

ABSTRACT

The Flexibility of Distress Tolerance through a Brief Acceptance and Commitment Therapy Intervention: A Pilot Study

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Distress tolerance (DT) is characterized as a person's capacity and willingness to tolerate negative emotional states. It is theorized that DT may contribute to the development, maintenance, and therapeutic extinction of a variety of forms of psychopathology. The paucity of literature for interventions altering DT indicates that further research in this area could be beneficial. The current study aimed to explore the impact of a brief Acceptance and Commitment Therapy (ACT) intervention on DT and various psychological symptoms. Baseline relationships between DT and symptoms, as well as DT and ACT-related constructs were explored. University student participants completed self-report instruments and a one-hour laboratory session of a standardized ACT intervention. Two weeks post-intervention, participants completed another set of self-report instruments. Results indicated that DT was significantly related to measures of discomfort intolerance, resiliency, and impulsivity. DT was significantly related to anxiety, stress, depression, binge eating, and negative affect, such that higher levels of DT were related to lower rates of psychological symptoms. When exploring DT and

ACT-related constructs, significant relationships were found between DT and psychological inflexibility, progress on valued living, and four of five mindfulness factors. Results revealed a significant change in DT when measured pre- and post-intervention. The current study shows that DT is flexible and can be significantly and positively altered after a brief one-hour intervention. Changes in resiliency and drinking motives for social, coping, enhancement, and conformity reasons were found. No changes were found in self-reported symptoms of depression, anxiety, stress, or negative affect. Although a lack of significant change on these variables was found, it should be noted that pre-to-post changes in these variables were all in the hypothesized direction. Contrary to hypotheses, results revealed an increase in binge eating when assessed pre- and post-intervention. In terms of ACT-related skills, no changes in psychological inflexibility or values consistency were found, while significant increases were observed for three out of five mindfulness factors. Overall, this study provides preliminary evidence for the utility of a single-session intervention to result in psychological change. An effective single-session intervention is an important alternative to a longer, more intensive treatment.

The Flexibility of Distress Tolerance Through a Brief-Acceptance
and Commitment Therapy Intervention: A Pilot Study

by

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LIST OF ABBREVIATIONS

ACT	Acceptance and Commitment Therapy
AAQ-II	Acceptance and Action Questionnaire-II
AS	Anxiety Sensitivity
ASI-3	Anxiety Sensitivity Index-3
BIS	Barratt Impulsivity Scale
BIS-Brief	Barratt Impulsivity Scale-Brief
BA	Behavioral Addiction
BRS	Brief Resiliency Scale
DASS-21	Depression Anxiety Stress Scale-21
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders-IV
DSM-5	Diagnostic and Statistical Manual of Mental Disorders-5
DBT	Dialectical Behavior Therapy
DT	Distress Tolerance
DTS	Distress Tolerance Scale
DI	Discomfort Intolerance
DMQ-R	Drinking Motives Questionnaire-Revised
ED	Eating Disorder
EDDS	Eating Disorders Diagnostic Scale- Binge Eating Module
FFMQ	Five Facet Mindfulness Questionnaire
GAD	Generalized Anxiety Disorder

LPI	Life Problems Inventory
MTPT	Mirror Tracing Persistence Task
PANAS	Positive Affect Negative Affect Scale
PTSD	Posttraumatic Stress Disorder
RCTs	Randomized Controlled Trials
SIDI	Skills for Improving Distress Intolerance
SUD	Substance Use Disorder
TAU	Treatment As Usual
VLQ	Valued Living Questionnaire
WTP-DI	Willingness to Pay- Distress Intolerance

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DEDICATION

To anyone daring to sacrifice the status quo in pursuit of something more

CHAPTER ONE

Introduction

One of the proposed mechanisms of psychopathology is the ability to tolerate negative affect, also referred to as distress tolerance (DT). The current study aimed to explore the role of a brief Acceptance and Commitment Therapy (ACT)-derived intervention on changes in DT, or one's capability of withstanding trying emotions. Additionally, the current study aimed to examine the utility of a brief, ACT-based intervention on a variety of symptoms of psychopathology, including depression, anxiety, stress, and binge eating.

At least half of the population is expected to meet criteria for a psychological disorder (Kessler et al., 2005). Due to the high prevalence rate of mental illness, resources (insurance, federal assistance programs) and productivity (work attendance, fulfilling personal obligations) of the population are negatively impacted. To provide preventative care and avoid the often-observed consequences associated with psychopathology, it is essential for researchers to examine the mechanisms and mediators of psychopathology, specifically DT. Having an increased understanding of DT's role in the maintenance, onset, and recovery from different psychological issues will allow clinicians to plan treatment more effectively.

Defining Distress Tolerance

Distress tolerance (DT) is an individual's ability and willingness to tolerate negative emotional states (Simons & Gaher, 2005). These states include any emotion

that is seen as aversive, and may include emotions such as anxiety, sadness, loneliness, or frustration, among others. It manifests as the degree to which a person, through behavior, avoids or acts to alleviate these negative feelings (Simons & Gaher, 2005). Conceptually, DT is comprised of four components. *Tolerance* is the capacity to withstand unbearable distress. *Appraisal* is the degree of acceptance versus shame related to distressing emotions and the individual's perception of their coping as equal or inferior to the coping of others. *Absorption* is the extent to which an individual is consumed by an experience. Lastly, *regulation* is the degree to which one engages in avoidance behaviors (Simons & Gaher, 2005). This capacity to tolerate emotional states may impact the significance assigned to the experience of different emotional states (Zvolensky, Bernstein, & Vujanovic, 2011). Some models posit that DT may be a lower-order factor under a higher-order concept of expressive dysregulation. An alternate conceptualization of DT utilizes five lower-order distinct variables of an overarching experiential (in)tolerance construct: intolerance of uncertainty, ambiguity, frustration, physical sensations, and negative emotional states (Bardeen, Fergus, & Orcutt, 2013; Leyro, Zvolensky, & Bernstein, 2010; Zvolensky, Vujanovic, Bernstein, & Leyro, 2010). In this conceptualization, the Distress Tolerance Scale (DTS) assesses one of the five factors: negative emotional states (Bardeen et al., 2013).

Although DT may be related to emotional dysregulation, the two concepts are not isomorphic, as DT is related to additional vulnerability factors (Brown, Lejuez, Kahler, Strong, & Zvolensky, 2005; Lang, 1994; Schmidt & Cook, 1999; Simons & Gaher, 2005). Emotion regulation, or the control an individual exerts over how, when, and what emotion is experienced, is essential for psychological health and well-being (Rottenberg

& Gross, 2003). It is unknown whether this process is conscious or unconscious (Rottenberg & Gross, 2003).

Furthermore, DT can be understood in terms of bio-behavioral and subjective (emotional) components. Measures of DT can be found in behavioral and self-report formats (Schmidt, Richey, & Fitzpatrick, 2006; Simons & Gaher, 2005). Researchers have developed both physical (Brown et al., 2005; Eisenberger & Leonard, 1980; Hajek, Belcher, & Stapleton, 1987; Zvolensky & Eifert, 2000) and psychological (Simons & Gaher, 2005) experimental measures to conceptualize an individual's level of DT. The current study investigated the subjective emotional components of DT. Subjective emotional DT measures an individual's opinion of his/her ability to respond to life stressors. This measurement of DT is from the perspective of the agent, who may view his/her coping strategies as "good" or "bad," and emotions as "positive" or "negative." For example, an individual with low DT may attempt to avoid situations where the risk of experiencing aversive states or negative emotions is high, due to his/her perceived lack of ability to cope with such situations. Someone who is unable to regulate his/her response to negative emotions, or who has low DT, is at higher risk for bulimic symptoms, SUD, and posttraumatic stress symptoms (Leyro et al., 2010; Zvolensky et al., 2011). An individual with high DT is hypothesized to feel capable of withstanding negatively charged feelings and to be resilient from developing symptoms of psychopathology (Simons & Gaher, 2005). Resiliency may be attributed to specific coping techniques, such as action-focused coping, that protect an individual from psychopathology.

DT is multidimensional in nature and not only includes an individual's ability to withstand negative emotion, but also the ability to accept the emotion as customary, to

regulate the emotion appropriately, and not to expel unnecessary energy thinking about the emotion (Zvolensky et al., 2011). Extant research has explored the concept of DT as it relates to psychopathology because individuals or populations expressing high DT may respond to stressful stimuli more adaptively, thereby decreasing the rate of psychopathology in that individual or population. If high DT is associated with decreased rates of psychopathology, the next logical question one would ask is “how is DT increased so that we can minimize the risk of psychopathology?” If interventions can target and reliably increase an individual’s level of DT, it would prove to be a malleable construct and could potentially help to reduce psychopathology.

State versus Trait Nature of DT

There is no universally accepted conceptualization of DT, nor is there sufficient research to fully understand its relationship to psychopathology. However, it is theorized that DT may contribute to the development, maintenance and therapeutic extinction of a variety of forms of psychopathology. A full conceptualization of DT cannot be assumed until the pliability of DT is understood. Research has shown that DT is correlated with mental illness, although the extent of its role is unknown. The true nature of the relationship between different forms of psychopathology and DT is difficult to distinguish and it is unknown whether DT is the cause of, or result of, different forms of psychopathology. One way to determine cause and effect is to experimentally manipulate DT.

The malleability of DT is unknown and highly debated (Zvolensky et al., 2011). Although research has reached a consensus on the important role DT plays in symptom development and relapse, theories are conflicted on the ability of DT to be altered. If DT

is trait-like and conceptualized as an ingrained characteristic of an individual, treatment options are limited and symptoms may be less amenable to change. On the other hand, if DT is state-like, it presents as malleable and interventions should focus on the flexibility of this particular construct. Understanding the malleability of DT is essential to developing appropriate treatments, relapse prevention plans, and preventative measures to protect against symptom onset.

Individual differences, or distinctions that mark one's personality structure from others, are influenced by genetics, conditioning, and embedded habits. One individual difference factor is how one perceives his/her feelings. This subjective experience of emotions encompasses valence and duration, both of which may influence DT through an individual's appraisal of a given situation (Zvolensky et al., 2010). This highly specialized individual personality structure is estimated to be relatively stable, although change is possible, providing justification for the investigation of malleability of this variable (Frenkel-Brunswick, 1948; Murphy, 1947). Emotions are also influenced by environmental and social contexts, suggesting that DT is also influenced by the same. For example, learned helplessness, a subjective experience influenced by the environment, occurs when an individual perceives events as uncontrollable and the outcomes as independent from the behavior he/she engages (Seligman & Beagley, 1975); the behavioral result is avoidance of stimuli in the absence of opportunities to escape. DT is, in part, developed through opportunities to respond to negative stimuli. If an individual is often presented with the opportunity to avoid negative states, he/she may not see the need to escape suddenly, whereas an individual who is often denied relief from negative

experience would agree to any alleviation of pain (Zvolensky et al., 2011), which can result in increased DT.

Although the flexibility of DT is debated, researchers agree that multiple neurobiological factors may play a role in managing DT. Genetics, social environment, and prior learning are theorized to influence DT. Zvolensky et al. (2011) reported that DT is context-specific and state-like, not trait-like and conceivably permanent. Therefore, it may be possible for DT to be altered, although specific strategies for improving DT have not been established.

One way to test the malleability of DT and to assess if it can be targeted in treatment would be to assess DT before and after exposure to an intervention, which is the focus of the present study. Because DT is related to different forms of psychopathology, the implications for treatment of these illnesses is enormous.

DT Related to Psychiatric Symptoms/Syndromes

A common thread uniting different forms of mental illness is the presence of avoidance and compensatory strategies to manage symptoms. Psychopathology may result in maladaptive beliefs about the experience of symptoms and avoidance tactics originating from these beliefs. This learned avoidance prevents individuals from confronting perceived fears, thereby reinforcing the fear and maintaining avoidance behaviors (e.g., an individual may dislike feeling anxious, and therefore avoid certain situations where s/he would anticipate feeling that way). This typically leads to heightened sensitivity towards that emotion, and the individual may continue to avoid any situation that could lead to that feeling, even if s/he has not actually felt anxious (Powers, Smits, & Telch, 2004; Salkovskis, Clark, Hackmann, Wells, & Gelder, 1999).

Avoidance has been linked to many forms of psychopathology, and has been shown to mediate the relationship between coping style and psychopathology (Fledderus, Bohlmeijer, & Pieterse, 2010). Higher rates of avoidance are linked to greater symptoms of psychopathology and decreased emotional health (Fledderus et al., 2010). Individuals are likely to engage in different avoidance techniques or behaviors to try to relieve uncomfortable feelings. This avoidance may manifest in different behaviors associated with mental illness (e.g., smoking and drug use, or alcohol abuse).

DT has been examined in relation to these behaviors. Smoking is currently one of the most well researched constructs in relation to DT (Bernstein, Trafton, Ilgen, & Zvolensky, 2008; Brandon et al., 2003; Brown, Lejuez, Kahler, & Strong, 2002; Hajek, 1991; Sirota et al., 2010). Lower DT has been associated with difficulties with smoking cessation, such that smoking may be used as a compensatory strategy for dealing with stress and other negative states (Cook, McFall, Calhoun, & Beckham, 2007; Hajek, 1991; Sirota et al., 2010). Low DT has also been defined as an inability to handle negative withdrawal symptoms associated with smoking cessation and may therefore act as a potential mechanism for smoking relapse. Brandon et al. (2003) found that pretreatment Mirror Tracing Persistence Task (MTPT; Quinn, Brandon, & Copeland, 1996; Strong et al., 2003), a neuropsychological task strongly correlated with DT, predicted smoking abstinence after a 12-month follow-up. Participants with lower levels of DT were more likely to have failed abstinence attempts and to perceive the side effects of smoking cessation as aversive. In another study, when light-moderate smokers underwent a 12-hour smoking deprivation, increased psychological symptoms were reported and shorter breath holding times observed as compared to individuals smoking as usual. Results

indicated that DT may be context-dependent and influenced by a variety of factors, specifically in the case of an aversive condition such as smoking deprivation (Bernstein et al., 2008). Further, Daughters et al. (2009) revealed that low DT placed Caucasian youth at higher risk for recent substance abuse, African American youth at higher risk for delinquent behavior, and girls at higher risk for internalizing symptoms (depression, anxiety, and psychosomatic complaints). Low tolerance for emotional distress is a vital component to the onset, maintenance, and recovery from a SUD (Brandon et al., 2003; Brown et al., 2002; Brown et al., 2005; Chaney, Roszell, & Cummings, 1982; Daughters et al., 2009; Otto, Powers, & Fischmann, 2005). Low DT is predictive of increased alcohol and drug use (Buckner, Keough, & Schmidt, et al., 2007; Daughters et al., 2009; Howell, Leyro, Hogan, Buckner, & Zvolensky, 2010; Quinn et al., 1996), as well as increased drop-out rates from SUD treatment (Daughters et al., 2005a). Low DT has been associated with coping use motives, consuming substances to reduce negative affect, and with alcohol and cannabis use (Howell et al., 2010; Potter, Vujanovic, Marshall-Berenz, Bernstein, & Bonn-Miller, 2011; Vujanovic, Marshall-Berenz, & Zvolensky, 2011c). In college students, individuals with low DT reported higher alcohol and marijuana consumption (Buckner et al., 2007; Kaiser, Milich, Lynam, & Charnigo, 2012), more difficulties with substance abuse and substance abuse related problems (Kaiser et al., 2012; Simons & Gaher, 2005), and poor coping skills leading to increased substance abuse (Kaiser et al., 2012; O'Cleirigh, Ironson, & Smits, 2007; Zvolensky et al., 2009).

Khantzian (1997) proposed the self-medication hypothesis, which states that substance use helps alleviate the negative symptoms from stress disorders, so individuals experiencing problematic symptoms are more likely to use substances to cope with

negative feelings. An individual will engage in substance use, whether alcohol or other classes of drugs, as a way to avoid or escape the consequences associated with aversive emotions and states. Unfortunately, the perceived positive effects from substance use are short lasting, and individuals need to engage in repeated drug use to continue avoiding emotions. Among college students with low DT, increased trait aggression was related to problematic alcohol use (Ali, Ryan, Beck, & Daughters, 2013). Individuals with these traits may utilize alcohol as a means of coping with aversive emotional states, which is consistent with the negative reinforcement model (Ali et al., 2013). It is still unclear, however, whether lower DT places an individual at greater risk for abusing substances, or if the use of substances is responsible for decreases in DT over time.

