.20	.50*	-							
9	-.09	.47*	-.34*	.27	-.02	.16	.19	.31*	-						
10	-.01	.09	-.02	.37*	.03	.21	.39*	.31*	.31*	-					
11	.37*	-.21	.41*	.08	.46*	.33*	-.07	-.08	-.15	-.09	-				
12	.28	.03	.23	-.13	.07	.17	-.08	-.07	-.01	-.15	.54*	-			
13	.63*	-.54*	.70*	-.11	.45*	.11	-.01	.12	-.29*	-.05	.49*	.25	-		
14	.55*	-.39*	.54*	-.21	.33*	.05	.07	.07	-.23	-.10	.37*	.13	.75*	-	
15	.53*	-.18	.51*	-.12	.18	-.03	.14	-.03	-.28	-.02	.39*	.23	.59*	.63*	-
16	.48*	-.34*	.61*	-.08	.17	.02	.02	-.01	-.25	-.16	.49*	.09	.59*	.41*	.62*

\*:  $p < .05$

1 = AAQ II, 2 = VQ progress, 3 = VQ obstruction, 4 = CERQ-SF acceptance, 5 = CERQ-SF self-blame, 6 = CERQ-SF rumination, 7 = CERQ-SF positive refocusing, 8 = CERQ-SF refocus on planning, 9 = CERQ-SF positive reappraisal, 10 = CERQ-SF putting into perspective, 11 = CERQ-SF catastrophizing, 12 = CERQ-SF other blame, 13 = DASS-21 depression, 14 = DASS-21 stress, 15 = DASS-21 Anxiety, 16 = LSAS-SR

