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Comparing Brief Acceptance and Control-Based Interventions: Evaluating Public Speaking Performance in Socially-Anxious Individuals

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Comparing Brief Acceptance and Control-Based Interventions: Evaluating Public Speaking

Performance in Socially-Anxious Individuals

by

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COMPARING BRIEF INTERVENTIONS

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This thesis has been examined and approved by the following members of the student's thesis committee.

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Dedication

The process of undertaking this thesis project has been an incredibly worthwhile and rewarding experience. Every step of the way, from conceptualization to dissemination, has been an enjoyable endeavor, and has inspired me to reach new heights in my scholarly career. First and foremost, I would like to thank my advisor, Dr. Jeff Buchanan. His endless guidance and wisdom every step of the way made this process incredibly smooth. I would also like to extend heartfelt thanks to Drs. Barry Ries and Brad Arsznov, both of whom provided many insightful comments and feedback in the critical stages of experimental design, data analysis, and dissemination of these findings. This experiment would not have been as well-constructed without the help and insight of my entire thesis committee.

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On a more personal level, I would also like to take a moment to thank my dearest girlfriend Jolene for all of her kindness, patience, and love throughout my entire career in graduate school. I couldn't have done this without you. Finally, I would like to dedicate this thesis to my family, particularly to my late mother, Deborah. I wouldn't be where I am right now without the nurturing and enriching environment I was blessed to have growing up.

Abstract

Social anxiety disorder is one of the most prevalent psychological disorders in our society today. Although Cognitive Behavioral Therapy (CBT) is considered a gold standard for the treatment of anxiety disorders, some individuals do not respond to CBT, and other approaches to treatment continue to be investigated. One alternative approach is Acceptance and Commitment Therapy (ACT), which has been used successfully to treat social anxiety, and has also tentatively been shown to be effective for increasing public speaking performance. The current study compared the effects of brief acceptance- and cognitive-control-based intervention protocols on public speaking performance in socially-anxious college students who took part in a lab-based public speaking task. Participants prepared and gave a 5-minute impromptu speech, and outcome data were collected concerning anxiety, avoidance, and distress. Results indicated that participants in the ACT and CBT conditions did not significantly differ in terms of public speaking performance, nor did they display a significant reduction in anxiety following the speech. Participants in the ACT condition did report significantly lower levels of experiential avoidance post-speech, indicating that the acceptance-based intervention was working via the proposed mechanism of action. These findings promote the feasibility and use of brief interventions, and shed light on the importance of developing techniques to increase public speaking performance.

Keywords: Acceptance-based interventions, ACT, CBT, public speaking anxiety, cognitive-control, social anxiety.

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Performance in Socially-Anxious Individuals

The fear of public speaking is a common experience for many people throughout our society. In fact, research has consistently shown that Americans have historically ranked the fear of public speaking as their greatest fear, even ranking it higher than the fear of death in some cases (Bruskin Associates, 1973, cited in Cunningham, Lefkoe, & Sechrest, 2006; Morreale, 2010). Although it is quite common for individuals to endorse feelings of fear or anxiety in public speaking situations, in most cases this distress does not rise to a debilitating level or cause impairment in functioning. Furthermore, a moderate amount of anxiety has been shown to lead to optimal performance in some cases, such as in the workplace (see Yerkes-Dodson curve; Dobson, 1983; Mellifont, Smith-Merry, & Newton-Scanlan, 2016).

However, some individuals do experience debilitating anxiety regarding public speaking and often endorse distressing thoughts, as evidenced by the following quote from an individual with social phobia, "I must not make mistakes. If I act foolishly, no one will want to talk to me, people won't like me, and I'll end up alone. If I feel stupid, then I'll act stupid. I'm stupid. I'm inadequate" (Clark & Wells, 1995, p. 82). In the case of individuals where anxiety relating to public speaking causes significant impairment or distress, a DSM-V diagnosis of social anxiety disorder may be rendered (American Psychiatric Association, 2013). Additionally, the authors of the DSM-V note that a specifier of "performance only" may be given if the individual only experiences anxiety regarding a specific situation where he or she is required to perform a certain action or behavior under scrutiny of others, such as public speaking.

It has historically been difficult to estimate prevalence rates for public speaking anxiety in general, as many people with public speaking anxiety remain untreated, or find idiosyncratic, non-traditional ways of managing their anxiety. However, a recent national survey indicated that the estimated lifetime and 12-month prevalence rates for social anxiety disorder are 12.1% and 7.1%, respectively (Ruscio et al., 2008). Research based on this same national survey also found that social anxiety disorder was the fourth most common mental health concern in the American population (Kessler, Chiu, Demler, & Walters, 2005). Furthermore, research has indicated that social anxiety disorder prevalence rates in college student populations mirror those found in the general population (Schry, Roberson-Nay, & White, 2012).

It is apparent that many more individuals beyond these prevalence estimates suffer from subclinical levels of anxiety related to public speaking. For example, research has indicated that approximately 85% of Americans report some distress or discomfort pertaining to public speaking (Burnley, Cross, & Spanos, 1993). Social anxiety also has been associated with isolation and unassertiveness in college students, which can lead to the development of comorbid depression and substance use (Falk-Dahl & Dahl, 2010). In addition to this, individuals with social anxiety disorder, and even public speaking anxiety, have been shown to exhibit more speech dysfluencies and worse performance on public speaking tasks when compared to non-phobic individuals (Glassman et al., 2016; Hofmann, Gerlach, Wender, & Roth, 1997).

A cursory glance at the literature pertaining to public speaking anxiety clearly illustrates that this disorder is one that causes afflicted individuals to suffer impairment and distress in many important life domains. Specifically, individuals with social anxiety disorder

are more likely to have a lower income, poorer mental health, and a lower quality of life (Falk Dahl & Dahl, 2010). Furthermore, avoidance of public speaking opportunities in occupational or educational settings can result in a loss of advantages or opportunities associated with advancement and success, leading to further reductions in overall quality of life (Block & Wulfert, 2000). This avoidance and unassertiveness, which often characterize social anxiety disorder, also make it difficult for individuals to recognize these difficulties and seek treatment. These studies concerning the debilitating effects of public speaking anxiety highlight the importance of research developing and investigating interventions to alleviate this condition.

Pharmacological interventions

Pharmacological interventions, usually in the form of benzodiazepines (e.g., alprazolam, diazepam), antidepressants such as selective serotonin reuptake inhibitors (SSRIs), or monoamine antioxidant inhibitors (MAOIs), have often been used to treat social anxiety disorder (Hofmann & Barlow, 2002). However, meta-analytic research has found that patients treated with only pharmacological interventions did not report maintenance of treatment effects for as long as patients who received psychological interventions, or a combination of pharmacological and psychological interventions (Gould, Buckminster, Pollack, Otto, & Yap, 1997). These findings point to the importance of interventions that work to affect change via different psychological and behavioral mechanisms, which are believed to have a more impactful and longer-lasting effect than pharmacological interventions alone.

Cognitive-Behavioral Approaches

One psychological intervention that has been shown to be very effective for the treatment of many different forms of psychopathology is Cognitive Behavioral Therapy (CBT).

A recent meta-analysis provided further evidence of CBT's effectiveness for over 16 different psychological disorders, including social anxiety disorder (Butler, Chapman, Forman, & Beck, 2006). CBT's effectiveness for treating anxiety has been confirmed in recent research as well (Craske et al., 2014), which further emphasizes the assertion that CBT is an evidence-based treatment for social anxiety disorder.

CBT operates on the assumption that emotional distress is caused by maladaptive thinking. Treatment from a CBT perspective aims to identify, control, and modify these maladaptive beliefs and schemas in order to reduce the patient's level of distress (Beck & Emery, 1985). It is noteworthy to mention that CBT is a broad umbrella term used to describe many different types of behavior therapy that are integrated with Beckian cognitive therapy principles. CBT was developed in the 1960s in response to traditional behavioral therapy's inadequate explanation of cognition and private events, and is often referred to as the second wave of behavior therapy (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). For the remainder of this paper, the term CBT is used to refer to a broad category of cognitive-behavioral treatments that are defined by their emphasis on cognitive restructuring and control over the content of thoughts as the primary mechanism of change (Ruiz, 2012).

CBT is based on a cognitive, information-processing model of psychopathology, which describes maladaptive thinking as existing within three separate, but intertwined levels (Blackburn & Davidson, 1995). The overarching concept in this model is that of cognitive schemas, which are described by Beck and colleagues as "cognitive structures that organize experience and behavior; beliefs and rules represent the content of the schemas and consequently determine the content of thinking, affect, and behavior" (Beck, Freeman, & Associates, 1990, p. 4). As evidenced by Beck's seminal work on the theory underpinning

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CBT, cognitive schemas are essentially a worldview or "lens" through which an individual interprets his or her environment. CBT also operates on the assumption that thoughts, behaviors, and emotions are all intricately intertwined and dependent on one another (Beck, 1976).

When these schemas are applied to an individual's environment, intermediate beliefs are formed (J. S. Beck, 1995). According to J. S. Beck, these intermediate beliefs involve the application of schemas to situations or interactions in everyday life, and may consist of attitudes or assumptions that a person holds about these situations. These "rules for living" often consist of maladaptive assumptions, such as "if… then" statements, and rigid rules, such as "must have…" remarks (Hyland & Budeszek, 2012, p. 106). Beck also posits that these rules for living nested in an individual's network of schemas are not always conscious, may not be easily altered, and in the case of pathological cognitions, may be less adaptive and more inflexible (Beck & Emery, 1985).

When these intermediate beliefs are applied to specific distressing situations, cognitive biases in thought content become activated, and usually take the form of automatic negative thoughts, which are readily observed by the clinician (Block, 2003). Beck theorized that these automatic negative thoughts typically occur instantaneously, and consist of negative distortions in thinking that are usually considered to be valid by the individual. Some examples of these distortions can include: overgeneralization, magnification, and false alarms (Beck, 1976).

Hyland and Buduszek (2012) note that these automatic thoughts usually pertain to a specific situation, such as the example of the individual who stated, "if I go to the party, nobody will talk to me" (p. 106). Block provides another illuminating example of these automatic negative thoughts with an overview of the cognitive triad of depression, which posits

that depressed individuals have a negative view of themselves, the world around them, and

their future (Block, 2003). Beck and Dozois (2011) also note that although maladaptive

schemas play an important role in the formulation of distress, environmental conditions or

stressors must be present in order to activate these schemas, which in turn cause distressing

thoughts to arise.

CBT Intervention Techniques. Treatment from a CBT approach involves helping the

patient learn to identify maladaptive patterns of thinking, and replace those patterns with more

adaptive ones. Specifically, patients are trained to modify cognitive and behavioral responses

in healthier ways with the intention of altering maladaptive patterns and decreasing distress

(Beck & Dozois, 2011). Beck and Dozois note that specific techniques included in this

approach include behavioral experiments to test the validity of beliefs, Socratic questioning,

and exploration of alternative hypotheses or explanations of events. Treatment from a CBT

perspective also involves a continual focus on evaluating and responding to automatic negative

thoughts and restructuring core beliefs and schemas (J. S. Beck, 1995). CBT typically consists

of a time-limited, manualized treatment package which often is composed of different elements

(e.g., exposure-based exercises, social skills training, problem-solving, activity planning;

Forman, Herbert, Moitra, Yeomans, & Geller, 2007).