Behavioral addictions (BAs) incorporate a relatively broad category of unhealthy reward-seeking behaviors, including gambling, shopping, exercise, work, sex, Internet use, gaming, and eating (Albrecht, Kirschner, & Grüsser, 2007). Three types of eating disorders (ED) have been examined in current research surrounding DT: anorexia nervosa, bulimia nervosa, and binge eating. Low DT has been predictive of emotional eating, external eating, symptoms of bulimia nervosa, symptoms of disordered eating, and disinhibition (Anestis, Selby, Fink, & Joiner, 2007; Kozak & Fought, 2011). Individuals with gambling addictions with brief prior abstinence attempts report higher levels of negative affect, more symptoms of depression, higher stress reactivity, and lower DT when compared to addicts with longer-lasting and more successful quit attempts (Daughters et al., 2005b). Hoarding behaviors have also been significantly associated with low levels of DT (Timpano, Buckner, Richey, Murphy, & Schmidt, 2009). Individuals possessing higher levels of DT endorsed fewer behavioral addictions, plus

DT strongly predicts both hedonistic (e.g., compulsive sex, caffeine, gambling) and nurturant addictive behaviors (e.g., work, bingeing, shopping; Greenberg, Sejud, Martindale, & Dolan, 2013). This externalizing behavior seems to have a strong relationship to one's ability to tolerate negative states.

Low DT has also been significantly related to greater internalizing symptoms, including obsessions, and it has been shown to act as a possible risk factor for the development of panic disorder and panic-like symptoms (Buckner et al., 2007; Schmidt et al., 2006). In contrast, high DT is associated with fewer reported symptoms of anxiety (Johnson, Berenz, & Zvolensky, 2012).

A significant inverse relationship between DT and PTSD has been observed, such that higher levels of DT are associated with reduced rates of posttraumatic stress symptoms. High DT may serve as a protective function against PTSD (Vujanovic, Bonn-Miller, Potter, Marshall, & Zvolensky, 2011b), while individuals with low levels of DT may experience a predisposition for experiencing symptoms of PTSD (Cloitre, Chase Stovall-McClough, Miranda, & Chemtob, 2004). In support of this, individuals with PTSD are at risk for heightened rates of smoking and more failed attempts at quitting smoking (Cook et al., 2007). Greenberg, Collum, O'Brien, and Dolan (2011) conducted a study in 86 adults (44 men and 42 women) enrolled in an in-patient treatment facility for SUDs. Congruent with studies discussed previously, those with lower DT endorsed higher levels of avoidance coping. Individuals with PTSD may feel a loss of control, which may greatly influence the specific coping strategies that are utilized. One possibility is that exposure to a trauma may gradually influence DT and decrease effective coping. On the other hand, if an individual has low DT prior to enduring a

trauma, this low level of DT may influence how an individual views and copes with the event, prompting the development of posttraumatic stress symptoms. The absorption subtype of DT has shown to be related to PTSD symptom experience, such that those suffering from PTSD are consumed by negative memories, emotions, and symptoms (Greenberg et al., 2011). The triggering trauma and its after-effects are consuming, often to the point that functioning is disturbed.

Low DT has also been associated with higher rates of borderline personality disorder and symptoms of depression (Anestis et al., 2007; Buckner et al., 2007). One study found support for a significant negative relationship between DT and depression severity, as well as between DT and overall psychological distress (Williams, Thompson, & Andrews, 2013).

Laboratory based studies have examined the relationship between negative affect and DT. Willoughby, Hailey, Mulkana, and Rowe (2002) induced a negative, depressed mood state in participants. The induced depression group had shorter cold-pressor times (an indication of lower tolerance for physical distress) and endorsed higher ratings of pain associated with the task than a control group. Decreased pain tolerance and increased subjective experience of pain provides strong evidence for a researcher's ability to alter mood state in the laboratory (Willoughby et al., 2002) and that mood may alter level of DT. DT was related in a state-manner to self-reported symptoms of negative affect. This artificially induced mood state was found to influence DT, providing clear evidence for the theory that DT is flexible.

DT and Related Traits

DT is a complex construct, with relationships to both emotional states such as depression, and more personality-like traits.

Impulsivity

Impulsivity is associated with addictive behaviors. Some researchers explain the relationship between DT and impulsivity by theorizing that DT is a lower-order factor of impulsivity, such that individuals with lower DT act to obtain the quickest perceived reward behavior and avoid aversive situations or consequences (Zvolensky et al., 2011). In this case, impulsivity refers to the actual physical reactions and responses of an individual, while DT involves the perceived ability to withstand distressing emotional cues without escape.

There is little research on the relationship between DT and impulsivity. In one study, low DT and high levels of impulsivity have been related to increased frequency of self-reported obsessions, an integral component of Obsessive-Compulsive Disorder (Cogle, Timpano, Fitch, & Hawkins, 2011; Cogle, Timpano, & Goetz, 2012). Other studies have also revealed interactions between these constructs. Among patients with bulimic symptoms, high levels of impulsivity and low DT have also been observed (Anestis et al., 2007; Fischer, Anderson, & Smith, 2004; Fischer, Smith, & Anderson, 2003; Whiteside & Lynam, 2001).

DT has been shown to mediate impulsivity and coping techniques in a sample of adults who had experienced a prior trauma (as outlined by DSM-IV) and used alcohol in the month prior to participation in the study (Marshall-Berenz, Vujanovic, & MacPherson, 2010b). Impulsivity acted as a significant negative predictor of DT and lower levels of

DT were associated with higher rates of impulsivity. Impulsivity and reward seeking in the short-term often leads to long-term negative consequences. This finding is particularly relevant to treatment planning and suggests that treatment interventions should focus on increasing DT, thereby giving patients the much-needed tools to take steps to not act impulsively, especially in cases of SUD and BA.

Resiliency

Resiliency is defined as an individual's ability to recover and rebound from stressors, both external and internal (Alessandri, Vecchione, Caprara, & Letzring, 2012; Everly, Smith, & Welzant, 2008; Kaminsky, McCabe, Langlieb, & Everly, 2007; Klohnen, 1996). An individual with greater resiliency will be better able to recuperate after facing adversity (Everly et al., 2008; Kaminsky et al., 2007). Many individuals who experience aversive events or traumatic stressors do not go on to develop psychological symptoms, medical symptoms, or health-related consequences (Orbke & Smith, 2013; Werner, 1989), suggesting that resiliency is the norm. Researchers have identified resiliency as a possible variable to explain individual differences in reactions to stressors. Resiliency may act as a protective factor for those exposed to different traumatic events, and may manifest as varying contextual, social, and individual variables (Fergus & Zimmerman, 2005; Garmezy, 1991; Masten, Cutuli, Herbers, & Reed, 2007; Zimmerman, 2013).

Recent research has focused on the associations between resiliency and issues related to mental health and social adjustment. Higher resiliency has been found to act as a protective factor against depression (Everly et al., 2008; Fredrickson, Tugade, Waugh, & Larkin, 2003), and these individuals are more likely to use active coping techniques

(Bonanno 2004; Orbske & Smith, 2013). Individuals with higher levels of resiliency report better adjustment (Alessandri et al., 2012; Block & Block, 1980; Fredrickson et al., 2003), job satisfaction (Everly et al., 2008), and greater performance at work (Everly et al., 2008). Low levels of resiliency are predictive of burnout and job turnover (Everly et al., 2008).

It is conceivable that resiliency is positively related to DT, though this relationship has yet to be tested empirically. The current study is the first known to examine this relationship.

Anxiety Sensitivity (AS)

DT refers to an individual's ability and willingness to endure any aversive emotional state. In contrast, anxiety sensitivity (AS) only refers to an individual's feelings related to fear and fear-related consequences (Zvolensky et al., 2011). McHugh and Otto (2012) found evidence that the Anxiety Sensitivity Index (ASI-3; Taylor et al., 2007), Frustration Discomfort Scale (Harrington, 2005), Discomfort Intolerance Scale (Schmidt et al., 2006), and Distress Tolerance Scale (Simons & Gaher, 2005) all measure the same higher-order construct. This finding is contrary to previous work that found these measures to be related, but by definition, clearly distinct (Bernstein, Zvolensky, Vujanovic, & Moos, 2009).

AS can be conceptualized as a lower-order factor of a higher-order DT variable (Mitchell, Riccardi, Keough, Timpano, & Schmidt, 2013). One study found that low DT and high AS placed an individual at greater risk of developing hoarding-like symptoms (Timpano et al., 2009). In a study of 88 trauma-exposed adults ($M_{age} = 22.9$, $SD = 9.1$), DT (as measured by breath holding) moderated the relationship between AS and PTSD

avoidance symptoms (Berenz, Vujanovic, Coffey, & Zvolensky, 2012). This finding indicates that individuals with lower levels of DT had increased rates of AS, which resulted in heightened PTSD avoidance symptoms. The interplay between DT and AS may have clinical implications and should be explored.

Although DT and AS are conceptualized as related constructs, one study reported that DT, but not AS, was significantly associated with coping motives for alcohol use (Howell et al., 2010). Howell et al. (2010) found that DT and AS were significantly negatively correlated and accounted for 19% of the shared variance. Results have been inconclusive to date, with studies supporting a significant negative relationship (Johnson et al., 2012), and others not finding support for a significant relationship between DT and AS (Brandt, Johnson, Schmidt, & Zvolensky, 2011). Mixed research findings indicate that further research is needed to distinguish DT as a distinct construct. The relationships between DT, impulsivity, resiliency, and AS, were explored in the current study.

DT emerged as a burgeoning research topic within the last decade, and has proven to have significant ties to other important constructs related to psychopathology and personality. Mixed research findings and expert opinions related to DT flexibility have led current and future research goals to focus on this flexibility.

Current Treatment Options for Increasing DT

DT skills have been shown to enhance interpersonal relationships among a suicidal sample of adolescents receiving Dialectical Behavior Therapy (DBT; Linehan, 1993) for borderline personality disorder traits (Miller, Wyman, Huppert, Glassman, & Rathus, 2000). DBT is a long and intensive therapeutic approach where a therapist is on-call and available for support as needed.

In one component analysis study, the overall effectiveness and subjective helpfulness of four behavioral skills addressed in DBT were investigated: mindfulness, DT, emotion-regulation, and interpersonal effectiveness skills (Miller et al., 2000). Treatment lasted for 12 weeks and consisted of weekly individual, family, skills training group, and telephone-based intervention sessions. The 60-item Life Problems Inventory (LPI; Rathus & Miller, 1995) was used to assess the severity of four problem areas targeted by DBT: impulsivity, confusion about yourself, emotional instability, and interpersonal problems. Significant effects were found overall, and within each component of DBT, although DT and mindfulness exhibited the highest alterations (Miller et al., 2000). Miller et al.'s study (2000) demonstrates that it is possible to change DT through an intervention specifically aimed at teaching DT skills.

The current study improves upon the Miller et al. (2000) study by employing a self-report measure specifically focused on DT, as opposed to assuming DT via impulsivity responses. The current study is a brief, one-session intervention targeted at changing DT. The current study aims to replicate results showing that DT is a malleable construct, by using brief intervention and treatment approach targeting a wider array of symptoms of psychopathology among a college student sample.

Brief mindfulness interventions have been found to significantly increase DT (Liu, Wang, Chang, Chen, & Si, 2013; Lotan, Tanay, & Bernstein, 2013) and cold-pressor task times (Liu et al., 2013). A 6-week internet based CBT intervention that was self-administered over 10-weeks resulted in increased DT, corresponding to an effect size of .31 (Williams et al., 2013).

Only one published study evaluates and supports the efficacy of a brief DT-focused treatment in a substance abusing treatment population (Bornovalova, Gratz, Daughters, Hunt, & Lejuez, 2012). Bornovalova and colleagues (2012) developed Skills for Improving Distress Intolerance (SIDI), which aims to teach skills for improving DT and reducing avoidance strategies. During this treatment, seventy-six participants ($M_{age}=43.2$, $SD=9.25$) in residential treatment for substance abuse completed a six-session adjunct treatment. Participants were randomized into the SIDI group, supportive counseling group, or treatment as usual (TAU) group. This SIDI treatment combines techniques from Linehan's (1993) DBT and Acceptance and Commitment Therapy (ACT), which stresses the integration of affective and cognitive components, as well as acceptance of aversive emotions (Hayes, Strosahl, & Wilson, 1999). Participants in the SIDI condition demonstrated significant reductions in depression and improvements in DT when measured before and after treatment. Additionally, the SIDI group had higher improvement in DT when compared to the supportive counseling and TAU conditions. Bornovalova et al.'s study (2012) provides preliminary evidence for the flexibility of DT and used two well-established treatment approaches (DBT and ACT) to develop the SIDI treatment protocol.

The current study aims to assess the flexibility of DT in a college sample, which differs from Bornovalova et al.'s (2012) study utilization of individuals receiving residential treatment for a SUD. The treatment protocol designed for this study is aimed at reducing global symptomatology, as opposed to the SIDI treatment, which was only tested on a narrow sample of inpatient adult substance abusers. Realistically, retention rates will be higher with a one-session intervention as opposed to a longer six-session

intervention. University students may endorse lower levels of psychopathology, but still may benefit from learning DT skills especially in a one-session intervention.

Summary of Research on DT

DT encompasses many facets of functioning, including the influence over cognitions, feelings, beliefs, motivation, and self-efficacy. Every emotionally-laden situation requires an individual to assess the threat of enduring the emotion, appraisal of its possible benefits versus consequences, self-efficacy related to successfully dealing with an aversive state, and acceptance of the need to withstand unpleasant emotions (Zvolensky et al., 2011).

DT is posited to act as a unique construct that is predictive of the onset, maintenance, and course of recovery for many forms of psychopathology. However, further research is needed to distinguish the flexibility of DT. Due to the theorized importance of DT, preventative treatments or early intervention may help to reduce rates of psychopathology among the population.

There is a paucity of research exploring interventions that alter DT. Without such research, it is difficult to fully conceptualize DT and understand the impact of DT's influence on psychopathology. Presently, it is difficult to understand how this complex construct may function with respect to various symptoms of psychopathology and individual changes possible through a brief intervention.

Treatments that encourage individuals to confront aversive states are theorized to not only build positive coping skills, but also increase their level of DT. ACT aims to decrease experiential avoidance and may prove to be a beneficial treatment for impacting level of DT. Given the evidence for DT's role in the onset and maintenance of symptoms,

developing treatments to raise DT and conducting research on such treatments is extremely important (Zvolensky et al., 2011). Earlier intervention and education of DT skills may act as a preventative form of treatment and reduce healthcare costs.

Introduction to Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) was developed by Steven Hayes, Ph.D. (Hayes et al., 1999), and is considered to be a third-wave behavioral therapy (Hayes, Follette, & Linehan, 2004a). ACT postulates that unpleasant thoughts and emotions are harmless. It is the derived association and interpretation of thoughts and emotions that may have long-lasting consequences (Blackledge & Hayes, 2001).

ACT does not attempt to change cognitive distortions, but instead teaches clients to learn how to live with them. In ACT, psychological symptoms and disturbance are the result of suffering caused by unconstructive thoughts and the manufactured moods associated with such thoughts. ACT encourages clients to recognize cognitive distortions, but also acknowledges that some distortions may not be accurate or helpful. Essentially, clients learn to step out of the struggle with their emotions and cognitions as opposed to exerting a great amount of energy fighting to avoid thoughts and feelings. In ACT, avoidance is conceptualized as a pervasive aspect of human suffering and cannot be prevented.

ACT theorizes that most psychological symptoms are a result of an individual's attempted, but failed avoidance of aversive emotions and thoughts. Through ACT, clients become able to recognize emotions without being consumed by them. Clients practice self-awareness through mindfulness techniques to challenge avoidance, learning to live a valued life in spite of aversive emotions. This valued life may consist of

whatever is important to the client and is an individualized aspect of ACT. By changing the focus of the client through the process of identifying values instead of focusing on symptoms, the client, theoretically, will experience symptom reduction. Of note, symptom reduction is not the key goal of ACT, but a commonly observed result (Hayes, 2005).

The main goals of ACT are often conceptualized in terms of three points: (1) learn to accept thoughts and feelings, (2) identify values, and (3) commit to taking steps to live out identified values (Hayes, 2005).

Within ACT, clinicians use an approach distinct from traditional methods. Clinicians are encouraged to use metaphors and experiential exercises to illustrate key concepts. Clinicians embrace a nonjudgmental, genuine, accepting stance with clients and emphasize the equality of the therapeutic relationship. Clinicians staunchly work towards creating a working alliance and avoid an “expert-client” affiliation. The therapist is encouraged to self-disclose when it is in the interest of the client, particularly when examining values and acceptance of difficult states.

ACT recognizes six core principles (referred to as the hexaflex; see Figure 1) that are essential for establishing psychological flexibility: (1) mindfulness, (2) acceptance, (3) defusion, (4) self-as-context, (5) values, and (6) committed action (Hayes, 2005). A meta-analysis of randomized controlled trials (RCTs) of ACT indicated that individual components of the ACT hexaflex have been shown to produce significant and reliable changes (Levin, Hildebrandt, Lillis, & Hayes, 2012).

Mindfulness

Mindfulness, or attention to the present moment, is an important module of ACT. Client and therapist work together to practice mindfulness skills. The therapist often models this behavior. Mindfulness encourages clients to stop living life on autopilot and entails expressing thoughts, feelings, memories, and sensations in the present moment as they occur. Facets of mindfulness, including nonjudgmental attitude and nonreactivity to experience, were significantly associated with elevated task persistence on anagrams (Evans, Baer, & Segerstrom, 2009; Nes, Segerstrom, & Sephton, 2005).

