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A Brief Acceptance and Commitment Therapy Protocol for Alcohol Withdrawal Symptoms: A Randomized Controlled Trial for Inpatient Detoxification Patients

Taylor R. Weststrate
Western Michigan University

A BRIEF ACCEPTANCE AND COMMITMENT THERAPY PROTOCOL FOR ALCOHOL WITHDRAWAL SYMPTOMS: A RANDOMIZED CONTROLLED TRIAL FOR INPATIENT DETOXIFICATION PATIENTS

Taylor R. Weststrate, Ph.D.

Western Michigan University, 2022

Alcohol detoxification inevitability involves physical and emotional discomfort. Common withdrawal symptoms include experiences of nausea, muscle pain, stomach and headaches, shakiness, restlessness, anxiety, and agitation. Rarer, but more severe, withdrawal symptoms can include hallucinations, seizures, and delirium tremens. Pharmacologic treatment of withdrawal symptoms is the primary, and often only, approach to intervention. The current study examined the incremental efficacy of adding a psychotherapeutic program based in Acceptance and Commitment Therapy (ACT) for individuals struggling with withdrawal during alcohol detoxification in a residential rehabilitation center. This study compared the standard of care, medication management, which was treatment as usual (TAU) at the facility, to TAU plus the ACT protocol. The ACT protocol included two 30-minute sessions, based on the ACT matrix, and brief (5-10 minute) coaching skills sessions. Forty-five adults (M_{age} = 42.4 years, 47% female, 84% white) were randomized to either ACT+TAU (n=22) or TAU (n=23) and spent an average of 4 days in detoxification. Effects generally favored the ACT condition across measures including: consumer satisfaction (t = -1.63, $p_{[1\ tailed]}$ = .05, d = .48), connection with chosen values (t = 2.01, $p_{[1\ tailed]}$ = .03, d = .60), increased use of ACT skills (F = 4.62, p = .04), decreased psychological inflexibility (F = 7.97, p = .01 and F = 2.92, p = .10), but not increased flexibility (F = .21, p = .65), and reduced withdrawal symptoms (F = 4.02, p = .05 and F =

3.42, $p = .07$). The number of ACT coaching sessions correlated significantly with use of ACT skills ($r = .44$, $p = .049$). Increased use of ACT skills mediated the relationship between condition and increased consumer satisfaction (point estimate = 1.05, $p = .03$), and on one measure of symptom withdrawal reduction (point estimate = -.23, $p < .05$) but not the other. Results suggest the potential benefit of adding an acceptance-based psychosocial intervention, as an augment to medication management, in acute alcohol detoxification protocols.

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by

Taylor R. Weststrate

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Doctoral Committee:

Scott Gaynor, Ph.D., Chair
Amy Naugle, Ph.D.
Brooke Smith, Ph.D.
Christopher Briggs, Ph.D.
Adam Miller, M.D.

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CHAPTER I

INTRODUCTION

Presentation and Prevalence of Alcohol Use Disorder

Alcohol Use Disorder is defined as a chronic health condition in which an individual cannot control their drinking and becomes physically and/or psychologically dependent on the substance, negatively impacting their day-to-day functioning. Individuals with this chronic condition commonly face physical discomfort and other body disruptions (e.g., Cardiomyopathy, high blood pressure, Cirrhosis, etc.), and fall short in fulfilling desired activities or life goals (e.g., work, social relationships, hobbies, etc.). Alcohol Use Disorder is under the umbrella term "Substance-Related and Addictive Disorders" within the Diagnostic and Statistical Manual 5th edition (DSM-5) which includes Opioid-related use, Cannabis-related use, and a plethora of other drug-related disorders. To be diagnosed with AUD, the DSM-5 specifies that an individual must meet two of eleven criteria outlined below in Table 1, with mild (presence of 2-3 symptoms), moderate (presence of 4-5 symptoms), and severe (presence of 6 or more symptoms) modifiers. Due to the breadth of AUD symptoms, it is seen as a multifactorial mental health condition, impacting both the individual and those around them, requiring the involvement of multiple systems of care, from acute intensive treatment to outpatient and community resources.

Rates of Alcohol Use Disorder have remained consistent over the past few years within the United States, with an estimated 14.5 million people (5.8%) ages 12 and older diagnosed in 2019. Sadly, 95,000 individuals die annually from an alcohol-related cause (National Survey Drug Use and Health [NSDUH], 2019; Substance Abuse and Mental Health Services Administration [SAMHSA], 2020) and of those deaths, over 26,000 were directly attributed to consistent alcohol use (e.g., liver disease, psychosis, fetal alcohol syndrome, etc.). The other

69,000 being affiliated with long-term or binge use (e.g., suicide, motor vehicle accidents, overdose, etc.) making it one of the leading preventable causes of death in the United States (Esser et al., 2020; Mokdad et al., 2018).

Table 1

Criterion for Alcohol Use Disorder as Outlined by the DSM-5

1. Alcohol is often taken in larger amounts or over a longer period than was intended.
2. There is a persistent desire or unsuccessful efforts to cut down or control alcohol use.
3. A great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects
4. Craving, or a strong desire or urge to use alcohol.
5. Recurrent alcohol use resulting in a failure to fulfill major role obligations at work, school, or home.
6. Continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol.
7. Important social, occupational, or recreational activities are given up or reduced because of alcohol use.
8. Recurrent alcohol use in situations in which it is physically hazardous.
9. Alcohol use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol.
10. Tolerance, as defined by either of the following: a. A need for markedly increased amounts of alcohol to achieve intoxication or desired effect. b. A markedly diminished effect with continued use of the same amount of alcohol.
11. Withdrawal, as manifested by either of the following: a. The characteristic withdrawal syndrome for alcohol b. Alcohol (or a closely related substance, such as a benzodiazepine) is taken to relieve or avoid withdrawal symptoms.