CBT for Social Anxiety. Although social phobia was once considered to be an

overlooked and neglected condition, research over the last two decades investigating CBT for

the treatment of social anxiety disorders has been very robust and has yielded lucrative results

(Norton & Price, 2007; Rapee & Heimberg, 1997). In addition to individual therapy, cognitive

behavioral group therapy (CBGT) has also been shown to be very effective, and is currently

listed as an empirically-supported treatment for social anxiety disorder (Dalrymple & Herbert,

2007; Heimberg & Becker, 2000). Evaluating social anxiety from a CBT perspective involves an overarching focus on biases in information processing related to the interpretation of situations as physically or psychologically dangerous (Beck & Emery, 1985; Beck & Dozois, 2011).

Rapee and Heimberg (1997) developed a CBT model of social anxiety, which posits that an individual with social anxiety typically perceives others as inherently critical and endorses a consistent fear of negative evaluation. These attentional biases towards negative evaluation often trigger the individual to judge a situation as presenting potential for danger. The sympathetic nervous system is then activated, which mediates the physiological reaction of anxiety (Beck, 1976).

Rapee and Heimberg's model goes on to describe social anxiety as cyclical in nature, as the individual continually focuses attention on his or her own appearance and possible threats in the environment. This hypervigilance leads to the development and maintenance of schemas concerning discrepancies between the individual's perceived performance and how they think others perceived them. This discrepancy causes the individual to view themselves negatively, which continues to perpetuate the vicious cycle of social anxiety (Beck & Emery, 1985; Rapee & Heimberg, 1997).

Limitations of CBT Approaches

Although CBT has been shown to be effective for treating social anxiety disorder, some individuals do not respond to traditional CBT (Craske et al., 2014). A recent meta-analysis found an average attrition rate of 15%, and an average treatment response rate of 53% for individuals who completed an entire course of CBT (Loerinc et al., 2015). Furthermore, research has shown that while individuals who undergo CBT often experience reductions in

anxiety symptoms and improvement in formation of interpersonal relationships, they do not always experience clinically significant improvement on other important life domains, such as personal growth or clarity of values (Dalrymple & Herbert, 2007). These studies indicate that a scholarship of other types of treatment for social anxiety is clearly needed to help individuals who do not respond to traditional CBT.

In addition to an increased focus on individuals who do not respond to CBT, there has also been a rich history of research dating back to the 1980s calling into question the proposed mechanism of action in CBT. This line of research, which has been spearheaded by Hayes and colleagues, proposed that the cognitive restructuring and schema changes typically utilized in CBT may not be necessary to produce therapeutic gains (Hayes et al., 2013; Rosenfarb & Hayes, 1984). Furthermore, a recent meta-analysis found that many CBT outcome studies did not provide evidence of the treatment working via the intended mechanism of action (e.g., cognitive restructuring; Ruiz, 2012).

Identification of the essential mechanism of change is important, in order to make treatment packages as efficient and succinct as possible. Unfortunately, the variety and number of components in CBT packages often present a challenge for researchers seeking to identify the mechanism of change underlying treatment gains (Hofmann, 2000). Furthermore, research investigating changes in cognition as the proposed mechanism of change in CBT has yielded mixed results (Ruiz, 2012). Many of these studies have either failed to establish temporal precedence of the mediating variable over the dependent variable, or simply failed to find evidence supporting the proposed mediator (Forman et al., 2007).

Further confounding CBT process research is the fact that Beck's traditional cognitive therapy is often combined with behavioral techniques, such as exposure therapy and social

skills training, to form many different treatment packages subsumed under the umbrella of

CBT (Forman et al., 2007; Norton & Price, 2007). Meta-analysis research indicated that

exposure therapy by itself or combined with cognitive therapy for anxiety disorders yielded

large effect sizes (Gould et al., 1997), indicating that behavioral exercises could be responsible

for therapeutic change. Further research has also shown that CBT alone is no more effective

than exposure therapy, or CBT plus exposure therapy (Hofmann & Barlow, 2002).

The effectiveness of behavioral components involved in CBT, specifically exposure,

calls into question the utility of cognitive restructuring techniques, and leads researchers to

wonder if cognitive restructuring is even a necessary component (Glassman et al., 2016).

Although CBT continues to be widely utilized for the treatment of social anxiety disorder, it is

apparent that more research applying cognitive-behavioral principles to the human suffering

involved in public speaking anxiety is needed. It is also clear that in order for sound treatments

to be developed, the proposed mechanisms of action need to be identified and tested.

Moreover, the theoretical underpinnings of the treatment should also be supported by

an exhaustive body of empirical research (Hayes, Levin, Plumb-Vilardaga, Villatte, &

Pistorello, 2013). Understanding the precise mechanism of change in a given treatment is

especially important for healthcare providers, because it can allow treatment packages to

become more succinct, saving both providers and patients time and money. Furthermore, a

thorough scholarship investigating the mechanisms of change in a given treatment will

continue to bolster the validity and empiricism of the field of clinical psychology (Baker,

McFall, & Shoham, 2009).

Acceptance and Commitment Therapy

Despite the early popularity of CBT and the second wave of behavior therapy, the ambiguity of cognitive restructuring as a mechanism of change has led researchers to question the mechanistic philosophy of CBT and its utility for alleviating human suffering (Hayes, 2004). This led to the development of Acceptance and Commitment Therapy, which is considered by some to be part of the third wave of behavior therapy (ACT, said as one word; Hayes, Strosahl, & Wilson, 1999). ACT is a type of treatment subsumed under the broad nomenclature of cognitive-behavioral approaches, and does not stand in opposition to traditional CBT. However, there are some differences between the two approaches; specifically, ACT works to increase quality of life by teaching patients to accept, rather than change, their negative thoughts in order to increase values-driven action (Hayes et al., 2013).

In response to the ambiguous link between basic scientific theory and applied technologies in traditional CBT, Hayes and colleagues developed a comprehensive line of research supporting ACT that is based on the philosophy of functional contextualism and grounded in Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). Functional contextualism is a philosophical approach stemming from radical behaviorism that emphasizes the context and function of a given behavior, and is "linked to the prediction and influence [of behavior] with precision, scope, and depth" (Hayes et al., 2013, p. 181). RFT is a comprehensive line of research explaining cognition and human language as verbal behaviors that come to be mutually related to one another through derived stimulus relations on the basis of form *and* function (Hayes, Barnes-Homes, & Roche, 2001). The theoretical underpinnings of ACT are particularly noteworthy, as ACT's foundation of behaviorally based traditions (e.g., RFT & functional contextualism) effectively lays the groundwork for the development of a comprehensive model of psychopathology and subsequent treatment.

ACT's model of psychopathology asserts that distress is caused by psychological inflexibility (Ruiz, 2012), with a particular emphasis on cognitive fusion (i.e., taking one's thoughts too literally), which is hypothesized to lead to experiential avoidance (Hayes et al., 2006). Experiential avoidance is defined as avoiding distressing or unpleasant emotions, experiences, or thoughts- even if the avoidance is not an effective coping strategy or leads to negative consequences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Hayes and colleagues go on to elucidate some of the negative consequences of experiential avoidance, including a lack of contact with experiences in the present moment and a lack of fulfillment from not engaging in values-congruent behavior. Moreover, avoiding unpleasant experiences or emotions has been shown to lead to a rebound effect in which the unpleasant emotions actually return with greater force and impact following suppression attempts (Gifford, 1994).

In addition to experiential avoidance, and cognitive fusion, maladaptive attachment to one's conceptualized self and a lack of values clarity are also key components in the ACT model of psychopathology (Hayes, Wilson, & Strosahl, 1999). Specifically, maladaptive attachment to one's conceptualized self involves deriving a rigid, literal relational network between one's thoughts and one's personal identity. ACT works towards helping clients achieve a greater emphasis on self-as-context, which involves a continual focus on a client's values-congruent identity, and teaches clients to observe thoughts, feelings, and experiences from the perspective of the "observing self" (Hayes, Barnes-Holmes, and Roche, 2001)

ACT Treatment. Treatment from an ACT perspective aims to increase psychological flexibility by helping patients change their relationships with their thoughts and emotions, rather than changing the actual *content* of these thoughts. By teaching acceptance of one's thoughts through mindful awareness of the present moment and increasing the view of one's

self in context, the patient will be able to decrease experiential avoidance, and conversely

increase committed action towards engaging in values-congruent behaviors. ACT can be

conceptualized as consisting of both mindfulness/acceptance and behavioral change processes

(Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

ACT is considered to be a somewhat eclectic approach, borrowing techniques from

many different schools of psychological treatments, including eastern medicine traditions

(Hayes et al., 2006). Some commonly-used techniques in ACT include exposure activities,

behavioral goal-setting, metaphors, cognitive defusion, and mindfulness-based activities.

Cognitive defusion is particularly important to the workability of an ACT approach, because

once an individual is able to verbally disentangle themselves from the literal meaning of their

thoughts and strict adherence to verbal rules, they can become open to behaving in a values-

congruent manner and increasing contact with the present moment (Hayes et al., 2013).

Although some of the techniques in ACT are similar to those found in traditional CBT

(e.g., exposure, behavioral goal-setting, and shaping), the main tenet of ACT is to increase

one's willingness to accept negative thoughts as a part of normal living, which in turn increases

values-driven action. This approach stands in contrast to the traditional CBT belief that one

needs to regulate or control the content of one's thoughts in order to live a happy life. ACT

views these attempts to control the content of thoughts as counterproductive and perhaps

iatrogenic because they maintain the belief that some thoughts are "bad" and that thoughts

need to be controlled or changed before improvement can occur (Hayes et al., 2013; Hayes,

Wilson, & Strosahl, 1999).

In addition to this, ACT also emphasizes contact with the present moment, and involves

a number of mindfulness-based activities (e.g., "soldiers on parade" mindfulness exercise in

Hayes, Wilson, & Strosahl, 1999, p. 158-160). Although the main intention of ACT is to increase psychological flexibility, rather than explicitly decreasing distressing symptoms, research has shown that ACT does inevitably lead to a reduction of these symptoms (Hayes et al., 2013). ACT serves as an excellent example of a second-order change strategy, which stands in stark contrast to CBT, which operates via a direct-change strategy (Hayes et al., 2006). Furthermore, by empowering the patient to challenge his or her "unworkable agenda" (Hayes, 2004, p. 652), the ACT therapist works to loosen the rigid relational frames that underlie cognitive fusion which had previously led to experiential avoidance.

ACT's model of psychopathology lends itself well to the treatment of many different psychological problems. ACT has been successfully used to treat a variety of conditions, including obsessive compulsive disorder (Twohig, Hayes, & Masuda, 2006), depression (Craske et al., 2014), anxiety (Forman et al., 2007), and even healthcare-related concerns such as smoking cessation, obesity, and substance abuse (Hayes et al., 2013). Although ACT is a relatively new therapy, and is sometimes criticized for a lack of rigorous outcome studies compared to traditional CBT (Öst, 2008), research has consistently shown that ACT not only produces treatment outcomes similar to CBT, but also works via its proposed mechanism of action (Forman et al., 2007; Hayes et al., 2013; Ruiz, 2012). Research comparing ACT to other established treatments has been an excellent way for researchers to verify the utility and feasibility of ACT, as evidenced by the criteria of ACT either leading to better outcomes, or working via a novel mechanism of action (Block & Wulfert, 2000; Hayes et al., 2006).