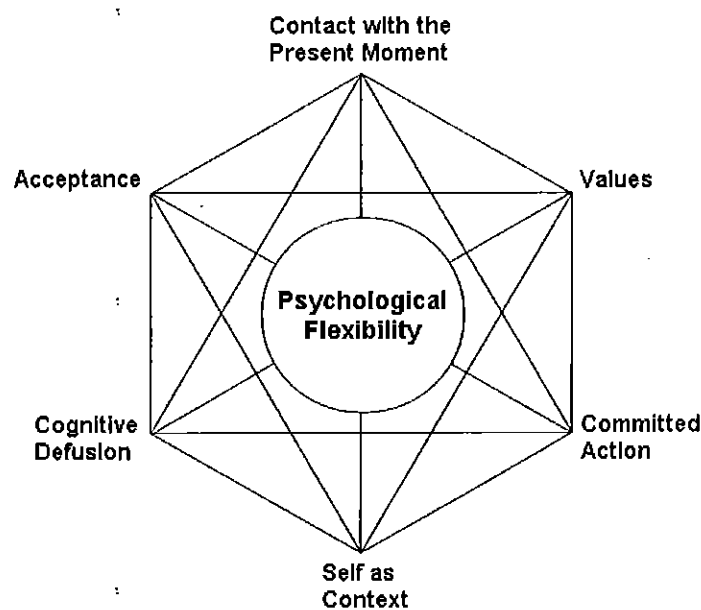


Figure 1 (Hayes; 2006). The six core processes of ACT. This figure illustrates the hexaflex and effective elements that comprise an ACT intervention.

Acceptance

ACT posits that acceptance and a willingness to withstand uncomfortable thoughts and feelings are necessary for treatment progress. Often, the act of avoidance requires substantial mental energy and inevitably exposes the client to elongated periods

of dealing with emotions. Willingness helps clients realize the short-term and long-term consequences of avoidance and how their goals and values have been disturbed. By learning to accept feelings and discuss them in the therapy context, these newly developed skills transfer to situations in daily life and help undermine the client's experiential control (Hayes, 2005).

Self as Context

Another aim of ACT is for the client to successfully differentiate between evaluations of life events and the continuous conceptualization of self that successfully withstands these events and is the sum of all experiences throughout the lifespan. A core strategy that the individual masters is recognizing that he/she is capable of containing the past. This technique differentiates between being defined by the past, and containing the past while not allowing it to determine an individual's present and future outlook (Hayes, 2005).

Values

The identification of values is a key component of ACT. Self-identified values act as a motivator and allow treatment to be tailored to each client. Discerning between values and goals is important and both are used in ACT. Goals are accomplishments that one can achieve, while values take constant effort to maintain and may be perceived as a way of living (e.g., a goal for a parent may be to attend their child's soccer game, but the value of being a good parent will never fully be attained because it is something a parent has to consistently work at every day). Maintaining values is a long-term practice. The identification of values, analysis of how successfully the client is living by their values,

and examining the resulting consequences of not working towards values motivates clients to endure unlikable events to profit their values. Values are standards that define us.

Committed Action

The final part of the hexaflex involves the client making a commitment to act out their personally identified values. This committed action plan helps clients transfer what is learned in session to their everyday lives. By having a fixed strategy, clients are more likely to act in accordance with their values.

ACT does not mandate what type of action plan is created, and emphasizes that the magnitude of the activity is not what is important, but following through on a commitment and living in accordance with a valued life is the primary goal of this core component.

Although ACT proposes specific metaphors and exercises, and facilitates the use of manuals for group treatment, clinicians are encouraged to fit the intervention for the specific population. The flexible nature of ACT can make it difficult for researchers to assess the fidelity of ACT. Since the conceptualization of ACT by Hayes and colleagues (1999) researchers have made progress in conducting research to explore contexts in which ACT is effective and disorders for which ACT is appropriate.

ACT Efficacy Literature

ACT has shown to be effective with a variety of disorders and intervention designs. Higher levels of mindfulness have been linked to decreased lower levels of psychopathology (Bernstein, Tanay, & Vujanovic, 2011). In one study, psychological

flexibility was significantly related to dieting, bulimia, and food preoccupation among female college students (Masuda & Latzman, 2012). ACT is significantly associated with: reduced shame, greater treatment adherence in individuals with SUDs (Luoma, Kohlenberg, Hayes, & Fletcher, 2012), improvements in symptoms of depression in various populations (Folke, Parling, & Lemin, 2012; Hayes, Boyd, & Sewell, 2011; White et al., 2011), decreased work stress and burnout (Bond & Bunce, 2000; Brinkborg, Michanek, Hesser, & Berglund, 2011), decreased infertility stress and depression (Peterson & Eifert, 2011), improvement in worry and depression in samples with Generalized Anxiety Disorder (GAD; Wetherell et al., 2011a), improvements in anxiety disorders (Block, 2002; Orsillo & Batten, 2005; Twohig, Hayes, & Masuda, 2006), decreases in test anxiety (Zettle, 2003), improvements in addictive disorders (Hayes et al., 2004c; Luciano, Gomez, Hernandez, & Cabello, 2001), as well as fewer crisis contacts, less depressive symptoms, and an increase in mindfulness skills among participants who met criteria for a psychotic disorder (White et al., 2011). Additionally, lower levels of acceptance have been associated with greater levels of marijuana and alcohol-use coping motives (Bonn-Miller, Vujanovic, Twohig, Medina, & Huggins, 2010; Vujanovic, Bonn-Miller, & Marlatt, 2011a). In a trauma-exposed population, ACT has been shown to decrease avoidance, increase psychological flexibility and acceptance, and subsequently minimize symptoms of hyperarousal, avoidance, and re-experiencing (Bonn-Miller et al., 2010; Mullick, Landes, & Kanter, 2011; Twohig, 2009). Acceptance-based interventions have shown to increase readiness for exposure-based therapy (Eifert & Heffner, 2003). Although successful in many other instances, Murphy and MacKillop (2014) found distraction strategies (both cognitive and behavioral) to be more efficacious than

mindfulness strategies in reducing alcohol cravings, demonstrating that more research needs to be conducted on this topic.

Although ACT and TAU displayed comparable reductions in depression, significant improvements in psychological flexibility and shorter doses of needed treatment were observed in clients receiving ACT than in their TAU counterparts (Peterson & Zettle, 2009). ACT has also exhibited greater reductions in eating pathology than cognitive therapy (Juarascio, Forman, & Herbert, 2010). Completing an ACT protocol has displayed other positive benefits, including better functioning and higher rates of treatment satisfaction in individuals with chronic pain (Veehof, Oskam, Schreurs, & Bohlmeijer, 2011; Wetherell et al., 2011b).

ACT has been delivered proficiently in-person in traditional psychotherapy modalities such as individual and group treatments, but there is evidence for briefer interventions as well, such as over the telephone workshops, PowerPoint presentations, and bibliotherapy (Levin & Hayes, 2011; Schimmel-Bristow, Bricker, & Comstock, 2012).

Brief Interventions in ACT

Past research has examined the efficacy of ACT on different symptoms of psychopathology in a variety of populations. Based on the positive results and utility of ACT, researchers have started to explore the efficacy of ACT when delivered in a brief session. Exploration of the efficacy of short ACT interventions has been done in case studies, individual, and group formats. In one ACT intervention, adherence to rehabilitation protocols and general psychological well-being following reconstructive

knee surgery in four adults noted overall improvements, but hypothesized that longer intervention may yield greater results (Mahoney & Hanrahan, 2011).

Furthermore, brief ACT based interventions have also shown reduced symptoms of psychosis and reduced hospitalization by 50% over a one-year post-intervention follow up in a sample exposed to four sessions of ACT (Bach & Hayes, 2002; Bach, Hayes, & Gallop, 2012; Morris & Oliver, 2008). Similar results were found in a variety of racial and ethnic minority patients with psychosis (Gaudiano & Herbert, 2006). Other studies in a variety of populations have noted improvements in patient adherence to a heart-healthy lifestyle and measures of acceptance, mindfulness, and cognitive defusion (Goodwin, Forman, Herbert, Butryn, & Ledley, 2012). Improvements in a patient with conversion disorder and dissociation (Baslet & Hill, 2011), decreased gambling persistence as a measure of impulsivity (Nastally & Dixon, 2012), and decreased panic disorder severity were all noted as a result of brief ACT interventions, delivered individually or by Microsoft PowerPoint. A one-day ACT workshop for body dissatisfaction (Pearson, Follette, & Hayes, 2012) and a one-day treatment for comorbid depression and migraine (Dindo, Recober, Marchman, Turbey, & O-Hara, 2012), yielded significant improvements over a wait-list condition in disordered eating attitudes and depressive symptoms and general functioning, respectively. Two brief intervention studies noted that ACT patients were more likely to report symptoms (Bach & Hayes, 2002), and be more subject to demand characteristics (Roche, Forsyth, & Maher, 2007), than TAU or wait-list control.

Explanations for these findings suggest that ACT forewarns clients and clinicians that symptoms may worsen before any relief is present. ACT may sensitize clients and

prompt them to confront unpleasant stimuli they have avoided, therefore increasing symptoms for a period of time (Roche et al., 2007).

Vujanovic, Bernstein, Berenz, and Zvolensky (2012) explored the effects of a single-session intervention in a trauma-exposed adult sample on AS. Measures were administered pre-intervention, post-intervention, and at three-months post-intervention. The intervention consisted of a two-hour individualized, manual-based treatment emphasizing cognitive and acceptance-based strategies (e.g., increasing metacognitive awareness, defusion, and psychological flexibility), and interoceptive exposure. Decreases in AS, posttraumatic stress symptoms, frequency and severity of panic attacks, negative affect, and level of functional impairment were observed. Vujanovic et al.'s study (2012) illustrates the validity and utility of a one-time brief intervention employing ACT strategies to create lasting change. The current study closely resembles Vujanovic et al.'s (2012) aim to create lasting change in a complicated construct related to emotion dysregulation. Vujanovic et al.'s (2012) study was conducted in a sample of five individuals exposed to trauma, while the current investigation was piloted in a college sample with no required diagnosis or symptoms of psychopathology for eligibility.

After exposure to an intervention, there was a decrease in total AS evidenced by the Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007) from baseline ($M = 29.00$, $SD = 6.00$) to three-month follow-up ($M = 20.20$, $SD = 11.69$; Vujanovic et al., 2012). On an individual level, four out of five participants reported decreases in AS three months post-treatment that resulted in scores in the normative range (Vujanovic et al., 2012). Negative affect, assessed by the Positive Affect Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) showed significant decreases in scores

between the baseline ($M = 18.80$, $SD = 4.60$) and three-month follow-up assessment ($M = 15.67$, $SD = 1.53$; Vujanovic et al., 2012).

Research has supported ACT as an effective treatment option for a variety of psychological disorders in a variety of contexts. The focus of ACT on decreasing experiential avoidance is consistent with an individual moving from a place of low to high DT. An innovative and measurably successful way to assess the flexibility of DT is through an ACT approach. The current study furthered ACT research by utilizing a one-hour intervention for nonspecific symptoms of psychopathology.

Conclusions

Poor emotion regulation techniques, which translate to low levels of DT, may act as a predictor of depressive episodes (Kring & Werner, 2004). Ineffective coping by emotional suppression results in an increase in self-reported negative emotions (Campbell-Sills, Barlow, Brown, & Hoffman, 2006). The lack of two integral components of ACT, acceptance and willingness, has been found to mediate the relationship between emotional suppression and strength of subjective emotion in a clinical sample (Zvolensky et al., 2011).

ACT theory posits that functional relationships and appraisal of thoughts and feelings interfere with daily living and fulfilling values (Levin & Hayes, 2011). Individuals engage in experiential avoidance to circumvent the prescribed feelings and thoughts associated with a given situation. Inability to withstand a variety of emotions and thoughts as well as the predisposition to engage in avoidance techniques has conceptual overlap with low DT. Individuals with high DT are more willing to

experience the full range of thoughts and feelings, and are able to refrain from being overcome by the situation.

ACT aims to increase an individual's capability and willingness to endure distress in service of the individual's goals and values. When an individual is constantly reminded of their values, it in turn makes an individual more prepared to experience suffering to reach their overarching emotional goals. Additionally, ACT serves to help clients disengage from unpleasant cognitions and affect as well as question the validity of internal statements. Through ACT, the client practices techniques to decrease cognitive fusion and increase contact with the present moment, which becomes an automatic process over time.

DT is linked to the onset, maintenance, and recovery of a variety of symptoms of psychopathology, yet the malleability of DT has yet to be explored. Furthermore, alterations in DT due to an ACT intervention have not been examined. Thus, the effects of a single-session ACT intervention for a wide variety of symptoms and comorbidities in a college sample may be useful. A brief intervention may be particularly useful in this population due to busy schedules and potential lack of motivation to participate in a long-term treatment. College students may endorse a variety of symptoms, so a generalized treatment focusing on values and outcomes, as opposed to symptoms, is suitable for this population. It is assumed that college students at Baylor University will possess a certain degree of reading and comprehension skills, making a didactic and interactive approach utilizing metaphors and exercises feasible.

The current study is distinctive and unique in several ways. It is the first study to investigate DT pre-intervention compared to post-intervention after completing a brief,

single-session intervention. The relationship between DT and psychological inflexibility, the construct that underlies all ACT principles, was investigated. Additionally, it was unclear if DT and psychological flexibility are two distinct constructs, or if there is enough overlap that they may be considered the same principle. It was hypothesized that the idea of values and focus on identifying concrete areas of life is a major motivating component of ACT. Additionally, the relationship between DT and values was investigated for the first time. If an individual is able to identify and keep in mind his/her values, he/she may be more capable and willing to withstand negative affective states in honoring and staying consistent with principles and priorities. A previous study revealed a significant relationship between mindfulness, specifically the facet of nonreactivity, and task persistence (Evans et al., 2009). Self-reported DT and nonreactivity as a component of mindfulness has never been explored. Due to the lack of convergent validity between behavioral and psychological measures of DT (Zvolensky et al., 2011), it is important to explore this relationship in a self-report format.

The current study replicates and extends previous research and explored the relationship between drinking motives and DT. Previous work has investigated the relationship between DT and coping skills as they relate to drinking (Howell et al., 2010; Potter et al., 2011), but not drinking motives, specifically.

The relationship between DT and ED will be explored further. Previous investigation has focused on the relationship between DT and Bulimia Nervosa (Anestis et al., 2007; Kozak & Fought, 2011). The current study examined the relationship between DT and ED, particularly binge eating, as it is now a separate diagnosis in DSM-5.

Internalizing symptoms have been explored primarily in youth and community samples (Buckner et al., 2007; Daughters et al., 2009). The current study aims to replicate previous results supporting a relationship between internalizing symptoms related to DT, and extend previous results by investigating a college student sample. Willoughby et al. (2002) induced negative affect in a laboratory, however the current study examined the relationship between DT and naturally occurring as well as self-induced negative affect.

The relationship between DT and impulsivity has been explored (Anestis et al., 2007; Kaiser et al., 2012) and determined that they are two distinct constructs, which was further explored in the current study.

Studying DT and ACT in the Context of a Student Population

Adolescence through young adulthood is a time ripe for the onset of mental illness. The current study explores interventions targeting DT within the context of a college student population. This is an important area of research because many college students are experiencing a wide variety of sub threshold symptoms of psychological illness. Of those who do meet criteria for a psychological disorder, median age of onset ranges between ages 11-30 years for anxiety, impulse control, mood, and substance use disorders (Kessler et al., 2005). Nearly 75% of all lifetime diagnoses have started by age 24 (Kessler et al., 2005).

Research aimed at developing interventions effective for college students may mitigate symptoms that are associated with maladjustment and mental illness. Developing an intervention that targets a variety of symptoms is beneficial for accessing and helping large groups of students. ACT fits for a college student population because

ACT has been effective with symptoms of numerous disorders and generalizable to different populations.

A brief intervention is a cost-effective way to manage symptoms before they escalate into mental illness. This research could influence preventative care seen in the university setting. DBT and a variety of other treatments are time-intensive and require significant resources (e.g., clinicians, coaching calls after hours, time commitment), which is not a realistic option for a majority of people. Brief therapy may prove beneficial for college students with busy and variable schedules and before psychopathology becomes more complex to treat. Shorter interventions decrease the risk of treatment dropout and noncompliance. There is a lack of research supporting brief interventions for college students with a variety of psychological symptoms.

Study Aims and Significance

The overall aim of the current study was to examine the flexibility of DT through a brief ACT intervention. Results of the current study will help clarify the flexibility of DT and its impact on current and future treatments. Furthermore, the results of the current study will help elucidate the relationship between DT and a wide variety of symptoms of pathology specifically selected for the proposed sample in mind: binge eating, depression, negative affect, drinking motives, and impulsivity. This study is the first, to the author's knowledge, to examine the elasticity of DT through a brief ACT intervention in a college sample. In sum, the current study helps to clarify the role DT plays in the maintenance and recovery of a variety of psychological symptoms, a role that as of yet, is not consistently defined or understood.