Figure 1

*Subjective Units of Distress over Time*

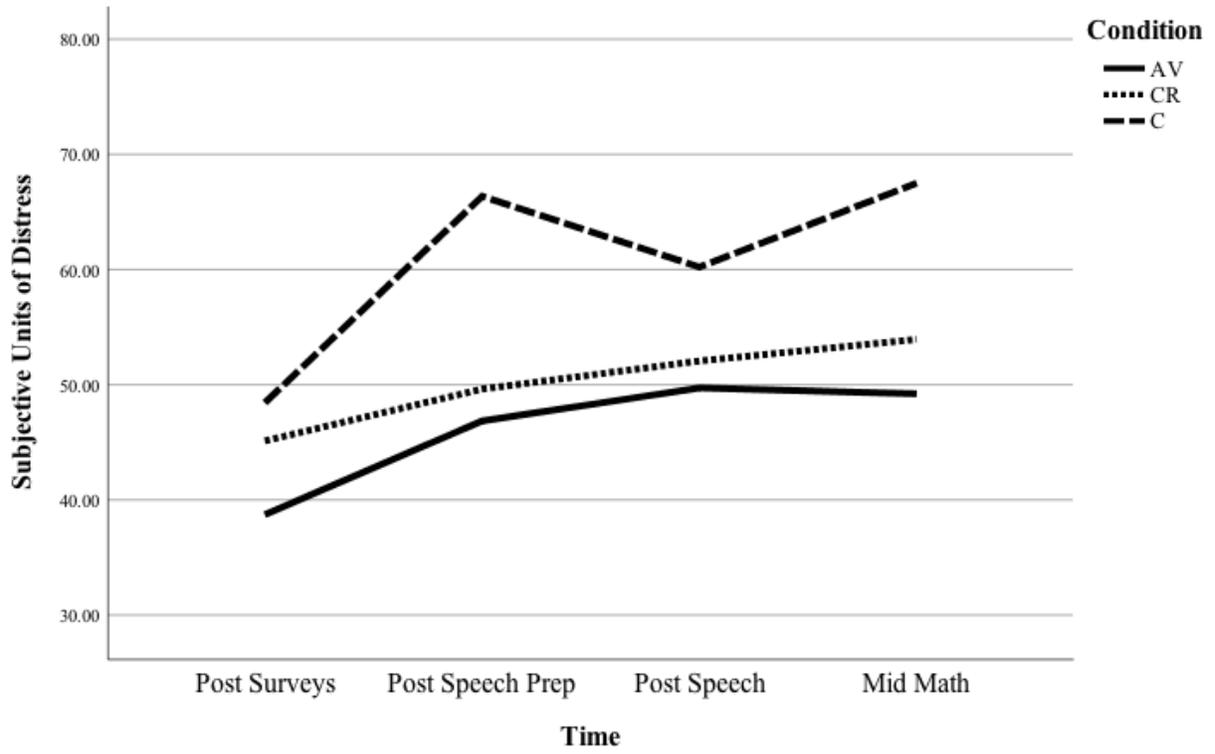


Figure 2

*Heart Rate over Time*

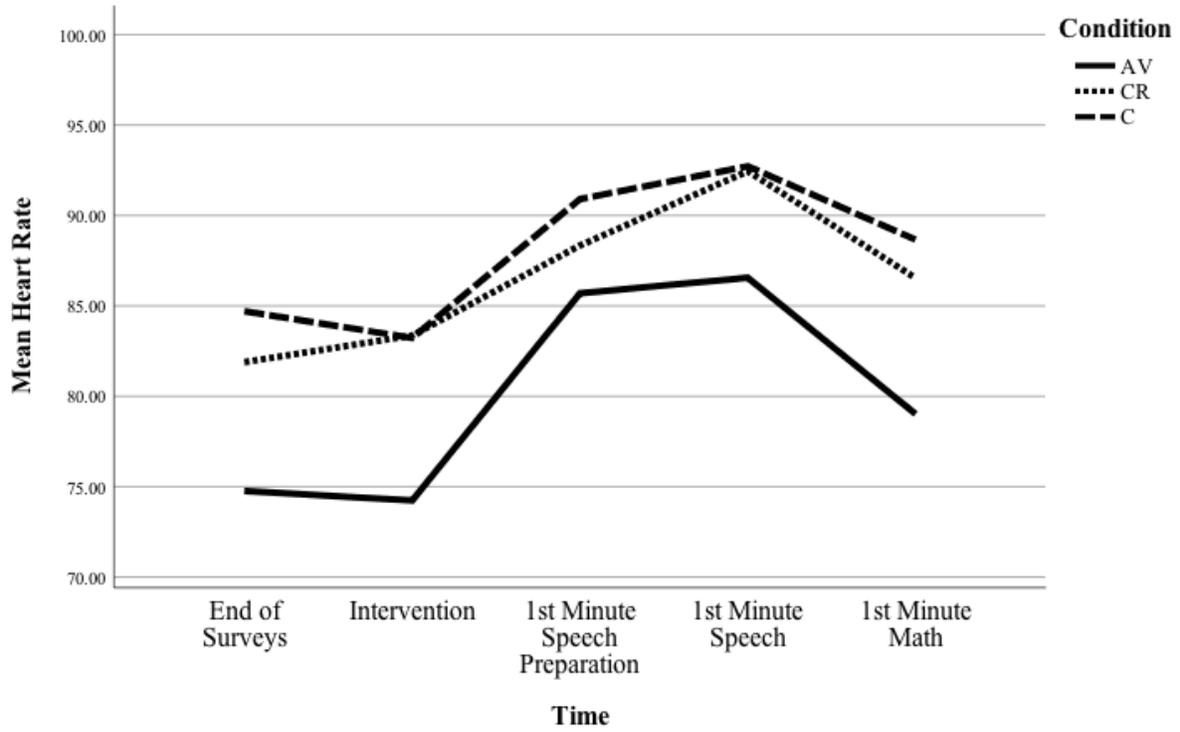


Figure 3

*Heart Rate Recovery*