ACT for Social Anxiety. ACT's assertion that cognitive fusion leads to experiential avoidance fits particularly well into a conceptualization of social anxiety disorder (Block & Wulfert, 2000), as individuals who have an intense fear of negative evaluation tend to avoid

situations in which they fear they will be perceived unfavorably (Craske et al., 2014). This

avoidance of certain situations can lead to these individuals being unable to live a life

consistent with their values, which in turn can lead to emotional distress and lost opportunities

to contact social reinforcers (Hayes, Wilson, & Strosahl, 1999). Further evidence of this is

provided by randomized controlled trials, which have revealed that ACT treatment with

exposure was more effective than exposure alone (England et al., 2012). This research, which

also identified mindfulness as a moderator of treatment effects, indicated that ACT made a

unique contribution above and beyond exposure, further establishing ACT's credibility as an

empirically supported treatment.

The aforementioned lost opportunities are very noticeable with regard to public

speaking anxiety, as individuals who consistently avoid public speaking situations may miss

out on educational and employment opportunities, thereby decreasing their overall quality of

life (Eifert & Forsyth, 2005). Moreover, research has found that decreases in experiential

avoidance mediated the reduction of anxiety symptoms caused by ACT (Eustis**,** Roemer,

Hayes-Skelton, & Orsillo, 2013). These findings have also been replicated in numerous studies

comparing ACT and CBT in the treatment of social anxiety (Dalrymple & Herbert, 2005;

Forman et al., 2007). These studies consistently demonstrate that ACT is just as effective as

CBT for the treatment of social anxiety disorder, and is therefore worthy of further research

(Craske et al., 2014; Glassman et al., 2016).

ACT for Increasing Pain Tolerance. Although acceptance is only one of the six basic

tenets of ACT, acceptance-based approaches in general have been investigated for increasing

pain tolerance and helping individuals deal with unpleasant or distressing emotional

experiences (Feldner, Zvolensky, Eifert, & Spira, 2003). The theory behind acceptance-based

approaches for increasing distress tolerance involves loosening the rigid cognitive bond

between distressing thoughts and avoidance or escape behavior. Acceptance-based approaches

work to help individuals change their relationship with distressing thoughts by teaching that

pain and distress are part of a normal human existence, and need not be avoided or made to

disappear (Hayes Strosahl, & Wilson, 1999). Acceptance-based approaches do not intend to

decrease distress per se, but instead seek to increase behavior that is consistent with one's

values (e.g., increasing pain tolerance in order to engage in a desired behavior) through

decreasing the believability of reason giving, which effectively allows individuals to distance

themselves from their distressing thoughts (Hayes et al., 1999).

Acceptance-based approaches have often been compared to cognitive-control-based

approaches, which posit that unpleasant or distressing thoughts need to be controlled or

suppressed (Masedo & Esteve, 2007). Although cognitive-control techniques are consistent

with the theory of CBT, and have been historically used to reduce emotional distress, Hayes

and colleagues have argued that attempting to control or suppress one's distressing thoughts

can paradoxically lead to a rebound of increased distress. In a seminal piece of research, Hayes

and colleagues found that individuals who had received an acceptance-based protocol were

able to hold their hand in a bucket of ice water for a significantly longer period of time than

individuals who had received a cognitive-control-based protocol (Hayes et al., 1999).

The finding that acceptance-based approaches can lead to increased pain tolerance has

been heavily researched and replicated across a number of distress tasks in laboratory settings,

such as electrical shock (Gutierrez, Luciano, Rodriguez, & Fink, 2004; Paez-Blarrina et al.,

2008), and aversive noise (Luciano et al., 2010). Findings from these studies have consistently

identified acceptance-based techniques as leading to increased distress/pain tolerance relative

to cognitive-control-based ones (Masedo & Esteve, 2007). This line of basic laboratory

research has provided empirical support to facilitate the use of acceptance-based techniques in

applied therapeutic settings. For example, researchers have demonstrated ACT's effectiveness

as an adjunctive treatment for individuals suffering from chronic pain (Wetherell et al., 2011).

ACT for Increasing Performance. There has been a bourgeoning line of research

investigating acceptance-based techniques for increasing performance in athletes. For example,

Little and Simpson (2000) found support for an acceptance-based intervention delivered to

college softball players. Little and Simpson indicated that although the players' performance

only increased slightly compared to players using cognitive-control/suppression techniques, the

players genuinely appreciated the acceptance-based program. Acceptance-based approaches

aimed at increasing athletic performance are based on the idea that suppression of anxious

thoughts related to performance may have a paradoxical effect of magnifying the distressing

thoughts one is trying to suppress (Gifford, 1994; Wegner, Schneider, Carter, & White, 1987).

By accepting anxious thoughts related to performance, and changing the relationship between

one's conceptualized self and these thoughts, an individual may be able to harness these

thoughts in the service of increasing performance (Little, 1998; Little & Simpson, 2000).

Although ACT and acceptance-based approaches have been applied to social anxiety

disorder, and consistently demonstrate clinically significant therapeutic improvements via the

proposed mechanism of action (England et al., 2012; Forman et al., 2007), relatively little

attention has been given to the use of acceptance-based approaches for increasing public

speaking performance in socially-anxious individuals. Only one study to date (Glassman et al.,

2016) has investigated the use of acceptance-based techniques in the service of increasing

public speaking performance. Glassman and colleagues found that individuals who received a

90-minute ACT intervention had significantly lower levels of blood volume in their left

dorsolateral prefrontal cortex, compared to those who received a CBT intervention of similar

length and structure. Glassman and colleagues hypothesized that the cognitive resources freed

up by not having to suppress and control emotional experiences led individuals in the ACT

condition to demonstrate higher levels of speech performance than those in the CBT group, as

measured by objective observer ratings.

Purpose of the Current Study

It is well-documented that individuals with public speaking anxiety tend to exhibit

more speech dysfluencies and lower speech performance than non-anxious individuals

(Hofmann et al., 1997). Therefore, increasing public speaking performance could improve the

quality of life of individuals suffering from public speaking anxiety. Although CBT has been

established as an empirically-supported treatment for social anxiety disorder, some individuals

do not respond to traditional CBT, and the mechanism of action has been called into question

(Ruiz, 2012). Acceptance-based approaches may be especially promising for treating public

speaking anxiety, as they have potential for exhibiting a twofold, synergistic effect—increasing

public speaking performance, and decreasing avoidance. Therefore, investigating the

differential effects of acceptance and cognitive-control-based interventions for increasing

performance, in addition to decreasing anxiety and distress, would be a worthwhile

scholarship.

The purpose of the current study was to compare brief acceptance and cognitive-

control-based interventions for increasing public speaking performance in socially-anxious

individuals. This study was a partial replication of Goldfarb's (2009) doctoral dissertation,

which implemented brief, idiosyncratic acceptance and cognitive-control-based interventions

designed to prepare socially-anxious individuals for coping with anxiety prior to, and during, a public speaking task in a laboratory-based setting. In addition to comparing the differential effects of the interventions on anxiety, the current study added a novel approach to this replication, in which the speech performance of subjects was evaluated to determine the differential effects of the interventions on public speaking performance. The current study's focus on improvement of speech performance fills a gap in the extant literature, as much of the research on acceptance-based approaches for social anxiety focus exclusively on symptom reduction. The sub-clinical sample of college students used in this study also lends itself well to the aim of increasing speech performance, as improvement of speech performance can directly lead to academic improvement.

Hypotheses

Given the purposes of this study and the state of the current empirical literature, several hypotheses were proposed.

Hypothesis 1: Participants in both conditions will show a significant reduction in anxiety following the speech. This hypothesis is based on the relative effectiveness of ACT and CBT. Furthermore, research has shown that both treatments are typically equally efficacious for treating social anxiety (Craske et al., 2014; Forman et al., 2007).

Hypothesis 2: Participants receiving the acceptance-based intervention will exhibit higher levels of speech performance than participants receiving the cognitive-control intervention. This hypothesis is grounded in Glassman and colleagues' (2016) research investigating acceptance-based techniques for increasing public speaking performance, which found that

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individuals exposed to the acceptance-based intervention had more available cognitive

resources, leading to better speech performance.

Hypothesis 3: Participants receiving the acceptance-based intervention will show significantly

lower levels of avoidance post-intervention than participants receiving the cognitive-control

intervention. This hypothesis is essentially a process measure of the mechanism of action in

ACT (Hayes, 2004). If the acceptance-based approach is operating via the proposed

mechanism of change (e.g., decreases in experiential avoidance), then the effectiveness of

acceptance-based approaches is further verified.

Hypothesis 4: Participants receiving the acceptance-based intervention will rate their

discomfort during/after the speech higher than those participants in the cognitive-control

group. This hypothesis is an additional process measure of ACT's mechanism of action. ACT

posits that although reductions in symptoms of anxiety are typically achieved by the end of

treatment, reductions in distressing thoughts are not the direct mechanism (Hayes et al., 2006).

Rather, treatment focuses on helping patients achieve acceptance of the entire range of human

experience in the service of increasing values-driven action (Hayes et al., 2013). If individuals

exposed to the acceptance-based intervention experience greater levels of anxiety while

continuing to do well on the public speaking task, then the effectiveness of acceptance-based

approaches is further confirmed.

Method

The experimental design utilized in this current study involved random assignment of

participants to receive either an acceptance-based or cognitive-control-based intervention.

Following completion of the intervention, participants prepared, and then delivered, a five-

minute, autobiographical speech about predetermined, standardized topics. Speeches were

videotaped and later analyzed to determine level of performance. Additionally, pre-

intervention and post-speech measures of experiential avoidance, anxiety, and subjective units

of discomfort were collected. With the exception of the evaluation of speech performance, the

experimental design used was a replication of Goldfarb's (2009) doctoral dissertation.

Prescreening Procedure

In order to recruit a sub-clinical sample of individuals who endorsed public speaking

anxiety, a prescreening survey was implemented via an online survey management system

associated with the author's institution. Participants in this study were students from a

Midwestern university who were enrolled in a psychology course offering extra credit in

exchange for research participation. After giving informed consent, students took the

prescreening survey via the online survey management program, and were invited to

participate in the in-person study if they met criteria for inclusion. Please see Figure 1 for a

depiction of the experiment flow chart.

Social Phobia Scale (SPS). The SPS is a self-report measure of anxiety and distress

regarding being observed by others in social situations (Mattick & Clark, 1998; see Appendix

A). The SPS consists of 20 items measured on a Likert scale with 0 indicating "*Not at all*

characteristic or true of me," and 4 indicating "*Extremely characteristic or true of me.*"

Mattick and Clark indicated that the SPS exhibited high levels of test-retest reliability ($\alpha = .91$)

and internal consistency ($\alpha = .89$); validity testing also revealed that the SPS exhibited a strong,

positive correlation with other measures of social anxiety. A cutoff score of 16 was used for

inclusion criteria, as previous research has found that a score of at least 16 has been shown to

be indicative of moderate, subclinical levels of social anxiety (Block, 2003). In addition to this,

a cutoff score of 16 has been utilized successfully in past studies (Goldfarb, 2009).

Leibowitz Social Anxiety Scale (LSAS). In addition to the SPS, the prescreening

survey also contained two items from the LSAS (Leibowitz, 1987). The two items included

asked participants to rate their level of fear (*none, mild, moderate, severe*) and level of

avoidance (*never, occasionally, often, usually*) regarding public speaking on a Likert scale of

0-3. These items were included as a quality check to validate that participants' social anxiety

pertained to public speaking situations. In accordance with Goldfarb's (2009) research,

inclusion criteria required participants to endorse at least a "moderate" level of fear and

"occasionally" avoid public speaking situations. In addition to this, the prescreening survey

also included a question that asked participants about their current use of anxiolytic

medications. Please see Appendix B for a copy of the LSAS and additional prescreening

questions.