There were two distinct aims for the current study. The initial aim was to evaluate the flexibility of DT and the effectiveness of a brief ACT intervention for increasing DT. A secondary aim was to examine the relationship between DT and a variety of measures of psychopathology and ACT constructs cross-sectionally in a sample of college students.

The current investigation took the form of a pilot study. Onken, Blaine, and Battjes (1997) identified three stages that comprise the Stage Model of Behavioral Therapies. Stage I of this model includes the development and initial pilot testing of a new therapy. Stage II is comprised of RCTs and Stage III includes exploring the generalizability of results in at least two RCTs.

The major goal of Stage I was to develop a treatment and pilot test the intervention to move to the RCT stage (Rounsaville, Carroll, & Onken, 2001). Stage I was broken down into two parts. Stage Ia included treatment development and manual creation. The target population and measures to assess treatment success were selected. Manual development was based on theoretical rationale and, most importantly, clinical judgment. The treatment manual utilized in the current study was developed using clinical judgment, supervision and guidance, and by researching commonly utilized portions of ACT components used in other research interventions. Stage Ib involved the pilot test (Rounsaville et al., 2001). Not only are the results of the intervention success important, but also a pilot study is important to investigate client acceptance of the treatment and to assess the ability to recruit enough participants for a future RCT. To move to Stage II, clinically significant improvements must be observed in at least one area targeted by the treatment (Rounsaville et al., 2001). The lack of results from

numerous RCTs on this topic made a Stage III investigation unfeasible at this time. The current study involved treatment development, manual writing, and pilot testing among a college student sample.

Rounsaville and colleagues (2001) encourage a systematic approach to treatment development and testing. Moving too quickly through the Stage Model discourages future development and overlooks the large amount of preparation required in testing a treatment approach (Onken et al., 1997). Due to the lack of existing one-session ACT interventions for general symptoms of psychopathology; a Stage I approach was deemed the most appropriate.

Study Hypotheses

The current study aimed to investigate the flexibility of DT and how DT correlates with personality traits of impulsiveness and negative affect, in addition to symptoms of depression, drinking motives, and binge eating. Additionally, the current study aimed to examine the association between DT and common constructs within ACT including psychological flexibility, mindfulness, and values identification. The following hypotheses were postulated:

H1. Levels of total DT will be significantly higher when measured after exposure to a brief ACT intervention.

H2. A single-session brief ACT intervention will successfully increase self-reported levels of ACT-related skills and decrease reported symptoms of psychopathology.

H3. At baseline, DT will be related to personality traits and psychological symptoms.

H3a. Total DT will be negatively related to impulsivity, drinking to cope, binge eating, negative affect, stress, depression, and anxiety

H3b. Distress intolerance, as measured by the WTP-DI, will be significantly negatively related to Total DT.

H3c. Total DT and resiliency will be positively related to a significant degree, such that higher DT will be associated with higher resiliency.

H4. There will be a significant relationship between DT and skills associated with ACT.

H4a. DT and progress on valued living will be positively related, while DT and psychological inflexibility will be negatively related, pretreatment.

H4b. There will be a significant positive association between the level of mindfulness, particularly non-reactivity to inner experience, and DT.

H5. Greater symptom endorsement, levels of negative affect, and impulsivity will be associated with lower levels of skills associated with ACT (mindfulness, psychological inflexibility, progress on values).

CHAPTER TWO

Methods

Participants

Phase I, the online study, consisted of 467 adults (see Figure 2). Participants were 336 (71.9%) women and 131 (28.1%) men ages 18 to 36 ($M = 19.06$, $SD = 1.42$), who were undergraduate students enrolled at Baylor University. A variety of races were represented, as well as varying years of college education, as illustrated in Table 1.

Table 1
Race and Education of College Sample Demographics in Phase I

Demographic	N	% of Participants
Race		
Black/African American	50	10.7
White/Caucasian	328	70.2
American Indian/Alaska Native	5	1.1
Asian/Asian American	52	11.1
Hawaii/Pacific Islander	3	0.6
Hispanic	14	3.0
Other	15	3.2
Year in School		
Freshman	232	49.7
Sophomore	133	28.5
Junior	58	12.4
Senior	43	9.2
Fifth-year	1	0.2

Phase II consisted of 147 completed intervention appointments. The retention rate between completing Phase II and Phase III of the current study was $131/147 = 89.12\%$. Phase III of the current study consisted of 119 adults. This sample included participants who completed both Phase II and Phase III of the current study within the

time parameters and provided complete data responses. Phase III participants were 97 (81.5%) women and 22 (18.5%) men, ages 18 to 36 ($M = 18.87$, $SD = 1.84$), who were undergraduate students enrolled at Baylor University. A variety of races were represented, as well as varying years of college education, as illustrated in Table 2.

Table 2
Race and Education of College Sample Demographics in Phase III

Demographic	N	% of Participants
Race		
Black/African American	6	5.0
White/Caucasian	94	79.0
Asian/Asian American	10	8.4
Hawaiian/Pacific Islander	1	0.8
Hispanic	3	2.5
Other	5	4.2
Year in school		
Freshman	70	58.8
Sophomore	34	28.6
Junior	6	5.0
Senior	9	7.6

Participants completed the current study as part of a course requirement or to receive extra course credit. The course instructors, who were not associated with the current study, determined the extrinsic value of participating in the research.

Procedures

A battery of questionnaires was administered via computer to students who participated in the current study (Phase I). The current study was available online and students were able to access the study questionnaires from the computer of their choice. Presentation of measures was randomized and the full battery was estimated to take participants one hour to complete. Participants who indicated that they were currently

undergoing psychotherapy or receiving counseling services were excluded from the laboratory visit (Phase II) and the subsequent follow-up (Phase III). This exclusionary criterion was met by 13/467 Phase I completers = 2.78% and was responsible for 13/158 = 8.23% of participants ineligible to progress to Phase II. If participants completed the online survey and denied current involvement in psychotherapy, they received an email invitation to register for an in-person laboratory visit.

During the laboratory visit (Phase II), participants completed a brief self-report measure on a computer prior to receiving treatment. Then, the participant engaged in an individual one-hour intervention session with a graduate student in Clinical Psychology trained in ACT. Supervision was provided. The intervention was comprised of an introduction to the ACT principles, emphasizing acceptance, mindfulness, cognitive defusion, and values. The therapist and participant engaged in different experiential exercises and metaphors, all of which were pre-determined and standardized (see Appendix A).

Two weeks after the intervention, individuals received an email inviting them to participate in the final online portion of the study (Phase III). Participants were asked to complete questionnaires that were identical to the previously completed set of questionnaires and took an estimated one-hour to complete. Participants had up to four weeks post-intervention to complete Phase III of the current study ($M = 19.58$, $SD = 4.29$ days). Individuals that completed Phase III after 4 weeks had already passed were not included in the intervention data analyses. Once pre- and post-intervention data were collected, it was made anonymous, such that no names or identifying information was associated with completed study data.

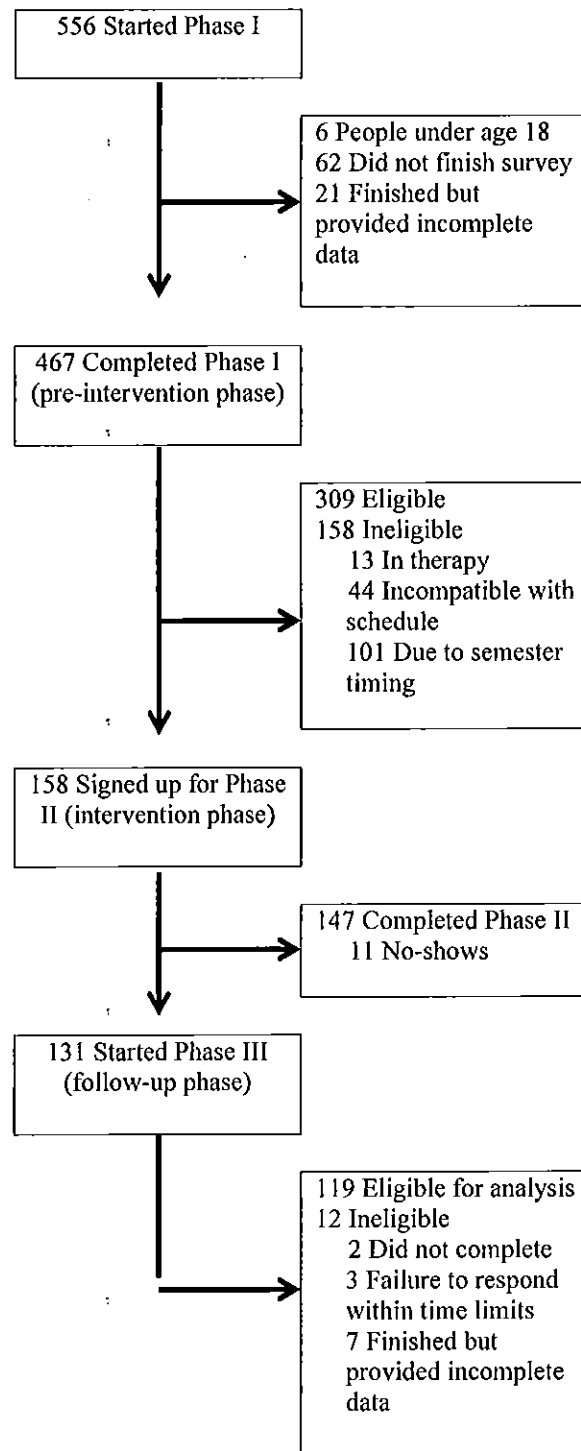


Figure 2. Flow chart. This figure illustrates participation over the course of the current study.

Measures

The following measures were selected for use in the current study based on their strong psychometric properties. Additionally, many of these assessments were normed using a college sample and are therefore deemed to be appropriate for the population utilized in the current study. All measures were presented in their originally published formats during Phase I of the current study. In Phase III, answers were recorded on the same scales, but question prompts were altered to indicate the respondent was to answer the question in the past two weeks' time (i.e., since the intervention).

Measures Related to Pathology

Brief Resiliency Scale (BRS). The Brief Resiliency Scale (BRS; Smith et al., 2008) is a 6-item self-report questionnaire measuring resiliency and an individual's ability to recover after stress. Respondents are asked to rate their level of agreement with a list of statements on a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). An example question is, "I tend to bounce back quickly after hard times." Total scores on the BRS are obtained by reverse scoring 3 items, and then summing the 6 items together. As a final step, the researcher calculates the item average score for an individual's responses. The BRS was investigated in four different samples, two undergraduate student samples and two medical-related samples. Mean BRS scores ranged from 3.53- 3.98 between the samples (Smith et al., 2008). The BRS is significantly correlated with other measures of resiliency, active coping, and optimism (Smith et al., 2008). The BRS demonstrated good reliability across the four samples,

with α ranging from .80- .91 (Smith et al., 2008). In the current sample, the BRS demonstrated good reliability in Phase I ($\alpha = .86$) and in Phase III ($\alpha = .88$).

Depression Anxiety Stress Scale-21 (DASS-21). The Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995) is a 21-item measure assessing symptoms of depression, stress, and anxiety. The DASS-21 originates from the DASS, a 42-item assessment of negative emotional symptoms (Lovibond & Lovibond, 1993). Participants are asked to rate, on a 4-point Likert-type scale, the severity of symptoms over the past week. Internal consistencies for the original DASS scale are good: depression ($\alpha = .91$), anxiety ($\alpha = .84$), and stress ($\alpha = .90$; Lovibond & Lovibond, 1993). When compared to the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988), and Beck Depression Inventory-II (Beck, Steer, & Brown, 1996), the DASS subscales showed greater differentiation in factor loadings and were highly correlated with each questionnaire (Lovibond & Lovibond, 1995). Psychometric properties have been evaluated in diverse samples (Antony, Bieling, Cox, Enns, & Swinson, 1998; Osman et al., 2012; Sinclair et al., 2012). In a sample of undergraduates, internal consistency for the DASS-21 was as follows: depression ($\alpha = .85$), anxiety ($\alpha = .81$), and stress ($\alpha = .88$; Osman et al., 2012). In the current study, the reliability for each subscale was good in Phases I and III, respectively; depression ($\alpha = .85, .89$), anxiety ($\alpha = .84, .87$), and stress ($\alpha = .84, .86$).

Distress Tolerance Scale. The Distress Tolerance Scale (DTS; Simons & Gaher, 2005) is a 15-item self-report measure, in which participants indicate, on a 5-point Likert-type scale (1 = strongly agree to 5 = strongly disagree), their level of perceived ability to

withstand distressing states of emotion. The total DTS score ($\alpha = .89$) is composed of four subscales including: tolerance ($\alpha = .72 - .73$), appraisal ($\alpha = .81 - .84$), absorption ($\alpha = .78 - .77$), and regulation ($\alpha = .70 - .74$). Leyro, Bernstein, Vujanovic, McLeish, and Zvolensky (2011) conducted a confirmatory factor analysis of the DTS in a sample of smokers and found greater support for a multidimensional model, although a single factor model was also supported. This CFA supported a single second-order factor and 4 subfactors, consistent with Simon and Gaher's (2005) findings. In a sample of smokers, good internal consistency defined by Nunnally and Bernstein, (1994) was observed for the DTS total score ($\alpha = .91$), and four factors: absorption ($\alpha = .83$), appraisal ($\alpha = .85$), regulation ($\alpha = .77$), and tolerance ($\alpha = .66$). Studies have noted a significant negative association between negative affect and DT score. Research has found mixed results when taking into account the role gender may play on DT (Leyro et al., 2011; Simons & Gaher, 2005). In the current study, total DT from Phases I ($\alpha = .90$) and III ($\alpha = .93$) were excellent. In Phase I, the DT subscales demonstrated good reliability; absorption ($\alpha = .81$), appraisal ($\alpha = .81$), regulation ($\alpha = .74$), and tolerance ($\alpha = .75$). Additionally, DT factors demonstrated good reliability during the phase III follow-up portion of the current study; absorption ($\alpha = .86$), appraisal ($\alpha = .85$), regulation ($\alpha = .73$), and tolerance ($\alpha = .84$).

Drinking Motives Questionnaire-Revised. The Drinking Motive Questionnaire-Revised (DMQ-R; Cooper, 1994) is a 4-dimensional, 20-item questionnaire based on the original Drinking Motives Questionnaire (DMQ; Cooper Russell, Skinner, & Windle, 1992). Participants are asked to indicate, on a 5-point Likert-type scale (1 = almost never/never, 5 = almost always/always), how often they drink alcohol for a given reason.

Originally, this measure was derived from Cox and Klinger's (1988) motivational model of drinking use and the theory that unhealthy alcohol consumption may be used as a coping motive (Cooper, Russell, & George, 1988). Originally, Cooper et al. (1992) identified a 3-dimensional measurement of drinking motives, including coping ($\alpha = .81$), social ($\alpha = .77$), and enhancement ($\alpha = .85$) motives. The DMQ-R identified 4 factors, or motivations, for substance use: coping ($\alpha = .84$), conformity ($\alpha = .85$), social ($\alpha = .85$), and enhancement ($\alpha = .88$; Cooper, 1994). In Phase I of the current study, the four DMQ-R factors demonstrated excellent reliability; coping ($\alpha = .90$), conformity ($\alpha = .87$), social ($\alpha = .95$), and enhancement ($\alpha = .91$). In Phase III of the current study, the four DMQ-R factors displayed good reliability; coping ($\alpha = .80$), conformity ($\alpha = .89$), social ($\alpha = .96$), and enhancement ($\alpha = .91$).

Eating Disorders Diagnostic Scale- Binge Eating Module. The Eating Disorders Diagnostic Scale-Binge Eating Module (EDDS; Stice, Telch, & Rizvi, 2000) is a 22-item self-report measure that assesses symptoms of anorexia nervosa, bulimia nervosa, and binge eating disorder. Researchers used the DSM-IV and validated structured interviews including the Eating Disorders Evaluation (EDE; Fairburn & Cooper, 1993) and eating disorders module from the SCID-I (Spitzer, Williams, Gibbon, & First, 1990) to generate items. Respondents are asked to carefully respond to questions (either yes/no) or on a 7- or 14-point Likert scale for frequency of a particular behavior (e.g. how many times per week?). The EDDS was normed using a sample of 367 women between the ages of 13-61 ($M_{age} = 29.7$, $SD = 13.2$), with and without eating disorders. On average, the EDDS exhibited good internal consistency ($\alpha = .89$). The EDDS has demonstrated excellent utility in diagnosing ED as evidenced by the agreement rates in diagnoses between the

EDDS and structured interviews. Agreement ratings are as follows: 99% for anorexia nervosa, 96% for bulimia nervosa, and 93% for binge eating disorder (Stice et al., 2000). In this sample, the EDDS binge eating items demonstrated adequate reliability in the initial phase ($\alpha = .75$) and follow-up phase ($\alpha = .76$) of the study.