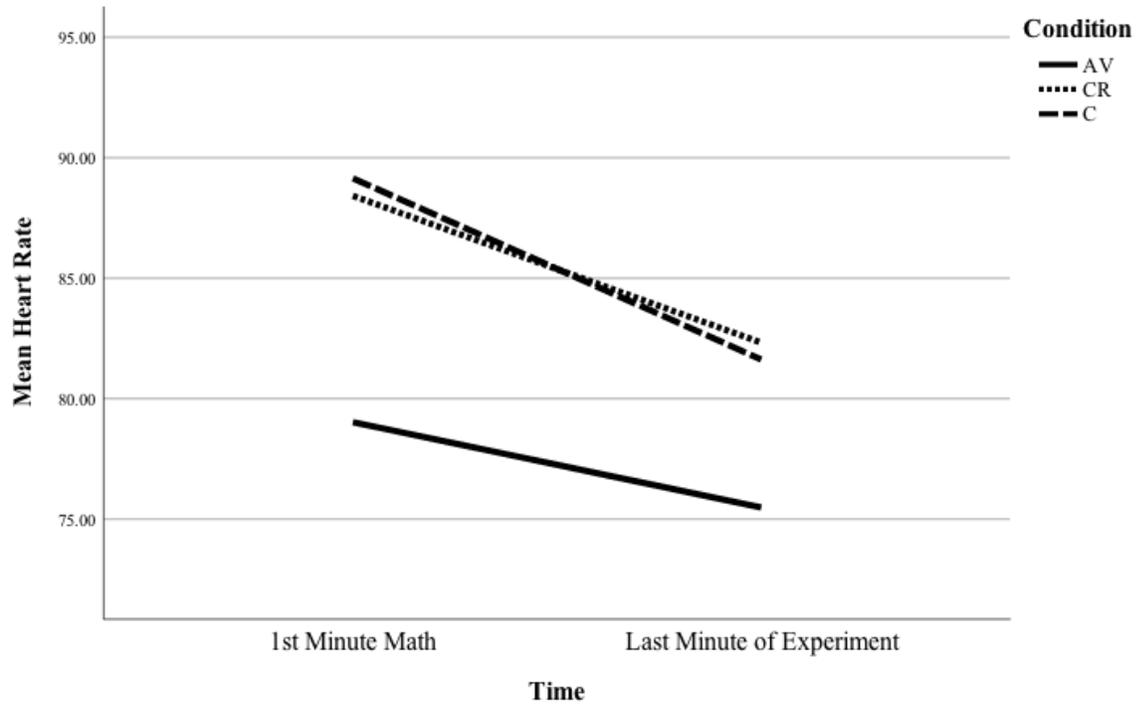


Figure 4

*Change in Subjective Units of Distress over Time*

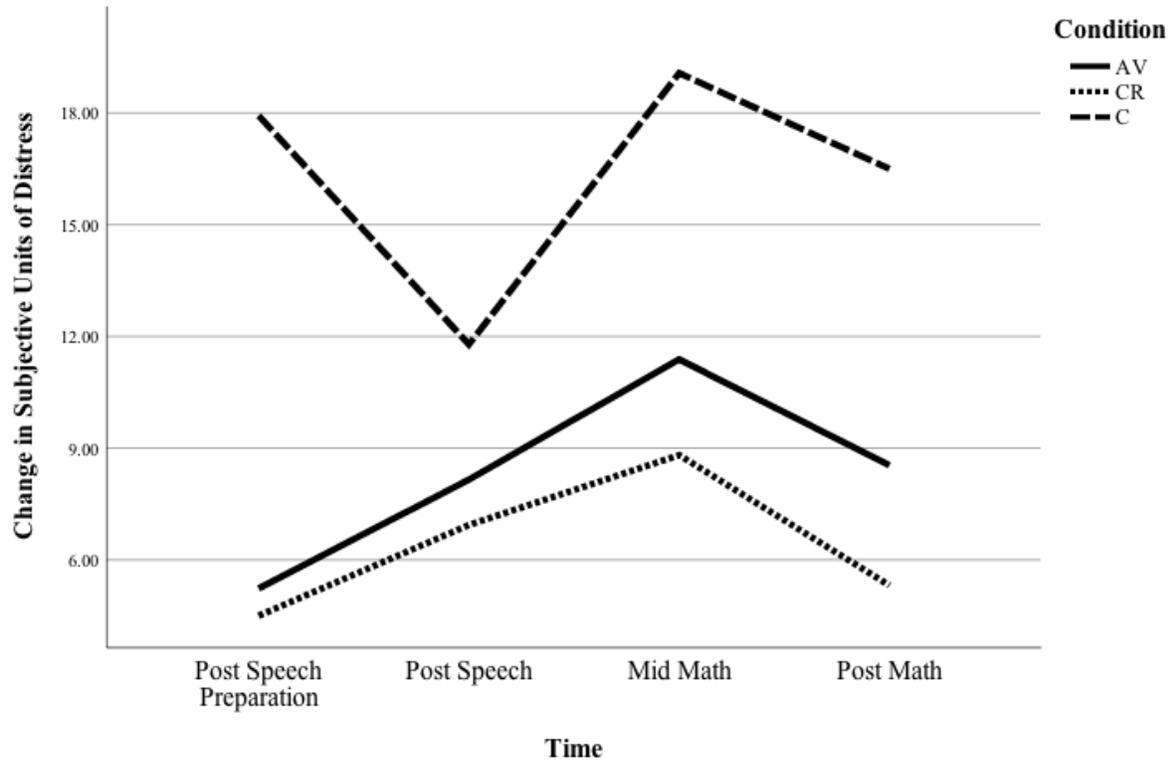
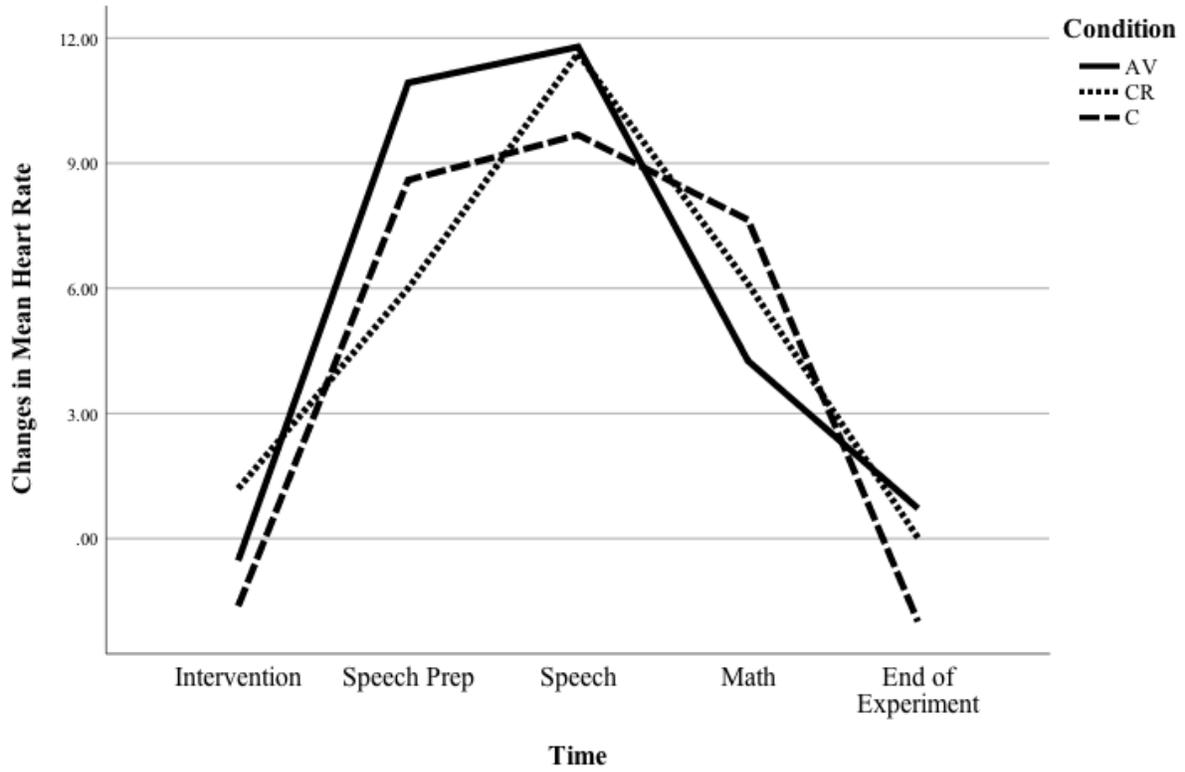