Participants

The prescreening procedure produced an initial sample of 376 individuals. Please see

Table 1 for a complete listing of SPS scores for all participants throughout the study. Please see

Table 2 and Table 3 for a complete listing of descriptive statistics pertaining to the two LSAS

questions regarding fear and avoidance of public speaking. From the initial sample of 376,

34% ($N = 128$) of individuals met criteria for participation in the in-person part of the study

and were subsequently contacted via email with an invitation to participate in the in-person

part of the study. Please see Appendix C for a copy of the recruitment email sent to eligible

participants.

Of the pool of 128 eligible subjects, 32.8% (*N* = 42) of individuals participated in the in-person part of the study. The average SPS score for individuals who participated in the in-person study was 35.93 (*SD* = 14.41). Of the 42 individuals who participated in the in-person study, 40.5% reported "usually" avoiding public speaking situations, and 50% endorsed a "severe" level of fear regarding public speaking. Furthermore, 28.6% of individuals who participated in the in-person study reported current use of anxiolytic medication. Of the 42 individuals who participated in the in-person study, 78.6% were female, 31% indicated they were first-year college students, and 71.4% reported their ethnicity as "Caucasian." Additionally, 88.1% of the sample of individuals who took part in the in-person study were 22 years of age or younger.

It is noteworthy to mention that two of the 42 individuals who participated in the in-person study did not complete the public speaking task, and dropped out of the study. These participants reported experiencing a great deal of distress regarding the public speaking task, and invoked their right to refuse to participate further prior to delivering their speeches. Incomplete data from these participants were not included in the planned statistical analyses.

Outcome Measures

Spielberger State-Trait Anxiety Inventory (STAI). The STAI is a two-part, self-report instrument used to measure an individual's propensity to anxiety (trait) and current level of anxiety (state) (Spielberger, 1983; see Appendix D). For the purposes of this study, only the STAI-S (state) was administered, as participants' current level of anxiety was most relevant to the public speaking task at hand. The STAI-S is a 20-item inventory which asks participants to respond to statements on a Likert scale with 1 indicating "*Not at all,*" and 4 meaning "*Very much so.*" The STAI-S contains 10 reverse-scored items, and higher scores are indicative of

greater anxiety. Previous research has shown that the STAI demonstrated good internal consistency ($\alpha = 0.86 - 0.95$) and test-retest reliability ($\alpha = 0.65 - 0.75$). In addition to their research examining reliability, Spielberger and Vagg (1984) also indicated that the STAI has been shown to exhibit excellent concurrent and construct validity.

The STAI-S has been used extensively in clinical populations, and research has shown that scores of at least 40 are indicative of a moderate level of state anxiety. However, some have argued for the use of higher cut-off scores (Julian, 2011). Spielberger's (1983) research regarding normative samples for the STAI indicated that the average score for non-clinical, college-aged males was 38.76 ($SD = 11.95$), and 36.47 ($SD = 10.02$) for college-aged females. Furthermore, Goldfarb's (2009) research, which utilized a similar sampling procedure, reported that participants endorsed a requisite level of anxiety, as evidenced by pre-speech task STAI-S scores ($M = 48.58$, $SD = 11.32$).

Acceptance and Action Questionnaire (AAQ). The AAQ is a self-report measure of an individual's willingness to experience and accept negative or distressing thoughts while continuing to accomplish their desired goals (Hayes et al., 2004; see Appendix E). The AAQ consists of nine statements that individuals respond to on a Likert scale of 1-7, with 1 meaning "*Never true,*" and 7 meaning "*Always true.*" Four of the items are reverse-scored, and higher scores indicate greater experiential avoidance. Previous psychometric research has indicated that the AAQ demonstrated excellent construct validity, good internal consistency ($\alpha = 0.70$), and adequate test-rest reliability ($\alpha = 0.64$; Hayes et al., 2004). Hayes and colleagues also reported that normative samples of clinical populations yielded AAQ scores of 38 - 40, with non-clinical samples exhibiting scores of 30 - 31.

The AAQ is regarded as a widely accepted measure of experiential avoidance in ACT research. Moreover, decreases in experiential avoidance have been shown to mediate ACT's treatment effects (Hayes et al., 2013). Although Hayes and colleagues (2004) note that the AAQ is potentially insensitive to treatment effects, as experiential avoidance is often conceptualized as a relatively stable trait, the AAQ has been effectively used as a process measure in numerous studies (Bond & Bunce, 2000; Goldfarb, 2009; Twohig, Hayes, & Masuda, 2006).

Subjective Units of Discomfort Scales (SUDS). SUDS are a self-report, subjective measure of the amount of distress that an individual is currently experiencing (Wolpe & Lazarus, 1966; see Appendix F). SUDS ratings are measured on a scale of 0-100, with 0 representing "*No distress,*" and 100 representing *"The most conceivable distress."* Tanner (2011) found that SUDS ratings demonstrated excellent convergent validity with clinician ratings of patient distress. In addition to collecting participant SUDS ratings pre-intervention and post-speech, participants were asked to estimate their peak SUDS rating *during* the speech at the post-speech measurement occasion.

Perception of Speech Performance (PSP). The PSP is a 17-item self- or other-report measure of the perception of public speaking performance (Rapee & Lim, 1992; see Appendix G). Items are rated on a Likert scale of 0-4, with 0 meaning "*Not at all,*" and 4 meaning *"Very much."* The PSP consists of 12 specific behavioral items (*e.g., Stuttered, Had long pauses*) and 5 global items (*e.g., Made a good overall impression, Appeared nervous*). Previous research has traditionally combined the global and specific items to form an aggregate score (Glassman et al., 2016; Rapee & Lim, 1992). To prevent acquiescence-based responding, some of the items are reverse-scored, with higher scores indicating worse speech performance. The SPS

has also been shown to demonstrate adequate levels of internal consistency ($\alpha = 0.79$; Rapee & Lim, 1992; Rapee & Heyman, 1996).

Research assistants, who were blinded to participant condition, rated video recordings of each participant's speech using the PSP. One research assistant served as a primary rater, rating each of the videos, while another independent rater evaluated 33% of the videos to provide a measure of interrater agreement (IOA). Both research assistants underwent extensive training pertaining to coding the speeches with the PSP until an adequate level of agreement was achieved. IOA was calculated, and yielded an intraclass correlation coefficient (ICC) of 0.52. Although the ICC of 0.52 is not as robust as the 0.79 ICC that Glassman and colleagues (2016) demonstrated with their use of the PSP, Cicchetti's (1994) guidelines indicate that an ICC of 0.52 would be considered slightly above average and therefore acceptable for these purposes.

Interventions

CBT. The CBT protocol used in this study was adopted from Goldfarb's (2009) doctoral dissertation (see Appendix H for a copy of the protocol). This idiosyncratic protocol, which is 15 minutes in length, was based on the work of CBT therapist David Burns (1999), and was found to be representative of the primary mechanism of CBT (cognitive restructuring) by an expert in CBT theory (William C. Sanderson, PhD; see Goldfarb, 2009, p. 34). The CBT protocol also contained an experiential exercise involving cognitive restructuring.

ACT. The ACT protocol used in this study was also adopted from Goldfarb's (2009) doctoral dissertation (see Appendix I for a copy of the protocol). This idiosyncratic protocol is identical to the CBT protocol in length, and featured an experiential exercise regarding

acceptance of distressing thoughts in service of pursuing values-consistent action. The ACT

protocol was based on the work of Block (2003) and Eifert & Forsyth's (2005) research

investigating ACT for anxiety disorders, and was found to be representative of the acceptance

portion of ACT by an expert in ACT theory (Joseph R. Scardapane, PhD, see Goldfarb, 2009,

p. 34).

Public Speaking Task

After receiving one of the two interventions, participants were then given five minutes

to prepare a brief, five-minute speech. The topic for the speech involved responding to five

separate prompts soliciting information regarding autobiographical topics, such as describing

the strengths and weaknesses of one's personality. Please see Appendix J for a copy of the

instructions for the speech. This type of idiosyncratic public speaking task was designed to

have good external validity, as the topics used are representative of social experiences an

individual may be likely to encounter in daily life. Additionally, previous research (e.g.,

Glassman et al., 2016) has found that public speaking tasks which provide individuals with

latitude regarding the topic of the speech are useful indicators of actual public speaking

performance, rather than a test of knowledge or content.

Each participant's speech was observed by two research assistants serving as

confederates in an attempt to increase the external validity of the public speaking task. All

confederates were trained to refrain from interacting with participants and to display non-

committal, ambivalent behavior during all speeches. All confederates received ample training

prior to, and throughout the experiment in an effort to maintain the internal validity of the

public speaking task. Please see Appendix K for a copy of the training manual provided to

confederates.

COMPARING BRIEF INTERVENTIONS

Procedure

Participants who completed the online prescreening survey and met criteria for inclusion were contacted via email requesting their participation in the in-person part of the study. Those participants who elected to participate further then made an appointment with the first author to participate in the in-person part of the study. Upon arriving in the lab, participants were then told they were going to take part in a study where they would be giving a brief speech. Informed consent was obtained from all participants prior to participation. Please see Appendix L for a copy of the consent forms.

Participants completed a pre-intervention battery of assessments, including the STAI-S, AAQ, SUDS, and brief demographic information (see Appendix F for demographic survey). Participants then received either the cognitive-control or acceptance-based intervention. The sequencing of interventions was randomly predetermined. Both protocols were administered by the first author, and were carried out with fidelity according to the instructions in each protocol. Following completion of the protocol, participants were given five minutes to prepare a five-minute speech, according to the given instructions.

After participants gave their speech, they completed a post-speech battery of assessments, including the STAI-S, AAQ, SUDS, and a number of Likert-scale questions intended to gauge the usefulness of the intervention and the distressing nature of the confederates in the public speaking task (see Appendix M for questions regarding usefulness of intervention/distress of task). Following completion of the post-intervention survey, participants were thoroughly debriefed (see Appendix N for a copy of the debriefing form).

Planned Statistical Tests & Achieved Power Analysis

COMPARING BRIEF INTERVENTIONS

Hypothesis one was tested using a between-subjects, repeated-measures ANOVA, which was used to compare within and between group differences on pre- and post-speech SSAI-S scores. The observed power from this analysis, given the current study's sample size ($N = 40$), alpha level ($\alpha = 0.05$), and effect size ($\eta = 0.04$), was $\beta = 0.23$.

Hypothesis two was tested using a between-subjects, one-way ANOVA which was used to compare the ACT & CBT groups on their speech performance scores. The observed power from this analysis, given the current study's sample size ($N = 40$), alpha level ($\alpha = 0.05$), and effect size ($\eta = 0.02$), was $\beta = 0.05$.

Hypothesis three was tested using a between-subjects, repeated-measures ANOVA which was used to compare within and between group differences on pre- and post-speech AAQ scores. The observed power from this analysis, given the current study's sample size ($N = 40$), alpha level ($\alpha = 0.05$), and effect size ($\eta = 0.07$), was $\beta = 0.37$.

Hypothesis four was tested using a between-subjects, repeated-measures factorial ANOVA, which was used to compare within and between group differences on pre-, during-, and post-speech SUDS ratings. The observed power from this analysis, given the current study's sample size ($N = 40$), alpha level ($\alpha = 0.05$), and effect size ($\eta = 0.36$), was $\beta = 0.99$.