Positive and Negative Affect Schedule (PANAS). The PANAS (Watson et al., 1988) is comprised of two scales measuring positive and negative affect via 20 emotions. Positive affect is the extent to which a person experiences positively perceived emotions (e.g., enthusiastic). High positive affect is associated with energy, while low positive affect correlates with sadness. Negative affect assesses general distress and aversive mood states (e.g., fear, anger). High negative affect may include guilt, while low negative affect incorporates serenity. A respondent indicates on a 5-point Likert-type scale (1 = very slightly/not at all, 5 = extremely), the extent to which he/she has experienced a given emotion. Uniquely, the PANAS allows the researcher to indicate the time period an individual should take into consideration when responding. This instrument was normed on a college student sample and did not show any consistent gender differences in responding (Watson et al., 1988). The PANAS has proven to be internally consistent and stable. Alpha coefficients are all acceptably high and range from .86 to .90 for positive affect and from .84 to .87 for negative affect. Positive affect and negative affect share a minimal, negative correlation with one another (-.12 to -.23). The PANAS was administered three times throughout the current investigation, during each phase of study. In Phase I, positive affect ($\alpha = .88$) and negative affect ($\alpha = .85$) demonstrated good reliability. The PANAS was administered prior to the intervention in Phase II of the current study, and demonstrated good reliability for positive affect (α

= .84), and adequate reliability for negative affect ($\alpha = .70$). In the follow-up phase of the current study, the PANAS demonstrated good reliability for both positive ($\alpha = .87$), and negative affect ($\alpha = .88$).

Willingness to Pay Distress Intolerance (WTP-DI). The Willingness to Pay-Distress Intolerance (WTP-DI; McHugh, Hearon, Halperin, & Otto, 2011b) measure was adapted from the original willingness to pay (WTP) measure used in economic research, which assesses the utility of resources. The WTP-DI measures Distress Intolerance, another word for DT. It offers the researcher the option to explore Distress Intolerance (DI) across numerous domains. Individuals are asked to identify how much they would be willing to pay to avoid aversive events after an exposure to such event. The WTP-DI was developed in response to observed shortcomings of current DT measures, and its developers note that the WTP-DI requires the participant to possess less self-awareness than other DT measures and utilizes different wording that is believed to reduce confounding variables. McHugh et al. (2011b) used numerous ways to induce different mood states, including physical tasks (e.g., cold pressor task) and emotional tasks (e.g., video clips). After being exposed to a mood-altering event, participants are asked what percentage of their income they would pay to never have feelings of distress like those they just experienced. McHugh et al. (2011b) stress that the actual monetary amount an individual decides to forfeit is not central to the research, but the relative evaluation of desire to avoid distress is the important information gleaned from the question. Participants are asked how confident they are that they would pay their prescribed amount, and then asked how difficult it was to answer the previous two questions.

Due to the online nature of the current study and inability to ensure participant completion of behavioral tasks or video watching to assess DT, the researchers utilized a self-script format for the WTP-DI. Participants were instructed to, "Please write about a recent time you felt anxious. Include a detailed description of the situation, your thoughts, and your feelings related to the event. Some examples of anxiety-provoking events include, but are not limited to: adjusting to college, giving a speech, having to take a course final, a time when your boss called you into his/her office unannounced, or trying to make friends in a social situation." Researchers hypothesized that having an individualized script writing session would make the exercise more realistic and applicable to the participant's life. Researchers were also able to read participant scripts and observe time spent on the WTP-DI as a validity check of the measure.

Evidence supports autobiographical recollection as one of the most effective ways to provoke emotional states (Baker & Gutterfriend, 1993; Brewer, Doughtie, & Lubin, 1980; Jallais & Gilet, 2010), above and beyond script reading to induce aversive mood state (Brewer et al., 1980; Hernandez, Vander Wal, & Spring, 2003). Previous research found autobiographical mood induction dependably produced large increases in depression scores (Cohen's $d = 1.48$) over numerous days of testing (Hernandez et al., 2003). This is contrary to films or pre-written scripts, which effectively induce mood on the first occasion, but decrease in efficacy over repeated administrations (Gerrards-Hesse, Kordelia, & Hesse, 1994; Hernandez et al., 2003).

Another confounding factor predicted and accounted for by the researchers was the question asking what percentage of income would be paid to avoid distress. As the current sample was undergraduate college students where employment is varied, the

researchers decided to utilize the national average personal income from 2012 (\$42,693) as the standard income for every respondent. Participants were asked to select how much they would pay to avoid future distress from the following options: 0% of my monthly income (\$0), 1% of my monthly income (\$35.58/month), 2% of my monthly income (\$71.16/month), 5% of my monthly income (\$177.89/month), 10% of my monthly income (\$355.78/month), 15% of my monthly income (\$533.66/month), or more than 15% of my monthly income (more than \$533.66/month).

Because the DTS wording was altered from its original format, the WTP-DI was meant to act as a secondary measure of DT in the current study. The WTP-DI and DTS have demonstrated modest correlations with one another. In the current study, 75.2% of participants from Phase I reported the WTP-DI questions were neutral to very easy to answer, and 24.4% reported the questions were somewhat difficult to very difficult. In Phase III of the current study, 86% reported the questions were neutral to very easy, while 14% noted the questions were somewhat difficult to very difficult to answer.

Measures of Personality

Barratt Impulsiveness Scale-Brief. The Barratt Impulsiveness Scale (BIS) was developed in 1959 (Barratt). The BIS has undergone several revisions and factor analysis studies (Barratt, 1965; Patton, Stanford, & Barratt, 1995). The current study utilized the BIS-Brief (Steinberg, Sharp, Stanford, & Tharp, 2013), which is an 8-item measure assessing unidimensional impulsivity. The BIS-Brief asks an individual to read each statement and circle their response on a 4-point Likert type scale (1 = rarely/never to 4 = almost always/always; Patton et al., 1995). Items are introduced by asking the individual

to consider the different ways they think and act, and to answer questions as quickly as possible. An example item is, “I do things without thinking.” The BIS-Brief was evaluated in an adult community sample, adult domestic violence sample, and an adolescent and young adult inpatient sample (Steinberg et al., 2013). In the nonclinical adult sample, the BIS-Brief demonstrated adequate reliability ($\alpha = .73$). The BIS-Brief has proven to be a reliable and consistent measure (Steinberg et al., 2013). Impulsivity has been demonstrated as a stable, trait-like factor, and was therefore only administered in Phase I of the current study. In the current study, the BIS-Brief demonstrated acceptable reliability ($\alpha = .79$).

Measures Related to ACT Principles

Acceptance and Action Questionnaire-II. The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) is a 7-item self-report measure based on the Acceptance and Action Questionnaire-I (AAQ-I) developed by Hayes et al. (2004b). The AAQ-II instructs participants to rate the truth of each statement using a 7-point Likert-type scale (1 = never true to 7 = always true). A sample of an item from the AAQ-II is, “I worry about not being able to control my worries and feelings.” High scores on this measure indicate greater levels of experiential avoidance and psychological rigidity. In a study across 6 samples with 2,816 participants, the AAQ-II was shown to have better psychometric properties than the AAQ-I and good reliability and validity. Mean alpha coefficient was .84 (.78 - .88) and the 3- and 12-month test-retest reliability was .81 and .79. The AAQ-II investigates avoidance, acceptance of unpleasant emotions, and psychological rigidity (Bond et al., 2011).

The ability to be mindful and accept associated thoughts and feelings (positive or negative) without defensiveness can be referred to as psychological flexibility (Hayes et al., 1999; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). An individual has psychological flexibility when he or she is able to accept situations that cannot be altered and maintains efforts to live a valued life (Hayes et al., 2006). Psychological flexibility is sometimes referred to as “acceptance” and summarizes the thoughts and feelings a person is willing to withstand. Low levels of psychological flexibility, or conversely, high levels of inflexibility, are related to greater levels of depression, anxiety, stress, and overall psychological distress (Hayes et al., 2006). Psychological flexibility mediates the impact of cognitive coping processes, reappraisal (Kashdan, Barrios, Forsyth, & Steger, 2006), and the total effectiveness of treatment. Psychological flexibility is a measure of willingness to withstand privately experienced unwanted negative thoughts and feelings, not overt behavioral acts. Psychological flexibility is an internal trait dealing with willingness to experience negative feelings.

The AAQ-II is a one-dimensional measure that assesses the construct of psychological inflexibility, and results indicate that it does so in a comparable manner across very different samples. The AAQ-II demonstrated excellent reliability when administered in Phase I ($\alpha = .92$) and Phase III of the current study ($\alpha = .92$).

Five Facet Mindfulness Questionnaire. The Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) is a 39-item questionnaire in which participants rate what is generally true for them on a 1-5 Likert-type scale (1 = never or very rarely true to 5 = very often or always true). This questionnaire is based on a prior factor analytic study and integrates five independent

measures. The FFMQ is comprised of the following five factors: observing (“I notice the smells and aromas of things.”), describing (“I am good at finding words to describe my feelings.”), acting with awareness (“I find myself doing things without paying attention”), non-judging of inner experience (“I think some of my emotions are bad or inappropriate and I should not feel them”), and non-reactivity to inner experience (“I perceive my feelings and emotions without having to react to them.”). The current study was particularly interested in an individual’s responses on the non-reactivity to inner experience subscale. Non-reactivity entails an individual being aware, but not overwhelmed, by internal experiences. In a study of college-age adults, alpha coefficients for mindfulness and the five factors ranged from .75- .88 (Fernandez, Wood, Stein, & Rossi, 2010). Theoretically, if an individual reports high levels of DT, he/she should report low levels of reactivity, because he/she is able to withstand aversive experiences and does not feel the need to escape or avoid. The FFMQ was selected for the current study because of its’ excellent psychometrics, relatively brief number of items, and examination of a variety of mindfulness factors (Baer et al., 2006; Fernandez et al., 2010). The FFMQ was administered during Phases I and III of the present study, pre- and post-intervention. All facets of the FMMQ demonstrated acceptable reliability during both administration points in the current study; observing ($\alpha = .82, .82$), describing ($\alpha = .86, .90$), acting with awareness ($\alpha = .88, .88$), non-judging of inner experience ($\alpha = .92, .93$), and non-reactivity to inner experience ($\alpha = .79, .83$).

Valued Living Questionnaire (VLQ). The Valued Living Questionnaire (VLQ; Wilson, Sandoz, Kitchens, & Roberts, 2010) consists of two questionnaires and 20 questions total. The VLQ asks individuals to rate on a 10 point Likert-scale (1 = not at

all important/not at all consistent with my value, 10 = extremely important/completely consistent with my value), how important a given value is to them, and (on another form) how the individual thinks he/she has been doing over the past week with their value. Individuals are asked to examine the following areas of their life: (1) family (other than marriage or parenting), (2) marriage/couples/intimate relations, (3) parenting, (4) friends/social life, (5) work, (6) education/training, (7) recreation/fun, (8) spirituality, (9) citizenship/community life, and (10) physical self-care (diet, exercise, and sleep). Three scores are yielded from the VLQ, the importance scale, consistency scale, and valued living composite. The consistency scaled score will be utilized in the current study, as the importance and composite scaled scores are intended for clinical use and not for research purposes. The VLQ was normed on a sample of 338 undergraduate students ($M_{age} = 19.94$) and demonstrated good psychometric properties for the importance scale ($\alpha = .77$), consistency scale ($\alpha = .75$), and composite score ($\alpha = .77$). In the current study, the VLQ consistency scale demonstrated adequate reliability when assessed pre-intervention ($\alpha = .79$) and post-intervention ($\alpha = .75$).

Data Analysis

H1. Levels of total DT will be significantly higher when measured after exposure to a brief ACT intervention.

A paired samples t-test will be calculated for this hypothesis.

H2. A single-session brief ACT intervention will successfully increase self-reported levels of ACT-related skills and decrease reported symptoms of psychopathology.

Paired samples t-tests will be calculated for these hypotheses.

H3. At baseline, DT will be related to personality traits and psychological symptoms.

H3a. Total DT will be negatively related to impulsivity, drinking to cope, binge eating, negative affect, stress, depression, and anxiety.

Pearson r correlations will be calculated for this hypothesis.

H3b. Distress intolerance, as measured by the WTP-DI, will be significantly negatively related to Total DT.

Pearson *r* correlations will be calculated for this hypothesis.

H3c. Total DT and resiliency will be positively related to a significant degree, such that higher DT will be associated with higher resiliency.

Pearson *r* correlations will be calculated for this hypothesis.

H4. There will be a significant relationship between DT and skills associated with ACT.

H4a. DT and progress on valued living will be positively related, while DT and psychological inflexibility will be negatively related, pretreatment

Pearson *r* correlations will be calculated for this hypothesis.

H4b. There will be a significant positive association between the level of mindfulness, particularly non-reactivity to inner experience, and DT.

Pearson *r* correlations will be calculated for this hypothesis.

H5. Greater symptom endorsement, levels of negative affect, and impulsivity will be associated with lower levels of skills associated with ACT (mindfulness, psychological inflexibility, progress on values).

Pearson *r* correlations will be calculated for this hypothesis.

CHAPTER THREE

Results

Means, standard deviations, and ranges for the independent variables (total DT score, total resiliency score, total DI score) are shown in Table 3. Means, standard deviations, and ranges for the dependent ACT-related and symptom scale variables are shown in Table 4.

Table 3
Mean, Std Deviation, and Range of Independent Variables (Phase I and Phase III)

Variable	Phase I <i>M</i>	Phase I SD	Phase I Range	Phase III <i>M</i>	Phase III SD	Phase III Range
Distress Tolerance	51.53	11.46	16-75	56.59	12.45	25-75
Distress Intolerance	2.83	1.79	1-7	2.54	1.72	1-7
Resiliency	3.36	0.77	1.17-5	3.53	0.79	1.17-5
Impulsivity	16.54	4.30	8-31	n/a	n/a	n/a

Note. $n = 463$ to $n = 467$ for Phase I. n varies because of missing values on some variables. $n = 119$ for Phase III.

Preliminary Analyses

Preliminary analyses were conducted to determine if there were differences between participants who completed Phase III of the study versus those participants who only chose to complete Phase I of the current study. Conducting independent samples *t*-tests assessed differences between completers and non-completers. No significant differences between completers and non-completers were observed. Results for nonsignificant findings, including effect sizes, are presented in Table 5.

Table 4
Mean, Std Deviation, and Range of Dependent Variables (Phase I and Phase III)

Variable	Phase I <i>M</i>	Phase I SD	Phase I Range	Phase III <i>M</i>	Phase III SD	Phase III Range
<i>ACT Variables</i>						
Psychological Inflexibility	18.85	9.44	7-49	18.36	9.08	7-42
Observing	24.07	6.29	8-40	24.34	5.95	11-38
Describing	26.34	6.26	8-40	26.54	6.07	5-54
Acting with awareness	25.72	6.40	8-40	25.41	5.54	8-39
Nonjudging of inner experience	27.38	7.75	8-40	29.07	7.21	8-40
Nonreactivity to inner experience	20.35	4.84	7-35	21.60	4.73	10-35
Values consistency	70.03	15.37	24-100	70.75	13.95	28-100
<i>Symptom Scales</i>						
Depression	23.01	8.78	14-54	21.75	8.84	14-54
Anxiety	21.58	8.23	14-52	20.94	8.58	14-52
Stress	26.15	9.00	14-54	24.95	9.02	14-54
Binge Eating	6.74	8.71	0-59	8.13	6.60	2-28
Negative Affect	22.18	6.98	10-50	21.21	7.50	10-42
DMQ Conformity	6.56	2.98	5-20	5.57	2.22	5-20
DMQ Coping	7.54	4.29	5-25	5.88	2.27	5-18
DMQ Enhancement	9.18	5.35	5-25	6.81	3.82	5-23
DMQ Social	10.56	6.29	5-25	7.71	5.11	5-25

Note. $n = 390$ to $n = 464$ for Phase I. $n = 99$ to $n = 119$ for Phase III. n varies because of missing values on some variables. DMQ = Drinking Motives Questionnaire.

Results by Hypothesis

H1. Levels of total DT will be significantly higher when measured after exposure to a brief ACT intervention.

A paired samples *t*-test was performed to compare means between DT scores pre- and post-intervention to investigate the flexibility of DT. Only individuals who completed all three phases of the current study were included in this analysis. Results indicated the ACT intervention resulted in a significant increase in level of DT, $t(118) = -4.14, p < .001$. The Cohen's effect size value ($d = .38$) suggested a low-to-moderate

sized effect. Changes in resiliency and distress intolerance were also investigated as convergent variables for DT. Results, including effect sizes, are presented in Table 6.