Figure 5

*Change in Heart Rate over Time*



APPENDIX I: SELF-REPORT MEASURES

Demographics Questionnaire

1. Sex						
Male				Female		
2. Age (fill in)						
3. Major (fill in)						
4. Ethnicity						
African American	Asian	Caucasian	Hispanic	Native American	Multiracial	Other:
5. Country of Origin						
USA		Mexico			Other:	
6. Level of College Education						
Freshman	Sophomore	Junior	Senior	Other:		

Health Questionnaire

1. Have you ever been diagnosed with a heart condition?	
No	Yes:
2. Have you ever been diagnosed with a condition that can affect your heart rate (e.g. diabetes, high cholesterol, etc.)?	
No	Yes:

3. Do you currently have a pacemaker?	
No	Yes
4. Do you currently take any medication that affects your heart rate?	
No	Yes
5. Have you smoked a cigarette- even one puff – during the last seven days?	
No	Yes. <i>If yes</i> , how many cigarettes did you smoke on an average day? _____
6. Did you drink any alcohol during the last seven days?	
No	Yes. <i>If yes</i> , how many alcoholic drinks did you drink on an average day? _____
7. Did you drink any caffeine during the last seven days?	
No	Yes. <i>If yes</i> , how many caffeinated drinks did you drink on an average day? _____
8. Did you engage in a rigorous workout (e.g. running, crossfit) in the last seven days?	
No	Yes. <i>If yes</i> , how many hours did you work out on an average day? _____
9. Are you currently using medication for a psychological difficulty? (e.g. ADHD, anxiety, depression)	
No	Yes. <i>If yes</i> , what medication are you using or what difficulty are you treating? _____
10. Have you used medication for a psychological difficulty in the past?	

No	Yes. <i>If yes</i> , what medication did you use or what difficulty were you treating?
11. Are you currently using psychotherapy/counseling services to treat a psychological difficulty?	
No	Yes
12. Have you used psychotherapy/ counseling services to treat a psychological difficulty in the past?	
No	Yes

CERQ- SF

**How do you cope with events?**

Everyone gets confronted with negative or unpleasant events now and then and everyone responds to them in his or her own way. By the following questions you are asked to indicate what you generally think, when you experience negative or unpleasant events.

	<b>(almost never</b>	<b>some-times</b>	<b>regu-larly</b>	<b>often</b>	<b>(almost always</b>
1. I think that I have to accept that this has happened	1	2	3	4	5
2. I often think about how I feel about what I have experienced	1	2	3	4	5
3. I think I can learn something from the situation	1	2	3	4	5
4. I feel that I am the one who is responsible for what has happened	1	2	3	4	5

5. I think that I have to accept the situation	1	2	3	4	5
6. I am preoccupied with what I think and feel about what I have experienced	1	2	3	4	5
7. I think of pleasant things that have nothing to do with it	1	2	3	4	5
8. I think that I can become a stronger person as a result of what has happened	1	2	3	4	5
9. I keep thinking about how terrible it is what I have experienced	1	2	3	4	5
10. I feel that others are responsible for what has happened	1	2	3	4	5
11. I think of something nice instead of what has happened	1	2	3	4	5
12. I think about how to change the situation	1	2	3	4	5
13. I think that it hasn't been too bad compared to other things	1	2	3	4	5
14. I think that basically the cause must lie within myself	1	2	3	4	5
15. I think about a plan of what I can do best	1	2	3	4	5
16. I tell myself that there are worse things in life	1	2	3	4	5
17. I continually think how horrible the situation has been	1	2	3	4	5

18. I feel that basically the cause lies with others	1	2	3	4	5
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AAQ-II

Below you will find a list of statements. Please rate how true each statement is for you by selecting an option from the scale.