Results

Descriptive Statistics. Overall means and standard deviations for all outcome measures are included in Table 4. Additionally, descriptive and inferential statistics for dependent variables in both experimental conditions are provided in Table 5. A chi-square test of independence revealed that the CBT and ACT groups did not significantly differ regarding ethnicity, $\chi^2 (4) = 5.33$, $p = 0.26$, gender, $\chi^2 (1) = 1.29$, $p = 0.26$, anxiolytic use, $\chi^2 (1) = 3.14$, p

COMPARING BRIEF INTERVENTIONS

= 0.08, or year in school, $\chi^2 (4) = 4.54$, $p = 0.34$. An independent-samples t test also indicated

that the groups did not significantly differ in age, $t(38) = -0.67$, $p = 0.51$.

Hypothesis 1. Although participants, on average, did display lower STAI-S scores post

speech ($M = 43.10$, $SD = 14.11$) compared to their pre-intervention score ($M = 45.70$, $SD =$

10.57), an ANOVA indicated that this difference was not significant, $F(1, 38) = 1.54$, $p = 0.22$,

$\eta = 0.04$. Although participants in the ACT condition reported greater levels of anxiety post-

speech ($M = 43.80$, $SD = 14.88$) compared to participants in the CBT condition ($M = 42.40$,

$SD = 13.64$), there were no significant interaction effects between conditions, $F(1, 38) = 0.07$,

$p = 0.79$, $\eta = 0.002$.

Hypothesis 2. Participants in the CBT condition exhibited greater levels of public

speaking performance ($M = 16.00$, $SD = 7.96$) compared to participants in the ACT condition

($M = 18.55$, $SD = 10.03$). However, an ANOVA indicated that this difference was not

significant $F(1, 38) = 0.79$, $p = 0.38$, $\eta = 0.02$. Additionally, there were no significant

differences between conditions on SPS global items, $F(1, 38) = 1.73$, $p = 0.20$, $\eta = 0.04$, or

SPS specific items, $F(1, 38) = 0.22$, $p = 0.64$, $\eta = 0.006$.

Hypothesis 3. Although participants, on average, reported lower levels of experiential

avoidance post-speech ($M = 37.23$, $SD = 8.31$) compared to their pre-intervention

measurements ($M = 38.28$, $SD = 7.17$), an ANOVA revealed that this difference was not

significant, $F(1, 38) = 2.79$, $p = 0.10$, $\eta = 0.07$. Further analysis revealed a significant

interaction effect, $F(1, 38) = 4.95$, $p = 0.03$, $\eta = 0.12$. Specifically, participants in the ACT

condition reported significantly lower levels of avoidance following the speech ($M = 35.20$, SD

$= 8.53$), compared to participants in the CBT condition ($M = 39.25$, $SD = 7.77$). Furthermore,

the post-speech level of avoidance for participants in the CBT condition represents an increase

from their pre-intervention score ($M = 38.90$, $SD = 7.52$). Please see Figure 2 for a depiction

of this interaction.

Hypothesis 4. An ANOVA revealed that participants had significantly different SUDS

scores throughout the measurement periods (pre, during, and post). Mauchly's test indicated

the assumption of sphericity had been violated, $\chi^2 (2) = 22.04$, $p < 0.001$. Therefore, the

degrees of freedom were adjusted using a Greenhouse-Geisser correction ($\varepsilon = 0.69$), $F(1.38,$

$52.46) = 21.04$, $p < 0.001$, $\eta = 0.36$. Post hoc tests revealed that participant ratings of distress

at the peak moment during their speeches ($M = 62.58$, $SD = 29.00$) were significantly higher

(both $p's < 0.001$) than the ratings given pre- ($M = 34.25$, $SD = 25.46$) and post-speech ($M =$

44.30, $SD = 30.47$). There was not a significant difference between pre- and post-speech

SUDS ratings ($p = 0.06$). Although there were no significant interaction effects between SUDS

ratings for ACT or CBT conditions, $F(1.38, 52.46) = 0.66$, $p = 0.47$, $\eta = 0.02$, participants in

the CBT group exhibited higher SUDS ratings during the speech ($M = 68.40$, $SD = 26.86$) than

participants in the ACT group ($M = 56.75$, $SD = 30.55$). Please see Figure 3 for a depiction of

SUDS scores across measurement times for both conditions.

Participant Use of Intervention. Of the participants who took part in the in-person

part of the study, 47.5% indicated "somewhat" using the techniques described during the

intervention during preparation for their speech. In addition to this, 22.5% of participants

indicated that the techniques learned were "quite a bit" useful in preparation for their speech. A

chi-square goodness of fit test indicated that participant ratings of the use of the intervention, χ^2

$(3) = 17$, $p = 0.001$, and the usefulness of the intervention, $\chi^2 (3) = 19$, $p < 0.001$, were both

significantly different from what would be expected by chance. Please see Table 6 for a

complete description of participant ratings of the interventions.

Participant Rating of Public Speaking Task. Participants also provided information on the level of distress induced by the public speaking task. Specifically, 37.5% of participants reported experiencing the live audience of two confederates as "moderately distressing." In addition to this, 30% of participants indicated that the live audience was "extremely distressing." Furthermore, 67.5% of participants indicated that the noncommittal and ambivalent behavior displayed by the confederates during the speech "increased anxiety." A chi-square goodness of fit test indicated that participant ratings of distress caused by the confederate audience, $\chi^2(3) = 7.8$, $p = 0.05$, and their noncommittal behavior during the speeches, $\chi^2(2) = 21.05$, $p < 0.001$, were both significantly different from what would be expected by chance. Please see Table 7 and 8 for complete descriptions of participant ratings of the public speaking task.

Discussion

The current study did not reveal any significant differences between the two intervention conditions with regard to reductions in anxiety or public speaking performance. However, results did tentatively indicate that the acceptance-based approach was exerting an effect via its proposed mechanism of change. In addition to this, participants who received the acceptance-based intervention reported experiencing less distress during the public speaking task compared to those who received the cognitive-control-based intervention. Participants also rated the public speaking task as considerably distressing, supporting the external validity of the public speaking task used in this study. A discussion follows about how these results fit within the framework of the extant literature, as well as limitations and directions for future research.

Participants who received the acceptance-based intervention exhibited significantly lower levels of experiential avoidance following the speech compared to those who received the cognitive-control-based intervention. This finding, however, must be interpreted with a good deal of caution, as the significance of the omnibus ANOVA test ($p = 0.10$) only approached the alpha cutoff score of $p < 0.05$. Interpretation of an interaction effect, such as the one concerning AAQ scores, without the presence of a significant main effect is typically cautioned against. However, the following interpretation is included for comprehensiveness's sake. Nonetheless, this tentative finding is consistent with previous research, which found that decreases in experiential avoidance mediated the relationship between ACT and decreases in distressing symptoms (Hayes et al., 2006), and more specifically, anxiety symptoms as well (Eustis**,** Roemer, Hayes-Skelton, & Orsillo, 2013). Although the current study was not intended as a mediation analysis per se, it is still encouraging that an intervention as brief in nature as the one implemented in this study was able to induce effects consistent with ACT theory.

Participant SUDS ratings throughout the experiment were also particularly noteworthy. Results indicated that participant ratings of distress during the speech were significantly higher than ratings taken pre- or post-speech, which indicated that the public speaking task sufficiently induced anxiety, further validating the idiosyncratic public speaking task used in this study. Furthermore, participants who received the acceptance-based intervention reported lower levels of distress during the public speaking task than participants who received the cognitive-control-based intervention, although this difference was not statistically significant. This finding runs contrary to previous research, as ACT is posited to work via teaching acceptance of distressing thoughts, rather than specifically intending to decrease or change the content of those thoughts (Hayes et al., 2013). Regardless of the ambiguity concerning

participant ratings of distress during the speech, reduced levels of distress during the speech reported by participants who received the acceptance-based intervention can be interpreted in a positive light, and may be indicative of the intervention's ability to aid participants in managing their distress during public speaking.

Limitations and Future Directions

The validity of the idiosyncratic public speaking task used in this study can potentially be viewed as a limitation, as there are a number of pre-existing public speaking tasks that have been well-researched and established as valid (e.g., Beidel, Turner, Jacob, & Cooley, 1989; Westenberg et al., 2009) that were not utilized in this study. In order to promote generalizability of the results of this study to commonly-encountered social settings, an idiosyncratic public speaking task consisting of common autobiographical topics was utilized (e.g., talk about a time when you had to overcome a conflict or challenge with someone else, talk about strengths of personality). Although the specific prompts were idiosyncratic in nature, the format of the public speaking task (i.e., talking about oneself, the impromptu nature of the task/limited preparation time, and the presence of confederates) was consistent with previous research (Beidel, Turner, Jacob, & Cooley, 1989; Morrison et al., 2016).

Participant ratings of the distressing nature of the public speaking task, in addition to the peak SUDS ratings provided during the speech, further support the validity of the public speaking task used in this study. Future research endeavors should investigate different types of public speaking tasks, including ones well-validated by previous research, in an effort to induce a sufficient level of anxiety, while still maintaining a task that is representative of commonly-encountered public speaking opportunities. In addition to this, most of the confederates used in this study were female. Future research could also investigate the

relationship between confederate and participant gender, and may want to include more than two confederates to increase the ecological validity of the public speaking task.

Attention is also warranted concerning the lack of significant findings related to participants' public speaking performance. Although no significant difference was found, participants who received the cognitive-control-based intervention actually exhibited *higher* levels of speech performance, a finding that ran contrary to the study's original hypothesis, which predicted that the acceptance-based intervention would lead to greater levels of speech performance. Moreover, the lack of significant findings was not consistent with previous research (Glassman et al., 2016), which found that individuals who received an acceptance-based intervention exhibited increased levels of public speaking performance. However, a number of plausible reasons are explored below concerning why this current study did not yield significant results.

First and foremost, the brief nature of the intervention may not have had as much of an impact on participants as intended. For example, 32.5% of participants only reported using the intervention while preparing for their speech "a little bit." Furthermore, participants in this study were not explicitly seeking out an intervention to improve public speaking performance, thus their degree of motivation to make use of the intervention may be questionable. Future research could foster greater motivation in participants to make use of the intervention by advertising the study explicitly to socially-anxious individuals seeking to improve their public speaking performance.

Future research investigating cognitive behavioral therapies for decreasing anxiety and improving performance would be well-served investigating longer, more extensive interventions. Although one-time interventions probably do not have the same impact as a

longer course of treatment, the purpose of the current study was not to provide psychotherapy, but rather was experimental in nature. However, brief interventions are very feasible and may be useful for individuals who are faced with preparing for a distressing task with only a small amount of time to do so (Goldfarb, 2009).

Many of the protocols used in experimental research are often more extensive and longer (60-90 minutes; see Gutierrez, Luciano, Rodriguez, & Fink, 2004) than the brief interventions used in this study. This may explain the lack of significant effects regarding public speaking performance and decreases in anxiety in the current study, which utilized a shorter protocol (15 minutes). Future research may benefit from replicating more extensive protocols used in other studies, such as the protocols used in Glassman and colleague's (2016) research, which found robust effects of their acceptance-based protocol on public speaking performance. Additional replications could also make use of 60-90 minute acceptance-based protocols used in previous experimental distress tolerance research (Gutierrez, Luciano, Rodriguez, & Fink, 2004; Paez-Blarrina et al., 2008).