Table 5
Comparisons (t-tests) and Effect Sizes (d) for Phase I completers versus Phase III completers

Variable	Phase I Completers		Phase III Completers		T	Cohen's d
	M	SD	M	SD		
Distress Tolerance	51.28	11.74	52.49	10.69	-0.99	-.10
Distress Intolerance	2.85	1.80	2.70	1.75	0.79	.08
Resiliency	3.38	0.79	3.28	0.76	1.21	.13
Impulsivity	19.35	3.04	19.90	2.57	-1.79	-.18
<i>ACT Variables</i>						
Psychological Inflexibility	18.69	9.46	19.48	9.36	-0.79	-.08
VLQ Consistency	69.90	16.25	69.73	12.91	0.11	.01
FFMQ Observing	24.00	6.39	24.35	5.93	-0.53	-.05
FFMQ Describing	26.52	6.14	25.47	6.49	1.59	.16
FFMQ Act with Awareness	25.70	6.55	25.55	6.01	0.22	.02
FFMQ Nonjudging	27.48	7.91	27.04	7.55	0.53	.06
FFMQ Nonreactivity	20.28	5.02	20.38	4.28	-0.19	-.02
<i>Symptom Scales</i>						
Depression	23.40	9.21	22.29	7.53	1.32	.12
Anxiety	21.64	8.37	21.29	7.41	0.41	.04
Stress	26.16	9.16	26.34	8.49	-0.20	-.02
Binge Eating	6.60	8.44	7.11	9.00	-0.49	-.06
DMQ Social	10.82	6.44	10.24	5.96	0.91	.09
DMQ Coping	7.61	4.25	7.41	4.26	0.44	.05
DMQ Enhancement	9.41	5.51	8.67	4.83	1.39	.13
DMQ Conformity	6.66	3.12	6.39	2.72	0.84	.09
Negative Affect	21.99	7.07	22.63	6.72	-0.87	-.09

Note. $n = 321$ to $n = 369$ for Phase I completers, and $n = 88$ to $n = 119$ for Phase III completers. n varies because of missing values on some variables. Cohen's d was determined using the SD of variables from Phase I. * $p < .05$; ** $p < .01$; *** $p < .001$

H2. A single-session brief ACT intervention will successfully increase self-reported levels of ACT-related skills and decrease reported symptoms of psychopathology.

To evaluate the utility of a single-session ACT intervention, ACT-related skills and symptom measures were administered. ACT-related skills assessed include mindfulness, psychological inflexibility, and progress on valued living. Significant

Table 6
Comparisons (*t*-tests) and Effect Sizes (*d*) for measures Pre- and Post-Intervention

Variable	Baseline		Follow-Up		<i>t</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Distress Tolerance	52.49	10.69	56.59	12.45	-4.14***	.38
Distress Intolerance	2.70	1.75	2.54	1.72	1.24	.09
Resiliency	3.28	0.76	3.53	0.79	-3.85***	.33
<i>ACT Variables</i>						
Psychological Inflexibility	19.48	9.36	18.22	9.11	1.65	.13
VLQ Consistency	69.86	12.76	70.84	14.15	-0.75	.08
FFMQ Observing	24.35	5.93	24.31	6.01	0.09	.01
FFMQ Describing	25.51	6.50	26.53	6.10	-2.59*	.16
FFMQ Act with Awareness	25.54	6.04	25.34	5.56	0.37	.03
FFMQ Nonjudging	27.02	7.58	29.01	7.21	-3.27***	.26
FFMQ Nonreactivity	20.46	4.21	21.60	4.67	-2.91**	.27
<i>Symptom Scales</i>						
Depression	22.29	7.57	21.75	8.84	0.72	.07
Anxiety	21.29	7.41	21.00	8.59	0.39	.04
Stress	26.30	8.52	24.80	8.90	1.86	.18
Binge Eating	6.31	7.79	8.34	6.72	-2.58*	.26
DMQ Social	10.23	5.97	7.71	5.11	5.41***	.42
DMQ Coping	7.43	4.27	5.89	2.28	4.72***	.36
DMQ Enhancement	8.72	4.86	6.83	3.85	4.70***	.39
DMQ Conformity	6.31	2.56	5.57	2.22	3.04**	.29
Negative Affect	22.44	6.62	21.21	7.50	1.77	.19

Note. *n* = 111 to *n* = 119. *n* varies because of missing values on some variables. Cohen's *d* was determined using the *SD* of variables from Phase I. * *p* < .05; ** *p* < .01; *** *p* < .001

increases in describing, $t(115) = -2.59, p < .05$, nonjudging of inner experience, $t(116) = -3.27, p < .01$, and nonreactivity to inner experience, $t(114) = -2.91, p < .01$, mindfulness factors were noted after participation in the one-session intervention. The effects were small in magnitude (Cohen's *d* ranged from .16- .27).

Symptom severity of depression, anxiety, stress, negative affect, and motivations for drinking were examined prior to and after participation in a brief ACT intervention. Significant reductions in drinking for social, $t(115) = 5.41, p < .001$, conformity, $t(115) = 3.04, p < .01$, coping, $t(115) = 4.72, p < .001$, and drinking for enhancement reasons, $t(113) = 4.70, p < .001$, were found. Cohen's effect size value (*ds* ranged from .29-.42) suggested small-to-medium sized effects. Significant increases in self-reported binge

eating, $t(79) = -2.58, p < .05$, were reported post-intervention. Results, including effect sizes, are presented in Table 6.

H3. At baseline, DT will be related to personality traits and psychological symptoms.

H3a. Total DT will be negatively related to impulsivity, drinking to cope, binge eating, negative affect, stress, depression, and anxiety. In terms of personality traits, a moderate correlation was observed between DT and impulsivity $r(458) = -.32, p < .001$. When examining self-reported psychological symptoms, DT was strongly and negatively correlated with negative affect, anxiety, stress, and depression. When DT was compared to drinking motives, DT displayed the strongest relationship with drinking to cope. Results for significant and nonsignificant findings are displayed in Table 8.

H3b. Distress intolerance, as measured by the WTP-DI, will be significantly negatively related to Total DT. The relationship between DT and Willingness to Pay-Distress Intolerance (WTP-DI) was examined to assess the individual contribution of each measure to the study. Due to the researcher's need to alter the wording of each measure, this hypothesis acts as a validity check for the utility of each measure. Results are presented in Table 8.

H3c. Total DT and resiliency will be positively related to a significant degree, such that higher DT will be associated with higher resiliency. The relationship between total DT and resiliency was investigated. Significant and large correlations between DT and resiliency were observed during the baseline, $r(463) = .52, p < .001$ portion of the present study.

H4. There will be a significant relationship between DT and skills associated with ACT.

H4a. DT and progress on valued living will be positively related, while DT and psychological inflexibility will be negatively related, pretreatment. Total DT and psychological inflexibility as measured by the AAQ-II were strongly correlated, $r(455) = -.60, p < .001$. Total DT and progress on valued living were significantly correlated, $r(447) = .12, p < .05$. Results are displayed in Table 7.

Table 7
Pearson Correlation Matrix Between DT and ACT-related Skills (Phase I, Pre-treatment)

	DT	AAQ-II	VLQ-C	FFMQ-O	FFMQ-D	FFMQ-A	FFMQ-NJ	FFMQ-NR
DT	(.90)							
AAQ-II	-.60***	(.92)						
VLQ-C	.12*	-.23***	(.79)					
FFMQ-O	-.09	.20***	.03	(.82)				
FFMQ-D	.26***	-.32***	.22***	.19***	(.86)			
FFMQ-A	.35***	-.45***	.18***	-.26***	.26***	(.88)		
FFMQ-NJ	.44***	-.59***	.09	-.31***	.24***	.49***	(.92)	
FFMQ-NR	.29***	-.27***	.17***	.42***	.29***	-.06	-.02	(.79)

Note. $n = 447$ to $n = 467$. N varies due to missing values on some variables. () = Cronbach's alpha coefficients. Abbreviations. DT = Distress tolerance; AAQ-II = Psychological inflexibility; VLQ-C = Values consistency; FFMQ-O = Observing factor; FFMQ-D = Describing factor; FFMQ-A = Acting with awareness factor; FFMQ-NJ = Nonjudgmental towards inner experience factor; FFMQ-NR = Nonreactivity to inner experience factor. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 8
Pearson Correlation Matrix between DT, Personality traits, and symptom scales

DT	BIS-Brief	DI	BRS	DASS-D	DASS-A	DASS-S	NA	Binge eating	DMQ-S	DMQ-CP	DMQ-E	DMQ-CN
DT (.90)												
BIS-Brief	-.32*** (.79)											
DI	-.37*** .08 (n/a)											
BRS	.52*** -.16**	-.33*** (.86)										
DASS-D	-.45*** .29***	.31***	-.30*** (.85)									
DASS-A	-.48*** .25***	.27***	-.32***	.73*** (.84)								
DASS-S	-.47*** .25***	.34***	-.41***	.68***	.74*** (.84)							
NA	-.44*** .18***	.30***	-.43***	.41***	.44***	.53*** (.85)						
Binge eating	-.34*** .14**	.15**	-.22***	.37***	.36***	.32***	.23*** (.75)					
DMQ-S	-.02 .09*	.05	.08	.06	.08	.16	.13**	.09 (.95)				
DMQ-CP	-.19*** .15**	.18***	-.13**	.23***	.23***	.29***	.29***	.21***	.64*** (.90)			
DMQ-E	-.08 .10*	.04	.04	.07	.11*	.16**	.14**	.09	.84***	.71*** (.91)		
DMQ-CN	-.10* .07	.01	-.02	.10*	.21***	.17***	.19***	.14**	.54***	.50***	.49*** (.87)	

Note. n = 390 to n = 467. N varies due to missing values on some variables. () = Cronbach's alpha coefficients. DI = distress intolerance; BRS = Brief Resiliency Scale; DASS-D = Depression Scale; DASS-A = Anxiety Scale; DASS-S = Stress Scale; NA = Negative Affect; DMQ-S = Social; DMQ-CP = Coping; DMQ-E = Enhancement; DMQ-CN = Conformity. * p < .05; ** p < .01; *** p < .001.

H4b. There will be a significant positive association between the level of mindfulness, particularly non-reactivity to inner experience, and DT. Total DT and the nonreactivity to inner experience mindfulness factor were moderately correlated, $r(453) = .29, p < .001$. Out of the five mindfulness factors explored, DT was most strongly related to the nonjudgmental factor, $r(455) = .44, p < .001$. Results for significant and nonsignificant findings are displayed in Table 7.

H5. Greater symptom endorsement, levels of negative affect, and impulsivity will be associated with lower levels of skills associated with ACT (mindfulness, psychological inflexibility, progress on values).

The relationships between impulsivity, measured by the BIS-Brief, and skills associated with ACT were investigated. Analyses revealed a moderate association between impulsivity and psychological inflexibility, $r(448) = .30, p < .001$. A small, yet significant relationship was found between impulsivity and progress on values, $r(440) = -.17, p < .001$. When the relationship between impulsivity and mindfulness factors was investigated, the strongest relationship emerged between impulsivity and acting with awareness, $r(450) = -.49, p < .001$.

The relationships between various symptom clusters and skills associated with ACT were investigated. Significant correlations were found between negative affect and all ACT-related variables. Significant relationship was found between depression and all skills associated with ACT. Symptoms of anxiety and ACT-related skills were all significantly correlated. Significant relationships were found between stress and ACT-related skills. Significant and nonsignificant findings can be found in Table 9.

Table 9
Relationships between symptoms scales and skills associated with ACT

	BIS-Brief	Negative affect	DASS-D	DASS-A	DASS-S	AAQ-II	VLQ-C	FFMQ -O	FFMQ -D	FFMQ -A	FFMQ -NJ	FFMQ -NR
BIS-Brief	(.79)											
Negative affect	.18***	(.85)										
DASS-D	.29***	.41***	(.85)									
DASS-A	.25***	.44***	.73***	(.84)								
DASS-S	.25***	.53***	.68***	.74***	(.84)							
AAQ-II	.30***	.48***	.61***	.60***	.62***	(.92)						
VLQ-C	-.17***	-.17***	-.24***	-.13**	-.19***	-.23***	(.79)					
FFMQ-O	-.07	.11*	.23***	.25***	.22***	.20***	.03	(.82)				
FFMQ-D	-.29***	-.20***	-.26***	-.25***	-.19***	-.32***	.22***	.19***	(.86)			
FFMQ-A	-.49***	-.24***	-.45***	-.38***	-.41***	-.45***	.18***	-	.26***	(.88)		
FFMQ-NJ	-.18***	-.36***	-.51***	-.51***	-.46***	-.59***	.09	-	.24***	.49***	(.92)	
FFMQ-NR	-.18***	-.25***	-.10*	-.14**	-.18***	-.27***	.17***	.42***	.29***	-.06	-.02	(.79)

Note. n = 439 to n = 467. n varies due to missing values on some variables. () = Cronbach's alpha coefficients. Abbreviations. BIS-Brief = impulsivity; DASS-D = depression; DASS-A = anxiety; DASS-S = stress; AAQ-II = Psychological inflexibility; VLQ-C = Values consistency; FFMQ-O = Observing factor; FFMQ-D = Describing factor; FFMQ-A = Acting with awareness factor; FFMQ-NJ = Nonjudgmental towards inner experience factor; FFMQ-NR = Nonreactivity to inner experience factor. * p < .05; ** p < .01; *** p < .001.

CHAPTER FOUR

Discussion

Pre-post Analyses

A primary goal of this study was to investigate the flexibility of DT after exposure to a brief-ACT intervention. Consistent with the hypotheses, results revealed a significant change in DT when measured pre- and post-intervention. This finding is consistent with previous literature that found a significant change in DT after exposure to a 6-session adjunct treatment (Bornovalova et al., 2012) in individuals with SUD. The current study shows that DT is flexible and can be significantly and positively altered. Changes in DT were assessed 2-4 weeks after participation in the intervention. Future research should conduct longitudinal studies to compare DT changes following a single-session intervention versus a longer-term intervention to establish a dose-response relationship. Overall, this study provides preliminary evidence for the utility of a single-session intervention. An effective single-session intervention is an important alternative to a longer, more intensive treatment.

This study examined changes in symptom-related variables after participation in a brief-ACT intervention. Motivations for drinking behaviors in a college student sample were explored. Results from the present study were that, when examining drinking motives prior to and after a brief-ACT intervention, decreases in drinking for social, coping, enhancement, and conformity were found. All of the targeted motives for drinking decreased following the brief-ACT intervention. Individuals may have been

motivated to decrease drinking behaviors after consciously evaluating values, or may have learned mindfulness skills to help decrease motivations for consuming alcohol.

Significant increases in resiliency were observed. Interventions aimed at increasing DT and resiliency have overlapping techniques and theories; therefore the findings in the current study fit with previous research findings (Everly et al., 2008; Orbke & Smith, 2013). This study extends research by utilizing a different sample and single-session intervention with various therapeutic techniques.

No changes were found in self-reported symptoms of depression, anxiety, stress, or negative affect. Results also revealed a lack of significant changes in DI as measured by the WTP-DI. Although a lack of significant change on these variables was found, it should be noted that pre-to-post changes in these variables were all in the hypothesized direction. Nonetheless, the present results diverge from previous research finding significant reductions in depressive symptoms and stress in adolescents exposed to brief ACT in a group setting (Livheim et al., 2014). A previous study found significant decreases in perceived stress after exposure to a brief mindfulness intervention (Baer, Carmody, & Hunsinger, 2012). Of note, however, is that significant changes in symptoms were not found in the previous study until 4 weeks post-intervention (Baer et al., 2012). In the current study, symptoms were assessed over the past seven days, while time since the intervention ranged from 14 to 28 days per individual. The lack of significant changes may thus be due to the limited follow-up availability of 2-4 weeks post-intervention. Lack of significant findings may also be due to the nonclinical nature of the sample utilized in this study. Scores on the DASS-21 or PANAS may not have been elevated enough pretreatment to exhibit significant changes after exposure to the

brief treatment. Lack of variability in scores must be considered as a possible reason for lack of significance in findings, although nonsignificant reductions in scores were still found in the hypothesized direction. Future research may consider several follow-ups after the intervention (e.g., 1 week, 1 month, 3 months) for a clearer depiction of when symptom change occurs. Future research may also consider utilizing a different sample type (i.e., clinical versus non clinical population).

In terms of ACT-related skills, no significant changes in psychological inflexibility or values consistency were found. Although not significant, both psychological inflexibility and progress on values changed in the hypothesized directions. Significant increases were observed for three out of five mindfulness factors: describing, nonreactivity to inner experience, and nonjudging of inner experience. There were, however, no changes in the observing or acting with awareness mindfulness facets. Previous research noted increased rates of mindfulness and mastery of mindfulness skills two weeks after exposure to a brief mindfulness intervention (Baer et al., 2012). The current findings are consistent with previous research noting increased levels of mindfulness after exposure to a brief ACT intervention (Goodwin et al., 2012).