1. My painful experiences and memories make it difficult for me to live a life that I would value.						
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true
2. I'm afraid of my feelings.						
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true
3. I worry about not being able to control my worries and feelings.						
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true
4. My painful memories prevent me from having a fulfilling life.						
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true

5. Emotions cause problems in my life.						
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true
6. It seems like most people are handling their lives better than I am.						
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true
7. Worries get in the way of my success.						
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true

VQ

<b>Valuing Questionnaire</b>						
Please read each statement carefully and then circle the number which best describes how much the statement was true for you DURING THE PAST WEEK, INCLUDING TODAY.						
1) I spent a lot of time thinking about the past or future, rather than being engaged in activities that mattered to me						
0 Not at all true	1	2	3	4	5	6 Completely true
2) I was basically on "auto-pilot" most of the time						
0 Not at all true	1	2	3	4	5	6 Completely true
3) I worked toward my goals even if I didn't feel motivated to						
0 Not at all true	1	2	3	4	5	6 Completely true

4) I was proud about how I lived my life						
0 Not at all true	1	2	3	4	5	6 Completely true
5) I made progress in the areas of my life I care most about						
0 Not at all true	1	2	3	4	5	6 Completely true
6) Difficult thoughts, feelings or memories got in the way of what I really wanted to do						
0 Not at all true	1	2	3	4	5	6 Completely true
7) I continued to get better at being the kind of person I want to be						
0 Not at all true	1	2	3	4	5	6 Completely true
8) When things didn't go according to plan, I gave up easily						
0 Not at all true	1	2	3	4	5	6 Completely true
9) I felt like I had a purpose in life						
0 Not at all true	1	2	3	4	5	6 Completely true
10) It seemed like I was just 'going through the motions', rather than focusing on what was important to me						
0 Not at all true	1	2	3	4	5	6 Completely true

#### DASS-21

Please read each statement and select 0, 1, 2, or 3, which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement. The rating scale is as follows: 0 Did not apply to me at all-NEVER; 1 Applied to me to some degree, or some of the time- SOMETIMES; 2 Applied to me to a considerable degree, or a good part of time- OFTEN; 3 Applied to me very much, or most of the time- ALMOST ALWAYS

1. I found it hard to wind down	Never 0	Sometimes 1	Often 2	Almost Always 3
2. I was aware of dryness in my mouth	Never 0	Sometimes 1	Often 2	Almost Always 3
3. I couldn't seem to experience any positive feelings at all	Never 0	Sometimes 1	Often 2	Almost Always 3
4. I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	Never 0	Sometimes 1	Often 2	Almost Always 3
5. I found it difficult to work up the initiative to do things	Never 0	Sometimes 1	Often 2	Almost Always 3
6. I tended to over-react to situations	Never 0	Sometimes 1	Often 2	Almost Always 3
7. I experienced trembling (e.g. in the hands)	Never 0	Sometimes 1	Often 2	Almost Always 3
8. I felt that I was using a lot of nervous energy	Never 0	Sometimes 1	Often 2	Almost Always

				3
9. I was worried about situations in which I might panic and make a fool of myself	Never 0	Sometimes 1	Often 2	Almost Always 3
10. I felt that I had nothing to look forward to	Never 0	Sometimes 1	Often 2	Almost Always 3
11. I found myself getting agitated	Never 0	Sometimes 1	Often 2	Almost Always 3
12. I found it difficult to relax	Never 0	Sometimes 1	Often 2	Almost Always 3
13. I felt down-hearted and blue	Never 0	Sometimes 1	Often 2	Almost Always 3
14. I was intolerant of anything that kept me from getting on with what I was doing	Never 0	Sometimes 1	Often 2	Almost Always 3
15. I felt I was close to panic	Never 0	Sometimes 1	Often 2	Almost Always 3

16. I was unable to become enthusiastic about anything	Never 0	Sometimes 1	Often 2	Almost Always 3
17. I felt I wasn't worth much as a person	Never 0	Sometimes 1	Often 2	Almost Always 3
18. I felt that I was rather touchy	Never 0	Sometimes 1	Often 2	Almost Always 3
19. I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increased, hear missing a beat)	Never 0	Sometimes 1	Often 2	Almost Always 3
20. I felt scared without any good reason	Never 0	Sometimes 1	Often 2	Almost Always 3
21. I felt that life was meaningless	Never 0	Sometimes 1	Often 2	Almost Always 3

LSAS-SR

Answer the following questionnaire with the most suitable answer listed below. Base your answers on your experience in the past week.

Understanding the Situation	Fear or Anxiety				Avoidance			
1. Telephoning in public	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
2. Participating in small groups	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
3. Eating in public places	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
4. Drinking with others in public places	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
5. Talking to people of authority	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
6. Acting, performing or giving a talk in front of an audience	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually

7. Going to a party	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
8. Working while being observed	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
9. Writing while being observed	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
10. Calling someone you don't know very well	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
11. Talking with people you don't know very well	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
12. Meeting strangers	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
13. Urinating in a public bathroom	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually

14. Entering a room when others are already seated	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
15. Being the center of attention	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
16. Speaking up at a meeting	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
17. Taking a written test	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
18. Expressing appropriate disagreement or disapproval to people you don't know very well	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
19. Looking at people you don't know	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually

very well in the eyes								
20. Giving a report to a group	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
21. Trying to pick up someone	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
22. Returning goods to a store where returns are normally accepted	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
23. Giving an average party	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually
24. Resisting a high pressure salesperson	None	Mild	Moderate	Severe	Never	Occasionally	Often	Usually

## APPENDIX II: COGNITIVE REAPPRAISAL, ACCEPTANCE + VALUES, AND CONTROL INSTRUCTIONS

### Cognitive Reappraisal Instructions

Let us spend some time now discussing a way that you can approach an upcoming task, and negative thoughts and feelings in general. Human beings tend to do what they can to avoid experiencing negative thoughts and feelings, but sometimes these cannot be avoided. In fact, irrational negative thoughts are known to cause us unnecessary suffering. Let's imagine a person who is kind, well dressed, successful, and likeable. Logically, we would not expect this person to have trouble making friends or having good relationships at work. However, this person does not see himself or herself as others see them. When they were growing up, they had a lisp, which was later corrected with speech therapy. Other children made fun of them and there were two to three years when they had few friends. Although this experience is long gone, the person still holds on to the idea that they are unlikable and strange. All of their interactions with other people are colored by this thought, even though it is irrational, and it has a negative effect on their life. A person who thinks that others will not like them might become nervous when they are expected to meet new people, due to their belief that others will not be kind to them. Similarly, if they are giving a presentation in class, they might worry that others will think they look foolish and are doing a terrible job. They might become anxious just thinking about having to do something like this, because of their irrational negative thoughts about how others will be mean and judgmental, even if these thoughts have nothing to do with reality. In this way, the way we think about the world can change how we feel about it. Seeing social situations as unpleasant and feeling very nervous about them, this person might change their behavior to avoid them. They might not strike up conversation with classmates, might avoid asking an attractive partner out, or

might not raise their hand to speak up in class. Their inaccurate worries about being judged will keep them from being able to live their life fully and can even make them very unhappy and unsatisfied. A problem with this way of thinking is that a person who never has a chance to practice being in a scary social situation never gets to learn that it might not always be so bad. Sure, there are some people who will be unkind or uninterested in chatting or being friends, but if you never try to talk to anyone you will also miss on the people who might have been interested in forming a relationship. Similarly, if you never speak up in class, you don't get the chance to learn that, sometimes a professor will think you said something particularly smart or insightful. You can see how, if you let these thoughts continue unchallenged they can really cause a problem for someone.

Although you might not have negative thoughts that make you really unhappy or affect your life to such a big extent, you might have had a time that you experienced a negative thought. Maybe you were thinking about speaking up in class, but thought "No, that's stupid. You'll look like an idiot." Maybe you wanted to ask a girl/guy out, but stopped yourself because you thought "They aren't into me, they can do way better." Or maybe you even had a struggle when presenting in front of class, where you thought "I'm doing a terrible job and now everyone knows I don't really know anything." Let's take one of these thoughts or a different one that you might have had during a difficult experience. Think about a time that you judged yourself harshly. What were you thinking? Pause. Now I want you to think about anything that might contradict this to look at the situation more accurately and objectively. Let's take the speaking up in class example, being worried that you'll look stupid and other people will judge you. One way you might try to disprove this thought would be by remembering times that you've expressed your opinion and people have reacted positively. Maybe you saw some people listening

attentively or the professor nodding their head. Maybe your professor said you made a good point. Probably, there were some times you could remember when someone responded well to what you said. And even if something bad did happen, let's say the professor said "No, that's not right" you might have been able to deal with the situation. Even if you felt disappointed or frustrated or even sad for the rest of the day, you were eventually OK. It's a situation you probably forgot about five months from then. Thinking about things in these two ways, finding things that disprove your irrational thought and remembering that even if things don't go your way, you can be OK are a good way to deal with negative thoughts.

If you have any negative thoughts in this upcoming task, I want you to practice the technique described above. Remind yourself that there is no reason to feel anxious and that it's just an experiment that won't have a real impact on your life. You will not receive a grade and none of your professors, classmates, or friends will evaluate your performance on this task. This situation will pose no threat to you.

Let the upcoming task be an opportunity to practice how you would use this technique in your life. Think about the way you would normally handle feelings such as anxiety in a stressful situation and how this impacted your perception (Pause). Now, remember to evaluate your thoughts in the upcoming task objectively and logically. Recognize your feelings and observe the situation and rationally evaluate possible consequences of your performance. The next task is often found stressful by people who do it, but this is only because they are letting their irrational thoughts make them feel bad. Don't lose touch with the reality of the situation.

Acceptance + Values (adapted from Flynn, 2012)

Let us spend some time now discussing a way that you can approach an upcoming task, and negative thoughts and feelings in general. Human beings tend to do what they can to avoid

experiencing negative thoughts and feelings. And when we do experience them, we often try to get rid of them in some way. No one likes to feel bad. Take a moment to see if this is true in your experience. What you do when negative thoughts and feelings come up? (pause) What do you try to get rid of them or lessen them? (pause)

Although we engage in these kinds of behaviors in an attempt to make ourselves feel better, it actually makes us feel worse, especially in the long run. Research has shown that the more you try to stop yourself from thinking about things, the more likely these thoughts are to come up and really affect you. You may know this from your own experience.