Anecdotal evidence and SPS prescreening scores also indicated that participants exhibited a wide range of public speaking anxiety; some individuals reported very little anxiety, and a few participants reported such intense distress that they were unable to complete the study. Further research should utilize more stringent pre-screening procedures and/or, include only individuals with a DSM-V diagnosis of social anxiety disorder. These measures would increase the likelihood of obtaining a sample of individuals that more closely represents those with clinical levels of social anxiety. Utilization of more stringent inclusion criteria concerning public speaking anxiety may also allow for the intervention to produce the intended effects. It is also of note to mention that the sample from this current study limits

generalization to other populations, in the sense that the sample consisted of mostly Caucasian, female college students between the ages of 18-22. Future research could increase generality of findings by obtaining a more representative sample of the population. However, this study is highly generalizable to college students with social anxiety seeking to improve public speaking performance.

Another limitation concerns the measurement of speech performance. The inherent subjectivity involved in rating speech quality may have influenced the results. Even though extensive training and retraining of raters was emphasized in this study, measures of IOA were still slightly below a desirable level (ICC = 0.52). Although previous research has found that some variance among raters of public speaking performance is to be expected (Orr, 2008), future research should attempt control for this inherent subjectivity by continuing to emphasize a stringent training program and possibly implementing a system in which raters must meet a specified IOA requirement before proceeding with scoring.

A discussion regarding the lack of statistical power is also warranted, considering the achieved power analysis indicated the presence of a low level of power for many of the analyses conducted. This lack of power, combined with the small effect sizes found in the analyses conducted, would make it difficult to detect a small effect if one were present. Furthermore, some of the group X time interaction effects concerning predictions of differences between the two conditions on anxiety and SUDS scores may not have been able to be detected due to the lack of statistical power from the large number of analyses conducted. Future research could ameliorate this problem by obtaining a larger sample, or instituting more stringent eligibility requirements, such as a desire to improve public speaking performance or higher levels of public speaking anxiety.

The decision not to include an "inactive treatment" control condition also presented some limitations. A control condition was not included because a small sample size and subsequent lack of statistical power was anticipated during the research design process. Although the scope of this study was to examine the differential effects of two active interventions in the service of increasing public speaking performance rather than comparing a treatment group to a no-treatment control group on some measure of symptomology, the presence of a control group would allow for more conclusions to be drawn regarding the effectiveness of the interventions for increasing public speaking performance. In addition to this, individuals naturally tend to report reductions in anxiety once an aversive stimulus (i.e., a public speaking task) is removed. Therefore, the presence of a control group would allow for a better understanding of the intervention's effect on reductions in anxiety from pre- to post-speech measurements by controlling for the natural reductions of anxiety from pre- to post-speech by individuals in the control group.

Furthermore, Goldfarb's (2009) research utilized an experimental control condition in which participants were given a psychoeducational protocol regarding public speaking anxiety, and were subsequently instructed to prepare for their speech the way they normally would. Future replications of this study should plan to implement this control condition, in addition to the other two interventions, in order to investigate the effectiveness of these interventions for increasing public speaking performance, compared to the level of performance by individuals giving the speech without an active intervention (control group).

Conclusion

The findings of this study need be interpreted in light of several limitations, especially concerning the internal validity of the public speaking task and the external validity of the

sample of college students with sub-clinical levels of public speaking anxiety. However, the

tentative finding that the acceptance-based intervention was working via the intended

mechanism of action is especially encouraging, as understanding the process of change is

important for the development of any empirically-supported intervention (Hayes et al., 2013).

Furthermore, this study contributes to the extant literature by investigating the use of brief

acceptance and cognitive-control-based interventions for increasing public speaking

performance- a topic for which there has been a paucity of research, to date. As researchers

continue to investigate acceptance-based approaches as an alternative to traditional cognitive

behavioral techniques, more light will undoubtedly be shed on the promising role that

acceptance-based approaches can play in not only alleviating human suffering, but also

improving performance in values-consistent activities.

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COMPARING BRIEF INTERVENTIONS

Table 1.

Prescreening Survey- Social Phobia Scale.

Group	*M*	*SD*	*N*
Initial Sample	22.06	15.70	376
Eligible Ss	34.60	14.60	127
In-person study Ss	35.93	14.41	42

Table 2.

Prescreening Survey- Participant Level of Fear of Public Speaking

Group	None	Mild	Moderate	Severe	*N*
Initial Sample	5.1%	34.6%	37%	23.4%	376
Eligible Ss	N/A	N/A	55.1%	44.9%	127
In-person study Ss	N/A	N/A	50%	50%	42

Note. At least a "Moderate" level of fear was required for inclusion
   in the in-person study.

Table 3.

Prescreening Survey- Participant Level of Avoidance of Public Speaking

Group	Never	Occasionally	Often	Usually	*N*
Initial Sample	9%	40.4%	29.3%	21.3%	376
Eligible Ss	N/A	21.3%	39.4%	39.4%	127
In-person study Ss	N/A	28.6%	31%	40.5%	42

Note. At least a "Occasional" amount of avoidance was required for inclusion
   in the in-person study.

COMPARING BRIEF INTERVENTIONS

Table 4.

Overall Means for Dependent Variables

Measure	M	SD
AAQ-pre	38.28	7.17
AAQ-post	37.23	8.31
AAQ-total	37.76	7.74
STAI-S-pre	45.70	10.56
STAI-post	43.10	14.11
STAI-total	44.40	12.34
SUDS-pre	34.25	25.46
SUDS-during	62.58	29.00
SUDS-post	44.30	30.47
PSP-total	17.27	9.02

Note. N = 40 for all measures

Table 5.

Means for Dependent Variables by Condition

Measure	Pre-speech M (SD)	During-speech M (SD)	Post-speech M (SD)	Test Statistic F	Sig. Level p
AAQ				2.79	0.1
CBT	38.90 (7.52)	N/A	39.25 (7.77)		
ACT	37.65 (6.94)	N/A	35.20 (8.53)		
STAI-S				1.54	0.22
CBT	45.55 (12.05)	N/A	42.40 (13.64)		
ACT	45.85 (9.17)	N/A	43.80 (14.11)		
SUDS				21.04	0.001
CBT	35.00 (25.75)	68.40 (26.86)	47.50 (29.00)		
ACT	33.50 (25.81)	56.75 (30.55)	41.10 (32.29)		
PSP				0.79	0.38
CBT		16.00 (7.96)			
ACT		18.55 (10.03)			

Note. n = 20 for each group. Test statistic compared all participants from pre-post speech measurements, except PSP, which compared CBT and ACT group scores.

COMPARING BRIEF INTERVENTIONS

Table 6.

Participant Ratings of Interventions

Question	Not at all	A little bit	Somewhat	Quite a bit
Use	5%	32.5%	47.5%	15%
Usefulness	5%	20%	52.5%	22.5%

Note. $N = 40$ for all ratings.

Table 7.

Participant Ratings of Public Speaking Task

Not at all distressing	Slightly distressing	Moderately distressing	Extremely distressing
7.5%	25%	37.5%	30%

Note. $N = 40$ for all ratings.

Table 8.

Participant Ratings of Live Audience

Decreased anxiety	No effect	Increased anxiety
15%	17.5%	67.5%

Note. $N = 40$ for all ratings.

COMPARING BRIEF INTERVENTIONS

Figure 1.

Experiment Flow Chart

Participants prescreened via SONA systems using SPS and 2 items from LSAS ($n = 376$)

Eligible participants invited to attend in-person study ($n = 128$)

Participants attend in-person study and complete AAQ, STAI-S, SUDS ratings, and demographic survey ($n = 42$)

Random Assignment

Participants receive Acceptance-based protocol (n=20)

Participants receive cognitive-control-based protocol (n=20)

Participants prepare and give 5-minute speech

Participants complete post intervention AAQ, STAI-S, and SUDS ratings

COMPARING BRIEF INTERVENTIONS

Figure 2.

Interaction Between Intervention Conditions and AAQ Scores

Figure 3.

Participant SUDS Ratings Across Measurement Occasions

Appendix A

Social Phobia Scale

Please indicate the degree to which you feel the statement is characteristic of you:

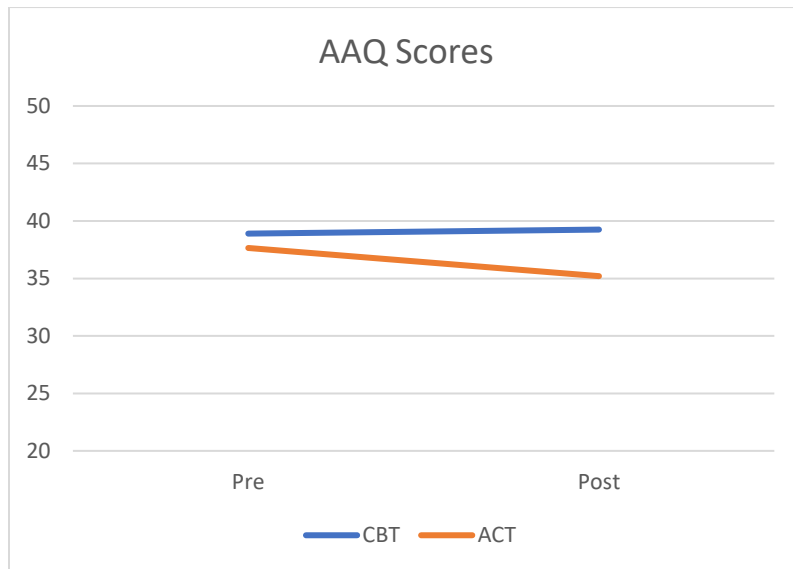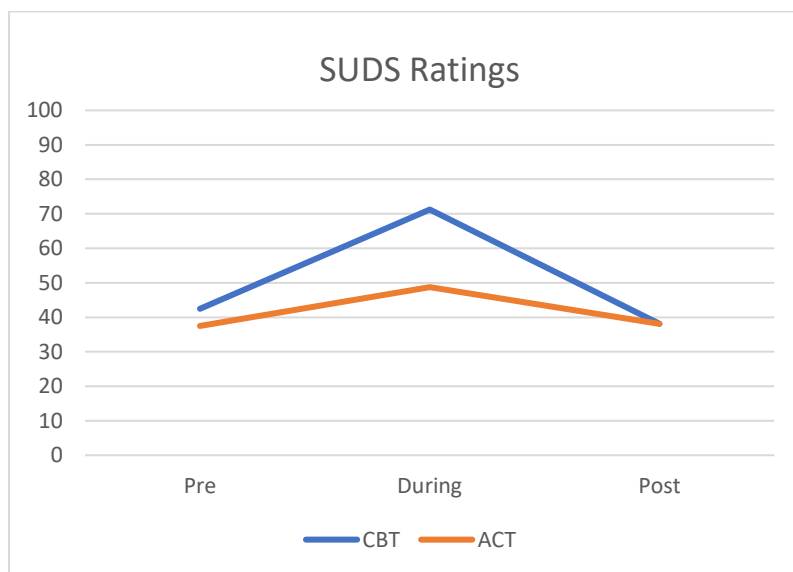|					
1. I get tense when I speak in front of other people	Not at all	Slightly	Moderately	Very	Extremely
2. I become anxious if I have to write in front of other people	Not at all	Slightly	Moderately	Very	Extremely
3. I become self-conscious when using public toilets	Not at all	Slightly	Moderately	Very	Extremely
4. I can suddenly become aware of my own voice and of others listening to me	Not at all	Slightly	Moderately	Very	Extremely
5. I get nervous that people are staring at me as I walk down the street	Not at all	Slightly	Moderately	Very	Extremely
6. I fear I may blush when I am with others	Not at all	Slightly	Moderately	Very	Extremely
7. I feel self-conscious if I have to enter a room where others are already seated	Not at all	Slightly	Moderately	Very	Extremely
8. I worry about shaking or trembling when I'm watched by other people	Not at all	Slightly	Moderately	Very	Extremely
9. I would get tense if I had to sit facing other people on a bus or a train	Not at all	Slightly	Moderately	Very	Extremely
10. I get panicky that others might see me to be faint, sick or ill	Not at all	Slightly	Moderately	Very	Extremely
11. I would find it difficult to drink something if in a group of people	Not at all	Slightly	Moderately	Very	Extremely
12. It would make me feel self-conscious to eat in front of a stranger at a restaurant	Not at all	Slightly	Moderately	Very	Extremely
13. I am worried people will think my behavior is odd	Not at all	Slightly	Moderately	Very	Extremely
14. I would get tense if I had to carry a tray across a crowded cafeteria	Not at all	Slightly	Moderately	Very	Extremely
15. I worry I'll lose control of myself in front of people	Not at all	Slightly	Moderately	Very	Extremely
16. I worry I might do something to attract the attention of others	Not at all	Slightly	Moderately	Very	Extremely
17. When in an elevator I am tense if people look at me	Not at all	Slightly	Moderately	Very	Extremely
18. I can feel conspicuous standing in a line	Not at all	Slightly	Moderately	Very	Extremely
19. I worry my head will shake or nod in front of people	Not at all	Slightly	Moderately	Very	Extremely
20. I feel awkward and tense if I know people are watching me	Not at all	Slightly	Moderately	Very	Extremely