Contrary to hypotheses, results revealed an increase in binge eating when assessed pre- and post-intervention. This finding stands in contrast to previous research noting improvements in disordered eating attitudes after participation in a one-day ACT workshop (Pearson et al., 2012), which led researchers to hypothesize that a brief intervention could lead to improvements in binge eating behaviors. Pearson et al. (2012) assessed eating attitudes one and two weeks post-intervention. Follow-up time differences between the current study and Pearson and colleague's study (2012) should

be taken into account when assessing the lack of continuity in results. More importantly, the difference between eating attitudes and actual binge eating episodes and symptoms must be taken into account. The current study did not assess opinions or attitudes regarding eating, but actual behavioral steps contributing towards a binge eating disorder diagnosis. Brief ACT intervention studies have noted initial increases in symptoms (Bach & Hayes, 2002) due to confrontation with previously avoided and aversive stimuli (Roche et al., 2007). In practice, the awareness of unpleasant thoughts and emotions, or how one is/isn't living according to values, may contribute to exacerbated symptoms for a period of time. Future research may want to include symptom measures of binge eating and other eating related disorders, in addition to perceived thoughts and attitudes towards eating to elucidate these relationships. This methodology could be particularly helpful with the recent release of the DSM-5 that has redefined eating disorder criteria and now recognizes binge eating disorder as a separate diagnosis. Future research should utilize more and a wider time range of follow-up assessments to allow for accurate tracking of symptoms and to account for a rebounding effect seen in previous literature.

Baseline Relationships between DT and Related Constructs

DT was significantly related to measures of DI, resiliency, and impulsivity. Out of these relationships, DT was most strongly related to resiliency. DT and resiliency have both been associated with mental health issues and coping techniques (Buckner et al., 2007; Bonanno, 2004; Everly et al., 2008; Greenberg et al., 2011).

However, previous research has not explored the relationship between DT and resiliency. It is surprising that this relationship has not been explored, as these constructs are similar by definition. DT is an individual's willingness to cope with aversive states,

while resiliency is an individual's ability to recover and rebound from internal and external stressors. Both of these constructs are being researched in terms of their ability to be targeted and changed through psychological intervention. DT and resiliency were positively correlated, but appear to be separate constructs as indicated by the medium and not overwhelmingly high association between variables.

This study was the first known examination of the overlap between DT and resiliency. In the present study, individuals with higher levels of DT also had higher rates of resiliency. Research exploring strategies to improve resiliency have focused on identifying values, social support, and positive reframing (Everly et al., 2008; Orske & Smith, 2013; Zimmerman, 2013). Because both DT and resiliency are important in terms of mental health, understanding potential overlapping strategies that may improve both of these constructs may help treatment planning and outcomes. This study indicated that DT and resiliency are related, but not synonymous, as evidenced by the magnitude of the correlation. Finding that a certain approach increases DT or resiliency should lead researchers to investigate the interventions effect on the related constructed. Knowing these constructs are related could help researchers design appropriate intervention studies to further elucidate this relationship.

This study revealed that individuals with higher DT reported lower levels of impulsivity, which is consistent with previous research (Marshall-Berenz et al., 2010b). This study supports previous research, but extends the findings from a trauma-exposed sample to a college student population. DT and impulsivity were moderately negatively correlated to one another. Rates of impulsivity have even been shown to predict DT (Marshall-Berenz et al., 2010b). Treatments targeting DT may help individuals learn

skills to improve upon taking impulsive actions as an avoidance mechanism. The current treatment resulted in significant increases in DT. This study provided initial evidence for an increased ability to cope with emotions, which could contribute to and reduce impulsive or harmful behaviors.

DT and DI were moderately negatively correlated. Individuals with higher rates of DT will endorse lower levels of DI. These individuals are better able to self-regulate and possess a higher self-efficacy in terms of coping with aversive states. Measures of DT and DI were included in this study for several reasons. First, the researcher had to change the wording on the DTS to account for changes in DT since the brief-ACT intervention and to counteract test-retest reliability of the DTS (Simons & Gaher, 2005). This administration of the WTP-DI was an extension of its use. A negative emotional state was induced using a self-written script following a prompt, instead of using a video clip. Researcher wanted to assess the utility of using two different measures for the hypothesized single construct. The moderate correlation insinuates that the two measures administered in this study are not indicative of a single overall construct, but instead of two moderately related variables. The negative relationship between DI and DT was expected and hypothesized, and indicated that individuals with higher DT will report lower DI. This inconsistent relationship between measures of the same construct is consistent with previous work examining the relationship between measures of DT (Marshall-Berenz, Vujanovic, Bonn-Miller, Bernstein, & Zvolensky, 2010a; McHugh et al., 2011a), and helps to draw attention to this pressing issue. Future research needs to determine the most accurate way to assess DT so that researchers can use a standardized approach that can generalize from one study to another.

DT and Psychological Symptoms

This study evaluated relationships between the DTS and presence of various psychological symptoms. DT was significantly related to anxiety, stress, depression, binge eating, and negative affect, such that higher levels of DT were related to lower rates of psychological symptoms. Relationships were strong and negative except for DT and binge eating, which was characterized by a moderate negative relationship. Low DT has previously been associated with greater internalizing symptoms (Schmidt et al., 2006) and increased rates of avoidance coping (Greenberg et al., 2011). These findings are supported by previous research noting a negative correlation of DT with symptoms of anxiety (Johnson et al., 2012), negative affect (Willoughby et al., 2002), depression (Buckner et al., 2007), and disordered eating (Anestis et al., 2007). Current findings extend previous work by examining these relationships in a college student sample. These findings indicate that high DT may act as a protective factor against these various psychological difficulties.

Greater alcohol use and difficulties with such use have been related to lower levels of DT (Buckner et al., 2007; Kaiser et al., 2012). DT was significantly related to drinking for reasons of conformity and coping. Future studies might seek to extend the present findings by sampling a larger number of individuals who participate in drinking activities. A significant relationship was not found between DT and drinking for social or enhancement purposes. Individuals with low levels of DT are no more likely to drink for social or enhancement purposes than individuals with high levels of DT. Previous work has investigated the relationship between DT and coping skills as they relate to drinking (Howell et al., 2010; Potter et al., 2011), but not drinking motives, specifically.

Drinking motives are important to investigate, particularly in a college student population, because of their potential impact on treatment planning. In particular, different drinking motivations could be better targeted by unique interventions (e.g., drinking for social/enhancement reasons may require a different treatment approach than drinking for coping reasons).

DT and ACT-Related Skills

The current study assessed the relationship between DT and ACT-related skills of psychological inflexibility, progress on valued living, and facets of mindfulness. To the author's knowledge, there is no previous research that has explored these relationships. DT was significantly related to psychological inflexibility and progress on valued living. Results support a strong negative relationship between DT and psychological inflexibility. Individuals with higher DT have lower psychological inflexibility and are better able to cope when faced with aversive events. It was hypothesized that DT and psychological inflexibility would be related due to their assessment of individual ability to tolerate unwanted internal states. The findings of this study show that DT is related to psychological inflexibility, a primary component of ACT theory. This study shows that DT is a natural target of an ACT intervention, and that future studies should continue to investigate this relationship. A significant, but small, positive association was found between DT and progress on values. Future research should consider other ways to assess the relationship between these two constructs. Assessing DT via behavioral or task persistence measures may further elucidate the relationship between progress on values and aspects of DT. Progress on values was measured by the VLQ (Wilson et al., 2010), which defines values categories for respondents to rate progress. Future

researchers may aim to create a new values progress measure that allows participants to define their own values.

Nevertheless, an important relationship between DT and values progress was found. Individuals with higher DT report acting in ways that are more consistent with their values than individuals with lower DT. People who are more willing to endure aversive states are better able to tolerate events that could potentially jeopardize progress on values. Identification of values is an integral part of ACT; it makes it worthwhile to withstand uncomfortable states when you are able to remember what it is in service of (i.e., your values).

The DTS was significantly correlated with four of five mindfulness factors: nonjudging of inner experience, nonreactivity to inner experience, describing, and acting with awareness. These positive significant relationships range from weak to strong in strength of association. Previous research links mindfulness, attention to the present moment, to decreased lower levels of psychopathology (Bernstein et al., 2011). In the current study, DT was most strongly related to the nonjudging of inner experience mindfulness factor. The nonjudging mindfulness factor encompasses an individual's belief about the acceptability of experiencing various emotions. An individual with higher DT, a greater willingness to experience aversive states, has an increased ability to accept different emotions. If someone is able to nonjudgmentally accept emotions (positive or negative), the interpretation of emotions as "bad" or aversive will decline. Accepting emotions as a natural part of life would undoubtedly raise DT and alter cognitions related to emotions, which could prove to be useful information when looking for ways to improve DT. This study adds new, important findings to the research

between DT and mindfulness as evidenced by previous research only investigating individual facets of mindfulness.

Previous research supported a relationship between non-reactivity to inner experience and task persistence, a behavioral assessment of DT (Evans et al., 2009). Non-reactivity mindfulness is conceptualized as an individual's ability to identify feelings while being able to refrain from having a reaction to those feelings. The current study supports this finding, but extends it to include emotion-focused, self-assessed DT, which is an easier, more cost-efficient way to assess DT. Future research could explore the relationship between behavioral measures of DT and facets of mindfulness, given that previous work has only investigated DT in relation to non-reactivity mindfulness. The current findings bolster previous findings that non-reactivity mindfulness and DT have a significant relationship. Theoretically, lower levels of reactivity should be associated with higher DT, because aversive emotions are not experienced. Interventions to raise DT, as well as opportunities to learn mindfulness techniques, could prove to be very useful in reducing psychopathology. DT, non-reactivity mindfulness, and nonjudgmental mindfulness all significantly increased after exposure to the currently investigated single-session intervention in which mindfulness skills were taught. The current study demonstrates the ability for DT and mindfulness techniques to be significantly changed in a brief amount of time, which is very promising for future treatment development.

The relationship between DT and the observing factor of mindfulness was not significant. The observing factor focuses on the awareness of senses in the present moment. Theoretically, DT is related to the experience of aversive emotional states, not present awareness of things unrelated to emotions. Although senses can influence

emotions by inducing memories (e.g., happy emotion may be induced after smelling apple pie and remembering your grandmother making it when you were a child), being aware of different sensations in the moment would not be expected to be related to DT. Perhaps sensations that trigger emotional memories are significantly related to DT, and could be a future research topic.

Baseline Relationships between Psychological Constructs with ACT-Related Skills

Impulsivity

Impulsivity was significantly related to psychological inflexibility and progress on valued living. Impulsivity and psychological inflexibility were moderately positively related. Higher impulsivity is associated with a greater inability or willingness to experience negative states. Individuals will take impulsive actions, not thinking about future consequences, to avoid distressing feelings in the present. Although significant, only a small negative relationship was found between impulsivity and values consistency. This finding indicates that a significant relationship does exist between impulsivity and values consistency. Individuals are better able to act according to self-identified values and withstand aversive experiences that challenge such values if they also have a lower level of impulsivity.

Impulsivity was associated with four out of five mindfulness factors: acting with awareness, describing, nonjudging of inner experience, and nonreactivity to inner experience. Impulsivity was most strongly associated with acting with awareness mindfulness, where a strong negative relationship was observed. Relationships between impulsivity and mindfulness factors ranged from weak to strong. Highly impulsive

individuals have difficulties being in the present moment. Impulsive individuals are more likely to act without thinking and avoid mindfulness strategies.

Negative Affect

Self-reported levels of negative affect were significantly associated with all ACT-related skills. Negative affect was correlated with psychological inflexibility, progress on valued living, and all five facets of mindfulness (acting with awareness, describing, nonjudging of inner experience, and nonreactivity to inner experience, and observing mindfulness). A strong positive relationship was found between negative affect and psychological inflexibility. Individuals experiencing greater levels of negative affect in the past week were more likely to report increased psychological inflexibility. Those who more frequently experience negative emotions are less likely to volunteer to experience even more aversive states. However, the direction of this relationship is unclear and causality cannot be determined through a correlation. Although significant, the negative association between negative affect and progress on values was considered small. This finding indicates that a relationship does exist, although it is only small in magnitude. Future research may wish to utilize a clinical sample to further explore this small relationship.

Negative affect was significantly related to all five facets of mindfulness. Negative relationships were observed for all facets except for the relationship between the observing facet of mindfulness and negative affect. The relationship between negative affect and observing mindfulness was positive and significant. Previous research supported a relationship between negative affect and mindfulness (Vidrine et al., 2014), but did not explore negative affect in relation to specific facets of mindfulness.

Greater levels of negative affect were associated with increased observing mindfulness. These individuals may be hyperaware of their surroundings and greater awareness of negative experiences. An individual experiencing high negative affect may be more likely to notice sensory stimuli and interpret it in a negative way, in a sense continuing the cycle of negative interpretation and affect. The strongest relationship between negative affect and mindfulness was found with the nonjudgmental to inner experience mindfulness facet, which exhibited a moderate negative relationship. A greater ability to be mindful, specifically regarding their perceptions of varying emotions, is associated with lower levels of negative affect. Such individuals are able to notice and respond to emotional content, but not be consumed by content to the point where it influences affective experience. Mindfulness intervention may decrease negative affect and related symptoms of pathology. This study extends previous research findings to specify which individual facets of mindfulness could be targeted in interventions.

Depression

Self-reported levels of depression were significantly associated with all ACT-related skills. Depression was significantly correlated with progress on valued living, psychological inflexibility, and all five facets of mindfulness (acting with awareness, describing, nonjudging of inner experience, and nonreactivity to inner experience, and observing mindfulness). Depression and values consistency shared a weak negative relationship. Those who are living their life in ways consistent with their values often report fewer depressive symptoms. When an individual is successfully living their life in ways that align with their underlying values and morals, they are less likely to feel depressed. Similar to previous research (Fergus, Valentiner, McGrath, Gier-Lonsway, &

Jencius, 2013), a strong positive relationship between depressive symptoms and psychological inflexibility was found. The sample utilized by Fergus and colleagues (2013) was clinical in nature and consisted of individuals with either a primary mood or anxiety disorder. Another investigation found a significant relationship between psychological inflexibility and depressive symptoms in Asian American young adults (Masuda, Mandavia, & Tully, 2013). The current investigation extends these findings to a non-clinical college student population, which provides important information for potential underlying mechanisms for symptom development.

All five mindfulness factors were significantly related to depressive symptoms. Previous research in a sample of treatment-seeking adults found significant associations between depressive symptoms and four mindfulness factors, excluding observing mindfulness (Desrosiers, Klemanski, & Nolen-Hoeksema, 2013). Consistent with previous literature (Desrosiers et al., 2013), the strongest association was found between depression and the nonjudgmental mindfulness factor. In the current study, the strongest relationship between depression and mindfulness was with the nonjudgmental of inner experience, followed by the acting with awareness facets. Both of these mindfulness facets exhibited strong negative relationships with depression. Although depression was significantly related to all facets of mindfulness, it did display a small negative relationship with the nonreactivity mindfulness facet. The current study furthers knowledge by extending findings to a nonclinical college student population. This provides evidence that these important associations exist when participants are experiencing sub threshold symptoms, and may therefore be important to consider in

treatment planning. Preventative care on college campuses could include brief mindfulness seminars and activities.

Anxiety

Self-reported levels of anxiety were significantly associated with all ACT-related skills. Anxiety was correlated with psychological inflexibility, progress on valued living, and all five facets of mindfulness (acting with awareness, describing, nonjudging of inner experience, and nonreactivity to inner experience, and observing mindfulness). The correlation between anxiety and psychological inflexibility was characterized as a strong positive relationship, while a small negative relationship was found between anxiety and values progress. These findings are consistent with previous work that found a positive association between psychological inflexibility and symptoms of anxiety in Asian American young adults (Masuda et al., 2013), but extend results to a more diverse sample.

Significant relationships between anxiety and mindfulness facets range from weak to strong. The strongest relationship between mindfulness and anxiety was found with the nonjudging of inner experience factor, which displayed a strong negative association. Previous research only found significant relationships between anxiety and three mindfulness factors: acting with awareness, nonjudging, and nonreactivity (Desrosiers et al., 2013). The significant relationships found by Desrosiers et al. (2013) can be classified as negative and weak. Overall, the current study supports significant relationships between mindfulness and anxiety, although some differences from previous work are noted. These studies used different measures to assess anxiety. Future research can investigate differences between forms of anxiety and mindfulness (e.g., social anxiety versus physiological responses to anxiety).

Stress

Level of stress was significantly associated with all ACT-related skills. Stress was significantly correlated with psychological inflexibility, progress on valued living, and all five facets of mindfulness (acting with awareness, describing, nonjudging of inner experience, and nonreactivity to inner experience, and observing). The strongest relationship between ACT-related skills and stress was found between psychological inflexibility and stress. Stress and psychological inflexibility displayed a strong positive relationship. The relationship between values progress and stress was negative and very small. The strongest relationship between stress and mindfulness was between stress and the nondugmental factor, which exhibited a strong negative relationship. Greater levels of stress are associated with decreased values consistency and mindfulness skills. Individuals with greater stress are often less able to flexibly apply strategies to cope.

Level of self-reported stress in relation to symptoms of ACT has not been well studied. Research regarding symptoms and ACT often studies specific disorders or symptoms related to disorders. In this study of nonclinical college students, the relationship between general stress level and ACT-related skills was important to assess. This provides important evidence for a relationship between general, nonclinical levels of self-reported stress over the past 7 days and ability to engage in ACT-related skills.