Have you ever tried really hard to fall asleep, only to discover that you just can't? The more pressure you put on yourself to sleep, the harder it gets, until sleeping becomes almost impossible. Well, it works the same way with negative thoughts and feelings. The harder you try to control them, the stronger they feel. It is part of human experience that we will feel anxious or sad, or uncomfortable at times. Where this process goes awry, is when we get in our own way, by forcefully trying to make the thoughts and emotions go away. Even worse, sometimes our sense of happiness becomes dependent on our ability to control these things, and then when we find that we can't, we end up feeling worse and worse. You see, when we approach thoughts and feelings as our enemies, we will struggle with them. The struggle with them gets in the way of things that matter to you.

So, now I will offer you an alternative to this struggle with control. Imagine you are in this massive tug of war with a monster---your negative thoughts and feelings. In between you and the monster is a pit and so far as you can see it is bottomless. If you lose and fall into this pit you will be destroyed. So, you pull and pull, but the harder you pull, the harder the monster pulls (just like the harder you try to control your negative thoughts and feelings, the more negative

thoughts and feelings you get). So you keep pulling, and it seems like you just keep edging closer and closer to the pit. The hardest thing to see here is that your job is not to win the tug of war. (slowly) Your job is just to drop the rope. Give up the internal struggle, and let the thoughts and feelings just be.

It is not the thoughts and feelings that keep us from doing tasks that are in front of us, such as study, go to the gym, spend time with friends. Rather, it's getting caught up in the thoughts and feelings that is the problem. Engaging in these sorts of activities often moves us closer to things and people we care about, such as being the student or the friend we want to be or taking care of ourselves physically. When we turn our attention and effort inward to our thoughts and feelings, sometimes we get so caught up in them that we neglect the things we care about and over time this eats away at the life we care about living. Rather than try to control thoughts and emotions, you can simply notice them, without struggle, without having to turn away from them, drop the rope and then notice the important life activities you are engaged in and allow yourself to gently return to those activities. Allow yourself feel whatever you feel and think whatever you think because they can be very hard to control. You can quit fighting with your thoughts and emotions, drop the rope, and return to your life when you notice you are struggling. This is the key to living well, the gentle return to your life when you notice your thoughts and feelings taking you away. This enables you to move towards our values no matter what thoughts and feelings are present.

In a few minutes we are going to begin a task. During this task, when you notice thoughts and feelings come up, I would like you notice that and then return to the task in front of you. You may experience a range of emotions; frustration, anxiety, boredom ... .Instead of trying actively to control them or push them away, I'd like you to try to notice them, open up to them, give up

the struggle, and return to the task. Remember, the harder you try to, “Not think bad thoughts or feel negative emotions,” the more you will experience both. Instead of battling with your negative thoughts and feelings, try to take a step back from the struggle, drop the rope, return to the task and see what happens.

Let this task be an opportunity to practice experiencing negative thoughts and feelings while still doing something that is important to you. Think about the way anxiety impacts your life. (pause) Where does that keep you from going in life? What if this next exercise could be practice for allowing these sorts of negative thought and feelings and staying engaged in activities you care about? The next task is often found stressful by people who do it. Imagine that you could use any nervousness as practice at noticing difficult thoughts and feelings, letting go of any struggle, and staying with the task the same way you might stay with meaningful activities in your own life. Another aspect of the study is that your participation will help us better understand other people who get sidetracked struggling with negative thoughts and feelings and lose touch with things that really matter to them.

#### Control Instructions (excerpt from Kreneck, n. d.)

For sixty years, Texas A&M University-Corpus Christi (and its predecessors) has been a beacon of learning in the South Texas Coastal Bend. The institution has had five different names over six decades of existence, including Arts and Technological College, University of Corpus Christi, Texas A&I University at Corpus Christi, Corpus Christi State University, and today’s Texas A&M University-Corpus Christi. Each name reflects a different stage of its continuing development. Yet, each era has been characterized by excellence, engagement, and expansion, qualities that are carrying forward into the future. As former University President Flavius C.

Killebrew has pointed out, these three words are “at the very core of the vision that is unfolding at Texas A&M University-Corpus Christi.”

This 60th anniversary of its founding is a time for savoring the rich mixture of change and continuity that has also been the hallmark of “The Island University.” It is an educational institution that has come to mean much to its region and the people it has influenced thousands of students have passed through its doors, taken classes, earned degrees, and moved forward to meet the challenges of life, armed with the knowledge and skills which they have mastered while here. Over the years, thousands of people have worked at the institution as faculty, staff, and administrators, and they have in their own way been enriched by the experience. The larger Corpus Christi and South Texas community of which the University is a part has not only contributed to it but has benefited as well. These benefits have been enormous, providing learning, opportunity, and prosperity, enhancing the quality of life for everyone. In order to savor what this school has meant and hopefully will come to mean, this commemorative volume will help the reader to consider its past, appreciate its present, and embrace its future.