Appendix B

Public Speaking Anxiety Question
(Adapted from Liebowitz, 1987)

Please rate your level of fear and avoidance for the following situation:

Giving a talk in front of an audience

	None	Mild	Moderate	Severe
Fear:	____	____	_____	_____

	Never	Occasionally	Often	Usually
Avoidance:	_____	_____	_____	_____

Please answer the following questions:

Are you currently being prescribed any anti-anxiety medications, such as Xanax or Ativan?

_____ Yes   _____ No

Is it OK for the researchers to contact you in the future about participating in another part of this study?

_____ Yes   _____ No

Appendix C

Recruitment Email sent to eligible participants

You are receiving this email because you recently participated in the online study "Evaluating interventions for public speaking anxiety in college students," and indicated that you were interested in participating in the in-person part of this study. Participation in the in-person study would take about ***45 minutes***, and earn you ***8 SONA extra credit points.***

The next step in the process, if you're interested, would be for us to arrange a time when you could come in to my lab, and I would explain the research study in depth and allow you an opportunity to ask any questions you may have before proceeding. I have listed some dates/times below for which I have availability. Feel free to select from any of these times. If none of these times work, please let me know and we can find a more agreeable time.

Applicable dates/times listed here

Thanks again for expressing interest in my research. Also, just an FYI, the study will take place in my office at the Clinical Psychology and Doctoral Center located in the U-Square Mall, kiddie corner from Coldstone. I would be more than happy to give you directions if you don't know where we are.

Hope to hear from you soon,

Appendix D

Self-Evaluation Questionnaire
STAI Form Y-1

DIRECTIONS:
A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wring answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

Appendix E

Action and Acceptance Questionnaire

1----------------2----------------3----------------4----------------5----------------6----------------7
never   very seldom   seldom   sometimes   frequently   almost always   always
true   true   true   true   true   true   true

_____ A. I am able to take action on a problem even if I am uncertain what is the right thing to do.

_____ B. I often catch myself daydreaming about things I've done and what I would do differently next time.

_____ C. When I feel depressed or anxious, I am unable to tale care of my responsibilities.

_____ D. I rarely worry about getting my anxieties, worries and feelings under control.

_____ E. I'm not afraid of my feelings.

_____ F. When I evaluate something negatively, I usually recognize that this is just a reaction, not an objective fact.

_____ G. When I compare myself to other people, it seems that most of them are handling their lives better than I do.

_____ H. Anxiety is bad.

_____ I. If I could magically remove all the painful experiences I've had in my life, I would do so.

COMPARING BRIEF INTERVENTIONS

Appendix F

Participant ID #:_____

Demographic Information

Age: _____

Gender:

Male:_____   Female:_____

Educational Level

Freshman:_____

Sophomore:_____

Junior:_____

Senior:_____

Other:_____

Ethnicity

White/Caucasian:_____

Black/African-American:_____

Latin-American:_____

Asian-American:_____

Other:_____

Subjective Units of Discomfort

On a scale of 0-100, with 0 representing *no distress* and 100 representing *the most conceivable distress,* please rate your discomfort at this moment.

_____

COMPARING BRIEF INTERVENTIONS

Appendix G

PSP

(Rapee & Lim, 1992)

We would like you to rate yourself on the features listed below. For each feature, please circle the appropriate number to indicate how you felt you actually performed. Your evaluation will remain confidential. For questions regarding the "audience," include anyone who was

interacting with you, observing you, or listening to you during the exposure

0 = Not at all
1 = Slightly
2 = Moderately
3 = Much
4 = Very much

1. Content was understandable. _____
2. Kept eye contact with audience. _____
3. Stuttered. _____
4. Had long pauses (more than 5 seconds). _____
5. Fidgeted. _____
6. "Um'ed" and "Ah'ed" alot _____
7. Had a clear voice. _____
8. Seemed to tremble or shake. _____
9. Sweated. _____
10. Blushed. _____
11. Face twitched. _____
12. Voice quivered. _____
13. Appeared confident. _____
14. Appeared nervous. _____
15. Kept audience interested. _____
16. Generally spoke well. _____
17. Made a good impression. _____

Appendix H

Cognitive Restructuring Protocol

(Partially Adapted from Block (2003) and Burns (1999))

I. Introduction (1 minute)

- Fear of Public Speaking is one of the most common fears in the United States. Most people try as best as possible to avoid this. One study indicates that approximately 85% of people in the United States report some discomfort related to public speaking.

- Therapists do not have a magic wand and anxiety cannot be eliminated in one session. However, if you stick with it and incorporate lessons, you can learn to manage the anxiety so that it is no longer a problem in your life.

II. Rationale for Cognitive Approach: (3-4 minutes)

- Definition of fear (adaptive response to a threatening situation) versus anxiety (future-oriented; response to a situation that is not objectively dangerous)

- Cognitive Component of Anxiety: How you think about a situation will influence your emotional response, which will influence your behavioral response. The goal of this technique is to help you understand that the ways that you think about a situation might not be adaptive, and give you tools to help you think in ways that are adaptive. (i.e. We need to change the negative thinking.)

III. Cognitive Restructuring: (5-6 minutes)

- Think for a moment about your upcoming speech. Write down any negative thoughts you might have just before you give your talk today. (Hand the participant a worksheet titled "negative thoughts"- see below)

- Hand the participant a "checklist of cognitive distortions" (see below) and explain the idea of a cognitive distortion.

- Go over a sample thought: " If I'm nervous, I won't be able to present my ideas very clearly" Explain how that relates to both "all or nothing thinking" and "fortune-telling"

- Ask participant to review the thoughts he/she put down on the sheet and to identify which cognitive distortions they related to and to provide some suggested rational alternatives. Suggestions and encouragement will be provided in formulating the rational alternatives. This sheet and the checklist will be saved in order to be utilized in a later part of the session.

IV. Part Two: Independent strategy review just prior to the speech (15 minutes)

- Instruct the participant to review their thoughts and related cognitive distortions as well as focusing on the rational alternatives provided. In addition, if they have any additional negative thoughts they should be written down on the sheet and compared to the list of cognitive distortions independently.

COMPARING BRIEF INTERVENTIONS

Negative Thoughts

1			
2			
3			
4			
5			

Checklist of Cognitive Distortions

(Adopted from Burns, 1999)

1. **All-or-nothing thinking**: You look at things in absolute, black-and-white categories.

2. **Overgeneralization**: You view a negative event as a never ending pattern of defeat.

3. **Mental filter**: You dwell on the negatives and ignore the positives.

4. **Discounting the positives**: You insist that your accomplishments or positive qualities "don't count."

5. **Jumping to conclusions**: (A) Mind reading- you assume that people are reacting negatively to you when there's no definite evidence for this; (B) Fortune-telling- you arbitrarily predict that things will turn out badly.

6. **Magnification or minimization**: You blow things way out of proportion or you shrink their importance inappropriately.

7. **Emotional reasoning:** You reason from how you feel: "I *feel* like an idiot, so I really must be one." Or "I don't *feel* like doing this, so I'll put it off."

8. **"Should statements":** You criticize yourself or other people with "should" or "shouldn'ts." "Musts," "oughts," and "have tos" are similar offenders.

9. **Labeling**: You identify with your shortcomings. Instead of saying "I made a mistake," you tell yourself, "I'm a jerk," or "a fool," or "a loser."

10. **Personalization and blame**: You blame yourself for something you weren't entirely responsible for, or blame other people and overlook ways that your own attitudes and behaviors might contribute to a problem.

Appendix I

Acceptance Protocol

(Partially Adapted from Block (2003) and Eifert & Forsyth (2005))

I. Introduction (1 minute)

* Read: All Questions will be answered after the presentation is completed.

- Fear of Public Speaking is one of the most common fears in the United States. Most people try as best as possible to avoid this. One study indicates that approximately 85% of people in the United States report some discomfort related to public speaking.

- Therapists do not have a magic wand and anxiety cannot be eliminated in one session. However, if you stick with it and incorporate this lesson in your life, you can learn to manage the anxiety so that it is no longer a problem.

II. Rationale for Acceptance Approach: (3-4 minutes)

- It is apparent that most of us try very hard to control our emotional experiences; we link thoughts and feelings to goals and outcomes. However, maybe it is not that we have not figured it out, but that in a real sense, they cannot be consciously controlled (for example, sometimes we cannot prevent our hands from shaking, or voice from trembling; and in the same way we cannot make anxious thoughts go away). Maybe we are dealing with an unworkable agenda. Maybe we are trying to do something that cannot be done.

- Now I am going to tell you a metaphor that I would like you to relate to your thoughts and feelings. It is called the Quicksand Metaphor (handout copy of metaphor- see below). *Read this aloud slowly to the participant.*

- Anxiety is what it is, in many instances a perfectly adaptive response and in other instances a nuisance----either way, it is a part of being a fully functioning human being

- Anxiety is part of living rather than a cause of not living

- To live a valued life, one must be willing to take the totality of human experience along for the ride.

- In summary, it is very important to behave in the way that you want to behave even with the anxiety you might feel. It is important to focus on what you want to do and not what you want to feel.