Limitations and Future Directions

This study had several limitations. First, only self-report measures in an online format were utilized for data collection. Moreover, the wording on some measures was altered to assess possible changes over time, which may have impacted the validity of such measures. Additionally, some of the constructs can be assessed in different ways.

Comparing differences between perceived and behavioral measures of DT among individuals diagnosed with a single disorder versus comorbid disorders is a future research direction that should be considered.

This study assessed perceived symptom severity and did not take diagnostic criteria into account during analyses. Although the aim of this study was to examine general symptomatology in an undergraduate sample, future research may wish to reliably separate samples into clinical and non-clinical groups. Future researchers may wish to conduct semi-structured interviews to compare differences between those meeting criteria for a diagnosis versus those experiencing subthreshold symptoms.

The SONA sample also contains a possible limitation. The sample was drawn from college students attending a Baptist university in the southern United States. The SONA sample consisted of a limited age range. This sample composition also contributed to a non-representative sample of the general population. This subset of the general population is not representative of a broad, general population, which may limit the generality of the present findings. Future studies may want to utilize a community sample.

The current study involved treatment development, manual writing, and pilot testing of a brief-ACT intervention. The results from this study provide promising evidence for the utility of a brief-ACT intervention at increasing DT and symptoms of psychopathology. The current study successfully completed Stage 1a and 1b of the Stage Model of Behavioral Therapies (Rounsaville et al., 2001). According to Onken and colleagues (1997) the next stage in this treatment development is to conduct RCTs. It is recommended that future research focus on completing a RCT of this treatment protocol.

APPENDICES

APPENDIX A

Brief-ACT Protocol

1. Introduction: To ACT therapist and a chance for the participant to introduce him/herself.
2. Informed Consent
 - a. Confidentiality/exceptions to confidentiality
 - b. Audio recording
 - c. Single-session experimental session in which you receive components of a scientifically-based psychotherapy.
 - d. Risks and benefits
 - i. May not receive benefit, technically could be feeling more distressed when leaving the session
 - ii. Offer referrals at end
3. PANAS
 - a. Have participant complete the PANAS on a computer
4. What is ACT?
 - a. ACT considers suffering to be normal. Emotions, even negative ones, are a normal part of life. In fact, suffering is connected to how we relate and perceive our thoughts and feelings. When we are suffering, we try to rid ourselves of painful experiences such as anxiety, sadness, negative thoughts, bad memories, etc.

b. Chocolate cake metaphor

- i. Some people respond with avoiding their chocolate cake in different ways
 1. Examples: Using a substance, distracting self (cleaning, watching television, studying/working a lot). Give lots of examples to show the participant that avoidance can take many forms.
- ii. What is your “chocolate cake”? What types of experiences or feelings have you had that you didn’t like and how did you respond to them?
 1. If you are uncomfortable sharing your “chocolate cake” with me, that’s okay, just keep it in your mind as we continue.

- c. Sometimes this response to uncomfortable feelings or thoughts and sensations, - this avoidance – this effort to eliminate the pain-- becomes a source of pain itself and thus is the problem. So in ACT, we work on viewing thoughts and feelings with a different stance or attitude. The ultimate goal is to help you build a better life based on your values.

5. What will I learn in ACT?

- a. ACT is not based on helping you change the frequency of unhelpful thoughts or unpleasant feelings (e.g., yellow Jeep) you have, but is about helping you respond to those thoughts and feelings in a more flexible manner.

- b. Emphasize collaboration and ask participant if he/she is willing to do exercises and metaphors together
 - i. If participant is unwilling or seems hesitant to do exercise and metaphors together, they will be thanked for their time and participation and informed that they still get credit for the in-person study, but that their participation is over.
 - c. Ask participant to repeat the treatment rationale to ensure their understanding.
 - d. Minimum threshold of knowledge to move on with protocol:
 - i. Response to uncomfortable feelings or thoughts is the problem, not the uncomfortable feelings or thoughts themselves
- 6. 10 minutes: Acceptance/Willingness
 - a. Transition
 - i. When you were a kid, did you ever play tug-of war?
 - ii. Bring up current struggle previously named or “chocolate cake” in general if client chooses not to disclose current struggle
 - iii. Tug of War metaphor
- 7. 10 minutes: Defusion versus Cognitive Fusion
 - a. Transition
 - i. Monster was not only pulling on rope, but also taunting you and saying mean things
 - ii. Read more into thoughts than we really should
 - b. Lemon-lemon-lemon exercise (5 minutes)

- c. Transition:
 - i. Sometimes we read more into our thoughts than is good for us, and we try to control them. Not only do we get caught up in our thoughts and take them literally, but we also try to suppress or avoid them, too.
 - d. Campfire metaphor (5 minutes)
8. 10 minutes: Contact with the present moment/Mindfulness
- a. Transition:
 - i. When you were a kid, did you ever eat warheads?
 - b. Lemon Warhead exercise (5 minutes)
 - i. Sugar free candy option if participant needs
 - c. Transition:
 - i. Thank for being so involved thus far
 - ii. This next exercise should hopefully be relaxing and is more of a personal, reflective experience
 - d. Leaves on a Stream exercise (5 minutes)
9. 10 minutes: Values
- a. Transition:
 - i. We've done all of these exercises to turn inwards and become more aware, but not judge our experiences, but what is it in service of?
 - ii. Context is doing all of these things to work towards our values

- iii. Maybe, if we can allow our thoughts to be leaves on the stream, we would have more time to really do what's important to us

- b. Values Notecard exercise

- i. How have you been doing at living out your values?

10. 10 minutes: Wrap-up

- a. Making a commitment

- i. I'm wondering if you're willing to make a commitment towards living out one of your values?

- ii. Emphasize that the size of the action doesn't matter

- iii. I'm going to do it with you and I will make a commitment to you as well.

- 1. I'm going to commit to getting 8 hours of sleep a night because health (physical and emotional) is one of my top values and impacts a lot of things in my life

- b. Wrap-up and reactions to the session

- i. What was today like for you?

- ii. Favorite part? Least favorite part?

- c. Offer referral to Baylor University Counseling Center

APPENDIX B

Metaphors and exercises

Chocolate Cake Exercise (Hayes et al., 1999)

The chocolate cake exercise is particularly effective with clients who are struggling to control obsessive thoughts or ruminations.

Therapist: Suppose I tell you right now that I don't want you to think about something. I'm going to tell you very soon. And when I do, don't think it even for a second. Here it comes. Remember, don't think of it. Don't think of . . . warm chocolate cake! You know how it smells when it first comes out of the oven. . . Don't think of it! The taste of the chocolate icing when you bite into the first warm piece . . . Don't think of it! As the warm, moist piece crumbles and crumbs fall to the plate . . . Don't think of it! It's very important; don't think about any of this!

Most clients get the point immediately and may laugh uncomfortably, nod, or smile. Others may respond by insisting that they did not think about anything. As illustrated in the following dialogue, the therapist can use this exercise to further highlight the futility of control or thought suppression strategies.

Therapist: So could you do it?

Client: Sure.

Therapist: And how did you do it?

Client: I just thought about something else.

Therapist: Ok. And how did you know you did it?

Client: What do you mean?

Therapist: The task was not to think of chocolate cake. So what did you think of?

Client: Driving a racecar.

Therapist: Great. And how did you know that thinking of a racecar was doing what I asked? So that you could report success?

Client: Well I was saying, "Great, I'm thinking of a racecar . . ." (*pauses*)

Therapist: Yes. And continue on. I'm thinking of a racecar and I'm not thinking of...

Client: Chocolate cake.

Therapist: Right. So even when it works, it doesn't.

Client: It's true. I did think of cake, but I pushed it out so fast I almost didn't think of it.

Therapist: And isn't this similar to what you have done with your obsessive thoughts?

Client: I try to push them out of my mind.

Therapist: But see the problem. All you are doing is adding racecars to chocolate cake. You can't 100% subtract chocolate cake deliberately, because to do it deliberately you have to formulate the rule, and then there you are, because the rule contains it. If you are not willing to have it...

Client: You do.

The point can also be made in respect to physical reactions. We might say to the client something like, "Don't salivate when I ask you to imagine biting into a wedge of lemon. Don't salivate as you imagine the taste of the juice on your lips and tongue and

teeth.” These exercises help the client make direct contact with the ineffectiveness of conscious purposeful control in these domains.

Tug-of-War With a Monster Metaphor (Hayes et al., 1999)

The following is a metaphor that was generated by a wonderful and courageous client with agoraphobia as a description of a breakthrough she experienced in ACT. This client abandoned a 20-year struggle with panic and started living instead; doing all the things she had always wanted to do (starting a business, going to school, leaving a destructive marriage) by including anxiety as a legitimate component of these life changes. We call this the *Tug-of-War with a Monster Metaphor*.

Therapist: The situation you are in is like being in a tug-of-war with a monster. It is big, ugly, and very strong. In between you and the monster is a pit, and so far as you can tell it is bottomless. If you lose this tug-of-war, you will fall into this pit and will be destroyed. So you pull and pull, but the harder you pull, the harder the monster pulls and you edge closer and closer to the pit. The hardest thing to see is that our job here is not to win the tug-of-war...our job is to drop the rope.

The drop-the-rope image is a perfect one for the larger agenda of ACT, in which emotional willingness and detachment from thoughts will dominate. Sometimes clients ask, “How do I do that?” after hearing this metaphor. It is best not to answer directly at this point, because that is the whole issue that the therapy addresses. The therapist can instead say something like, “Well, I don’t know exactly how to answer that right now. But the first step is simply to see that you are holding the rope.”

"Milk, Milk, Milk" or "Lemon, Lemon, Lemon" Exercise (Hayes et al., 1999; Zettle, 2007)

Having made an initial assault on the limits of language as a stand-in for actual experience, the therapist has to provide the client with the experience of making contact with language stripped of its symbolic functions. The following Milk, milk, milk exercise was first used by Titchener (1916; Hayes et al., 1999, pp. 425) to try to explain his context theory of meaning. It is a playful way to demonstrate that a literal, sequential, analytic, context is required for language stimuli to have any literal (i.e., derived) meaning.

Therapist: Let's do a little exercise. It's an eyes-open one. I'm going to ask you to say a word. Then you tell me what comes to mind. I want you to say the word "milk." Say it once.

Client: Milk.

Therapist: Good. Now what comes to mind when you said that?

Client: I have milk at home in the refrigerator.

Therapist: OK. What else? What shows up when we say "milk"?

Client: I picture it- white, a glass.

Therapist: Good. What else?

Client: I can taste it. Sort of.

Therapist: Exactly. And you can feel what it might feel like to drink a glass? Cold.

Creamy. Coats your mouth. Goes "glug, glug" as you drink it. Right?

Client: Sure.

Therapist: Ok, so let's see if this fits. What shot through your mind were things about actual milk you're your experience with it. All that happened is we made a

strange sound-milk-and lots of these things showed up. Notice that there isn't any milk in this room. None at all. But milk was in the room psychologically. You were seeing it, tasting it, feeling it, yet only the word was here. Now, here is the exercise, if you're willing to try it. The exercise is a little silly, so you might feel a little embarrassed doing it, but I am going to do the exercise with you so we can be silly together. What I am going to ask you to do is to say the word, "milk" out loud, rapidly, over and over again, and then notice what happens. Are you willing to try it?

Client: I guess so.

Therapist: OK. Let's do it. Say "milk" over and over again. *(Therapist and client say the word for 1 to 2 minutes, with the therapist periodically encouraging the client to keep it going, to keep saying it out loud, or to go faster).*

Therapist: Ok, now stop. Where is the milk?

Client: Gone *(laughs)*.

Therapist: Did you notice what happened to the psychological aspects of milk that were here a few minutes ago?

Client: After about 40 times they disappeared. All I could hear was the sound. It sounded very strange-in fact; I had a funny feeling that I didn't even know what word I was saying for a few moments. It sounded more like a bird sound than a word.

Therapist: Right. The creamy, cold, gluggy stuff just goes away. The first time you said it, it was as if milk were actually here, in the room. But all that really happened was that you said a word. The first time you said it, it was really

meaningful, it was almost solid. But when you said it again and again and again, you began to lose that meaning and the words began to be just a sound.

Client: That's what happened.

Therapist: Well, when you say things to yourself, in addition to any meaning sustained by the relation between those words and other things, isn't it also true that these words are just words? The words are just smoke. There isn't anything solid in them.

This exercise demonstrates quite quickly that although literal meaning dominates in language, it is not hard to establish contexts in which literal meaning quickly weakens and almost disappears. To many "milk" is a very odd sound, considered (as it almost never is) simply as a sound. It has a funny quality to it, reminding people of sounds made by birds or other animals. These direct properties are so glossed over by its functional symbolic properties, that it is often a revelation to hear-just to hear-"milk," perhaps for the first time since early childhood. This does not mean that milk has lost its literal meaning. Clients still have milk and that mammary secretions of cows in an equivalence class, though it may have loosened somewhat. What has happened is that the transfer of stimulus functions through that equivalence class has been greatly weakened.

Campfire Metaphor (Daghighi, 2011)

This metaphor is used to illustrate the "unworkability" of trying to "fix" (e.g. reduce, remove, suppress or change the form of) difficult "automatic" thoughts and emotions, by "adding" new thoughts when they appear in our "experiential window". (as when clients try to "solve" these internal experiences with self-debating, or when clients are fused with their thoughts).

This is a heavy tested metaphor, rated as “successful”. Change the words, or explanation procedure, as needed, when using this metaphor on your own.

Challenge: Extinguishing the campfire (without water). How?

Imagine that you were at a campsite with a campfire. You wanted to put out the campfire, but you were all alone, and there was no water anywhere to put out or extinguish the campfire – only firewood’s left at the campsite.

In the absence of using water what other ways could this campfire be extinguished? You only had firewood to “use” on the campfire, but that would certainly work in the opposite direction than what you wanted (to put out the campfire). Thus, you would not use it as a way of putting out the fire.

The single way to “put out” the campfire would be “do nothing”, but to let it “die out” on its own, as time goes by. It would be counterproductive to use the left-over firewood on the campfire, as it would only make the fire last longer, and turn into a bigger campfire (further fuel the fire). This particular setting looks a lot like when we experience difficult thoughts and emotions.

The campfire can be likened to the difficult thoughts or feelings that’s constantly recurring in our minds. And the leftover firewood are the thoughts we have, or get (e.g. trying to think in other ways, suppressing or condemning the difficult thoughts and emotions), when we experience these difficulties.

Our “automatic” instinct tell us that we should try to “fix” or solve these difficult thoughts and emotions, by adding on more thoughts (firewood), on those difficult thoughts and emotions (the campfire).

But we cannot see, or experience, that this type of “coping” (or problem solving-strategy), often actually prolong the experienced difficulties we try to get rid of experientially, and works the other way than we intended (to put out the campfire). We do not see that we are trying to “put out” these difficult experiences by “adding on more firewood”.

If we "add" more wood (negative or positive thoughts) to the campfire, it only makes the campfire more intense, warmer and enduring. Even if that is not what we thought it would do. You tend to get more fire by putting on more wood on a campfire. The same may be true of trying to “fix” difficult automatic thoughts and emotions, by adding new thoughts on them (instead of just observing them), when we experience them.

So the solution may be to just safely observe the campfire, its warmth, color, size and other qualities, and after a while it may be extinguished by itself, we may just observe it, instead of trying to “do something” with it (in the same way we use mindfulness to observe difficult internal experiences).

This metaphor is a nice defusion ‘tactic’, and it helps to illustrate the metaphor on a drawing board, drawing the campfire, the firewood, and explain how the firewood are equal to thoughts (and how we are prone to use firewood to put out the fire), as the campfire is equal to automatic negative thoughts and feelings that we may experience from time to time.

Eating Mindfully (Hayes, 2005)

(Ask patient to practice either observing or describing with eating candy (or a raisin, other small item of food) for about five minutes.

So rather than the focus being on breathing, we will ask you to focus your attention on what it is like to be tasting this, by either observing or describing your experience in the moment, what it is like to have the candy in your mouth. As with sitting mindfulness, if you find your mind wandering, as minds often do, just acknowledge that your mind has wandered and bring your attention back to the experiences that you are having with the candy- it's shape, texture, flavor, and your responses- again and again and again.

Leaves on a Stream (Hayes et al., 1999; pp. 158-162)

This is a mindfulness exercise where the patient is guided to place thoughts on leaves as they float by on a gentle stream. It is generally done with eyes closed. Have the patient imagine sitting next to a stream, and gently placing one thought after another on leaves as they float by. The key is to observe thinking as an ongoing process.

Values Clarification Notecard Exercise

This exercise asks patients to identify and write down his/her top five-ten values on a notecard. The patient is asked to look at his/her values and rank order the importance of each value, ultimately determining his/her primary value. A conversation ensues and the therapist and patient explore what the process was like and how easy and/or difficult it was.

Committed Action (Hayes, 2005)

Like bold moves, committed actions show us that we are living our values.

Committed actions are the everyday choices and decisions we make about what we do.

They are the actions that show us on a daily basis how we are living our values.

Value	Committed Action

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