In many ways a post-World War II phenomenon, this university officially began on April 1, 1947, when it was chartered as Arts and Technological College (ATC) by the Baptist General Convention of Texas at the behest of local Baptists in Beeville, a South Texas community of around 9,000 people. The keenest student of the University’s formative years, Carl R. Wrotenbery, notes that the Beeville residents hoped to use the recently vacated Chase Field, a nearby, wartime naval air base, as the campus of a private four-year Baptist college. In late 1946, even before the charter was officially obtained, the institution’s first board of trustees leased the air base. In early February 1947, the board gave the school its official name and elected E.S. Hutcherson, as the college’s first president. Pastor of Trinity Baptist Church in Houston,

President Hutcherson and his early staff were to ready the surplus facilities for the beginning of classes.

Regardless of all that was accomplished, no classes were ever held at Chase Field. Before the fall semester commenced, school officials concluded that financial support proved inadequate for launching the college in Beeville. In July 1947, ATC decided to accept a generous offer from Corpus Christi to relocate to that much larger city which at the time had a population of more than 108,000. ATC found its first and temporary location in Corpus Christi at Cuddihy Field, another surplus naval air base on the city's southwest outskirts. When classes began in September in a number of the facility's vacant buildings, the school boasted 312 students and 24 faculty members. That fall, the college changed its name to the University of Corpus Christi (UCC), much to the delight of the student body. The faculty and students also chose the "Tarpon" as its team name. The institution conducted classes at Cuddihy Field for only one semester because a permanent home, its third and final move, was found across town on Ward Island, the site which would eventually give the school its moniker, "The Island University."

Originally named for its owner Joseph C. Ward who had acquired the property in 1892, the island comprised around 240 acres and was located approximately 10 miles south of downtown between Corpus Christi Bay and the Cayo del Oso, a shallow, broad estuary of Oso Creek. It had been utilized by the United States Navy as a top-secret radar training facility during World War II. The training station was closed in September 1947, and the island was immediately made available as a permanent site for the school. By late November, the University had leased the property for a dollar a year, complete with the surplus buildings. UCC would later gain full title to the property.

Over the Christmas holidays in 1947, UCC moved from Cuddihy Field to Ward Island where fall classes resumed on January 5, 1948. Classes for the spring semester, the first full semester held on Ward Island, began February 2, 1948. Dr. Hutcherson carried forward as president. From that time on, the fledgling University of Corpus Christi established a small but viable campus community with all the elements of university life. With a permanent home, UCC had a student body of 556 for the 1949- 1950 academic year. It utilized the wooden buildings that formerly served the naval training center. The first commencement exercises were held in May 1949, with 29 graduates. Although the number of students fluctuated over the years, its high point came in 1967 with an enrollment of 996.

Student life included an array of clubs and organizations to enhance the learning experience. The students were served by a campus newspaper which over the years chronicled life at the school. UCC established and maintained an active athletic program which included football, basketball, baseball, tennis, track, boxing, and other sports which competed with schools around the state. The first permanent building at UCC was a women's dormitory which broke ground in 1956. Other structures followed, including the circular library building, known as the "round building" which was dedicated in May 1963. In many ways, the round building remained the most distinctive and historic structure on campus. Leadership of UCC also evolved over the years.

### APPENDIX III: INSTRUCTIONS TSST

Participants will fill out a brief survey that ensures that they understand the instructions (“What are you going to do if you feel stressed during the task?”). Prior to the distress task, participants will be asked to rate how concerned they are about completing the task on a scale from 0 to 100 (similar to Ritzert, Forsyth, Berghoff, Barnes-Holmes & Nicholson, 2015).

A list of three controversial topics is provided to participants: 1) Medical Marijuana – Should Marijuana be a legal medical option?, 2) Gun Control – Should more gun control laws be enacted?, 3) Animal Testing – Should animals be used for scientific or commercial testing? (similar to Hofmann et al., 2009). Participants will choose one topic and start a three-minute preparation period for their upcoming five-minute free speech and they receive pen and paper to take notes. After their preparation time is over, participants are asked to report their SUDS number. They then hand in their paper and pencil and deliver their speech to a recording video camera. They are asked to report their SUDS number at this time.

Next, they complete the arithmetic task and report their SUDS estimate halfway through and after conclusion of the task. The instructions for the task are as follows.

“This list gives you three different topics. I’d like for you to choose one of these topics. Once you have chosen a topic you will have a three-minute preparation period to prepare a speech about this topic. You can take notes during your preparation but you cannot use these notes during your speech. Your speech does not have to be long, you should aim for about five minutes. While you give your speech, you will be recorded so that a panel of three graduate students can later evaluate your speech including your nonverbal expression. Your preparation time begins now.”

“Please return to the computer to answer a question” (Participant provides SUDS rating)

“For your next task I would like you to count backwards from 2023 in steps of 17. Try to do this as accurately and quickly as possible. However, every time you answer is inaccurate you will be asked to start over at 2023. Do you have any questions? Your task begins now.”

Participants then return to the computer for another SUDS rating and closing questions.