III. ACT-style Exposure: (5-6 minutes)

- Before you begin speaking, I would like us to practice together putting the above principles to work. I would like you to close your eyes for a moment and think about the upcoming speech (pause this script for 5 seconds). Notice your thoughts (brief pause)…. Notice your feelings (brief pause)…and notice any bodily sensation (10 second pause). Notice how you can experience all of these thoughts, feelings, and sensations without needing to change anything about them. In a moment, I will ask you to describe out loud whatever you are experiencing. I am going to ask that you label each experience what it is (e.g.'s: " I am having the thought that people will think I am stupid";, "I am having the sensation that my heart is racing"). Now you tell me what you are

experiencing. (*individual describes experience out loud. Jot down comments in the lines below*)

_____

_____

_____

_____

_____

(Now reflect these ideas back to them, and switch to using the proper language in identifying the experience they described)

- We think that this type of talk can be helpful, as people tend to get very caught up in their experience. Labeling thoughts, feelings, and bodily sensations as thoughts feelings and bodily sensations may allow us to gain a little distance from these experiences. Labeling thoughts, feelings and bodily sensations as what they really are as opposed to what they say they are may allow you to accomplish the desired behavior. For example, when we label our bodily sensations as anxiety, we may be more likely to avoid it than if we label it as my heart is racing fast, I am breathing quickly, those are the actual experiences.

- _____(person's name) is it ok that you are having these thoughts, feelings, sensations, that you can notice them and just let them be? (STOP and wait for the answer) Are you willing to try and go forward with this speech while accepting these experiences? (Pause and wait for the answer)

Quicksand metaphor

We have a problem here, and that is that our minds tell us to do what doesn't work, because it doesn't see anything else to do. It is like as if you were stuck in quicksand. Naturally, you would try to get out. But, everything that you have learned about how to get out causes problems in quicksand. If you try to walk, jump, run, you just end up pushing down on the sand. If you struggle, crawl, or push with your hands, you just sink deeper. Often as people sink in quicksand, they get panicky and start flailing around, and down they go.

In quicksand, the only thing to do is to create as much surface area as possible, to lay out on the quicksand, getting everything that you have in full contact with it. Our relationship with our thoughts and feelings is like that. We need to get everything that we have in full contact with what we have been struggling with, but without more struggle. This may be hard. Not hard meaning effortful, but hard meaning tricky. It is tricky because our minds tell us to do what doesn't work because we can't see anything else to do. And we have learned this so well that we can't just tell ourselves to stop and expect that we will. So what I am telling you is to make as much contact with your anxiety as you can in a public speaking situation. **Do not try to decrease anxiety in any way.**

COMPARING BRIEF INTERVENTIONS

Appendix J

Speech Instructions

I am now going to ask you to prepare and give a speech about yourself. Your speech will be videotaped and later evaluated by a panel of judges who will rate and compare your speech to other speeches given under similar situations. I would like your speech to cover the following topics:

1. Spend one minute talking about the most difficult adjustment you had to make coming to college.
2. Spend one minute talking about a time when you received negative feedback from a teacher or boss.
3. Spend one minute talking about a time when you had to overcome a conflict or challenge with another person.
4. Spend one minute describing what you consider to be the primary strengths of your personality.
5. Finally, spend the final minute describing what you consider to be the primary weaknesses of your personality.

The speech will need to be five minutes long. You may create notes to help you prepare for the speech, but we encourage you to use them minimally during the actual speech. You will now have 5 minutes to prepare your speech. Please let me know at this time if you have any questions.

COMPARING BRIEF INTERVENTIONS

Appendix K

Research Assistant Instructions

Thank you for your participation. For this experiment, we are studying the effects of anxiety on public speaking. Specifically, we are focusing on creating an environment that will heighten anxiety through the presence of audience members.

Your role will be to sit silently during the participant's five-minute speech and display noncommittal behavior that offers neither negative nor positive feedback. Do not greet or welcome the participant as they enter the room or engage in communication with them in any way. If the participant directly asks you a question, answer it in the briefest manner possible. Do not smile nor frown, but rather keep body language vague. Examples of noncommittal behavior include displaying little to no welcoming or encouraging body language (such as head-nodding), keeping communication with the participant giving the speech to a minimum, and displaying a moderate amount of eye contact. A moderate amount of eye contact is defined as spending no more than half of each minute engaged in direct eye contact with the participant, with no more than 15 seconds of continuous eye contact.

By having all research assistants displaying the same noncommittal and vague behavior during participant speeches, we are able to keep the level of anxiety produced by this public speaking task consistent for each participant. If you have any questions, please ask the experimenter at this time.

COMPARING BRIEF INTERVENTIONS

Appendix L

ONLINE/ANONYMOUS SURVEY CONSENT

Purpose
I understand that the purpose of the research study is to measure the degree to which people experience public speaking anxiety.

Procedure
I understand that this research study will consist of two short online questionnaires, and will take approximately 10 minutes to complete.

Risks and Benefits
I understand that there are minimal risks associated with participation in this study. It is possible that I may become anxious or tense during the process of completing these surveys, and that these feelings of anxiety may be uncomfortable. If this occurs I can end my participation at any time, and still receive full compensation for participation. I understand that this study may not lead to any direct benefits.

Compensation
I understand that in exchange for my participation in this study, I will receive extra credit that can be applied to my psychology class through the SONA system.

Confidentiality
I understand that my responses and other information collected in this study will be anonymous. However, whenever one works with online technology there is always the risk of compromising privacy, confidentiality, and/or anonymity. If you would like more information about the specific privacy and anonymity risks posed by online surveys, please contact the Minnesota State University, Mankato Information and Technology Services Help Desk (507-389-6654) and ask to speak to the Information Security Manager.

I understand that my name and email address will be linked to my score on this survey for the sole purpose of the researcher contacting me to request further participation in another study. If you are chosen, and do agree to participate in the in-person study, no identifying information will be linked to your name during that study. All information collected during this study will be used for research purposes only and will only be accessible to the researcher and his research team.

Right to Refuse or Withdraw
I understand that participation is voluntary. I understand that I may withdraw from the study at any time without penalty by closing your web browser. Also, I can choose not to respond to any of the questions. I understand that I will not be penalized or jeopardize my relationship with Minnesota State University as a result of withdrawal from the study. I understand that I will be given the same amount of compensation (extra credit points) regardless of whether I complete the study or not.

COMPARING BRIEF INTERVENTIONS

Questions
I have been informed that if I have any questions, I am free to ask them. I understand that if I have any additional questions later, I may contact the office of the principal investigator, Jeffrey Buchanan, Ph.D. at (507) 389-5824 or the student investigator, Sam Spencer at (507) 508-2357, or if you have questions or concerns about the treatment of human subjects, please contact the IRB Administrator and Associate Vice President of Research and Dean of Graduate Studies, Dr. Barry Ries at (507) 389-1242.

Closing Statement
Submitting the completed survey will indicate your informed consent to participate and indicate your assurance that you are at least 18 years of age.

Please print a copy of this page for your future reference.

IRBNet #: 962649-1

COMPARING BRIEF INTERVENTIONS

Informed Consent for Participation in the Research Study

Purpose
I understand that the purpose of the research study is to investigate different interventions for public speaking anxiety, and how these treatments affect public speaking performance.

Participants
I understand that I have been asked to participate because I have reported experiencing at least a moderate degree of public speaking anxiety, based on the results of the online survey I took prior to this experiment.

Procedure
I understand that the experimenter will first have me complete four questionnaires. Then I will be provided one of two interventions (each are 15 minutes long) which are intended to help cope with anxiety related to public speaking. Which of the two interventions I receive has already been determined randomly. After completion of the intervention, I will be given five minutes to prepare a five-minute speech about myself, which will be presented to an audience of 2-3 people. After giving the speech, I will be asked to complete another questionnaire. I also understand that the speech I give will be videotaped. The videotape will be used to assess my speech performance and will only be viewed by some members of the principal investigator's research team who are working on this project. The total time commitment for the study will be about 50-60 minutes.

Risks
I understand that there are minimal risks associated with participation in this study. It is possible that I may become anxious or tense during the process of giving this speech, and that these feelings of anxiety may be uncomfortable. If this occurs I can end my participation at any time, and still receive full compensation for participation. If I choose to end my participation during the speech, I can simply raise my hand, and the study will stop. I am also aware that the Minnesota State University, Mankato Counseling Center can provide resources and support for dealing with any anxiety or distress that I may encounter as a result of this study. The phone number for the Counseling Center (507) 389-1455.

Benefits
I understand that this study may result in me gaining new coping methods for dealing with public speaking anxiety. This study may also eventually lead to the development of more effective methods for treating public speaking performance.

Compensation
I understand that in exchange for my participation in this study, I will receive extra credit points that can be applied to my psychology class through the SONA system.

COMPARING BRIEF INTERVENTIONS

Confidentiality
I understand that my responses and other information collected in this study will be completely confidential. Confidentiality will be protected in that your name or student ID number will not be included on any records collected during this study, including videotapes and questionnaires. Also, all information collected during this study, including videotapes, will be used for research purposes only and will only be accessible to the researcher and his research team. All information will be kept in a locked cabinet in the principal investigator's office and will be destroyed three years following the completion of the study.

Right to Refuse or Withdraw
I understand that participation is voluntary. I understand that I may withdraw from the study at any time without penalty. I understand that my decision as to whether or not to participate will not affect my relationship with Minnesota State University, Mankato, nor will a refusal to participate involve a penalty or loss of benefits. I understand that I will be given the same amount of compensation (extra credit points) regardless of whether I complete the study or not.

Questions
I have been informed that if I have any questions, I am free to ask them. I understand that if I have any additional questions later, I may contact the office of the principal investigator, Jeffrey Buchanan, Ph.D. at (507) 389-5824 or the student investigator, Sam Spencer at (507) 508-2357, or if you have questions or concerns about the treatment of human subjects, please contact the IRB Administrator and Associate Vice President of Research and Dean of Graduate Studies, Dr. Barry Ries at (507) 389-1242.

Closing Statement
My signature below indicates that I am 18 years of age or older and have decided to participate in a research study and that I have read this form, understand it, and have received a copy of this consent form.

_____   _____
Signature of Participant   Date

_____   _____
Signature of Investigator   Date

IRBNet #:962649

COMPARING BRIEF INTERVENTIONS

Appendix M

Participant ID #:_____

Subjective Units of Discomfort

On a scale of 0-100, with 0 representing *no distress* and 100 representing *the most conceivable distress,* please rate your discomfort at this moment.

_____

On a scale of 0-100, with 0 representing *no distress* and 100 representing *the most conceivable distress,* please rate your discomfort during the most distressing moment while you were giving your speech.

_____

Please rate how much you used the techniques learned from the intervention to help you manage anxiety experienced during preparation for, and throughout your speech.

Not at all	*A little bit*	*Somewhat*	*Quite a bit*
_____	_____	_____	_____

Please rate how useful the techniques from the intervention were in helping you deal with your anxiety preparing for, and during your speech.

Not at all	*A little bit*	*Somewhat*	*Quite a bit*
_____	_____	_____	_____

On the following rating scale, please rate how distressing it was having a live audience observe your speech.

Not at all distressing   Slightly distressing   Moderately distressing   Extremely distressing

_____	_____	_____	_____

Did the behavior of the people observing your speech increase, decrease, or have no effect on your level of anxiety during the speech?

Decreased anxiety	*No effect*	*Increased anxiety*
_____	_____	_____

COMPARING BRIEF INTERVENTIONS

Appendix N

Debriefing Form

(read to participants)

Thank you for participation in this study. We hope that you have gained exposure to potentially useful techniques for managing anxiety during public speaking. If you discover that you have any issues or distress related to the anxiety from this study, or anxiety in general, feel free to contact the University Counseling Center, which can provide valuable resources and support. They can be contacted at (507) 389-1455.

If you have any questions about this study, or would like to learn the results, please contact the principal investigator, Jeffrey Buchanan, Ph.D. at (507) 389-5824, or the student investigator, Sam Spencer at (507) 508-2357. Thank you again for your participation.