Note. Problematic pattern of alcohol use leading to clinically significant impairment or distress, as manifested by at least <u>two</u> of the above, occurring within a 12-month period.

Like other diagnoses, AUD varies in its presentation, depending on the patient's history of use, severity of use, and co-occurring mental health issues. Individuals diagnosed with AUD may present with severe physical health issues, such as pancreatitis or jaundice (yellowing of the skin and eyes), resulting in devastating and life-threatening symptoms. Others may not face such

apparent physical symptoms, but rather cognitive and social deterioration, such as failing to maintain healthy relationships, fulfilling personal goals, or maintaining a positive sense of self. In addition to the direct symptoms of AUD, patients struggling with this disorder commonly face co-occurring mental health conditions such as Post-Traumatic Stress Disorder (PTSD; Carter et al., 2011), Depression (Cranford et al., 2011), and Anxiety (Anker & Kushner, 2019). It is estimated that of those diagnosed with a substance use disorder (SUD), nearly 40% of them also have a diagnosed co-occurring mental health issue, with many others having undiagnosed mental health illnesses (Han et al., 2017). One of the more disheartening facts however is that of those diagnosed with AUD, only an estimated 7% have sought any form of treatment. This astonishing low percentage is surprising due to the impact AUD has on individuals and society, but easily explained after understanding the effects that elongated alcohol use has on the body and brain.

Alcohol, like other substances, upregulates multiple reward pathways in the brain, affecting a variety of neuronal reward pathways such as dopamine, serotonin, and gamma-aminobutyric acid (GABA) (Begleiter & Kissin, 1996). These pathways play a major role in the development of excessive alcohol use and can impact the physiological and behavioral changes we commonly see in individuals diagnosed with AUD. For example, the dopaminergic pathway plays the role of the motivator, that when activated, incentivizes certain stimuli that the organism has found pleasurable in the past. Through repeated activation, the pathway becomes stronger and more sensitive to the rewarding stimulus, motivating the organism to seek the stimulus more frequently and at higher intensities. What makes this concerning is that despite the long-term negative consequences of repeated use of the substance, even passing thoughts of rewarding stimuli, such as alcohol, can trigger the dopaminergic system, motivating an individual to seek the substance despite previous negative consequences or their desire to abstain (Banerjee, 2014).

The serotonin pathway plays the more well-known role of inducing pleasure within the organism. Alcohol is just one of many substances that activate a multitude of different serotonergic receptors within the brain, inducing moments of acute pleasure and happiness (Lovinger, 1999). Due to the activation of these receptors, the organism will feel acute senses of pleasure; however, will experience long-term negative consequences. Due to the excessive activation of the serotonergic pathway under the influence of the substance, when the substance is absent, the natural activation of these serotonergic pathways is decreased. Thus, to maintain a sense of pleasure, the organism will seek the use of the substance, rather than engaging in healthy activities. Sadly, after years of consistent use the hedonistic level, or the homeostatic level of pleasantness, will be significantly higher, meaning organisms will require more of the reinforcing stimuli to feel a sense of happiness or satisfaction. This drastic shift of the hedonistic level put those who seek recovery from alcohol at a disadvantage as they will have to face early recovery with anhedonia or discontentment.

And lastly, alcohol attaches to GABA receptors, resulting in a sense of calmness, relaxation, and pleasure (Koob, 2006). In cases of mild or moderated use, an individual won't be severely impacted by this upregulation of neuronal activity and will often get momentary relaxation or a minor escape from life's challenges. However, if an individual uses alcohol consistently over time, the receptors will become desensitized, requiring more of the substance to elicit a similar effect, a process called tolerance. Thus, the GABA pathway, like the serotonergic pathway, becomes dependent on the external substance to maintain the activation of GABA receptors in the brain, compared to the uninfluenced homeostatic activation before excessive substance use.

This reliance on external substances results in a downregulation of positively reinforcing reward processing in the brain if the neuronal-triggering substance is not consumed. Thus, a once positive reinforcing agent, becomes a negatively reinforcing one, as alcohol consumption transformed from a pleasure eliciting activity to an escape from uncomfortable symptoms occurring during abstinence or reduction of use. This process of using to maintain physical normality is referred to as alcohol dependence, an escape method that leads to a deadly cycle of use, relief, and repeat and presents with the one of the biggest barriers within alcohol detoxification treatment, alcohol withdrawal.

Alcohol withdrawal is grueling process for patients undergoing detoxification. Alcohol withdrawal is the emergence of excruciating physical and psychological symptoms, upon the reduction or extinction of alcohol consumption. This syndrome occurs when an individual abstains from use and experiences a reduced activation of the multiple neural reward-pathways. Due to the physiological adaption that occurred in the brain due to the excessive use, the absence of alcohol presents with physical flu-like symptoms. Alcohol withdrawal varies in presentation depending on the individual's history and severity of use. For example, individuals who have had a long history of intense use may face symptoms such as tremors, chills, severe headaches, excessive sweating, nausea, and vomiting. In certain cases, more severe symptoms may occur including seizures, autonomic instability and delirium tremens (a condition that includes disorientation, delusions and hallucinations). Psychologically, individuals commonly describe intense feelings of nervousness, rumination, sadness, guilt, and shame following their use, making the withdrawal process uncomfortable and prone to avoidance behaviors. In addition, with the high rates of co-occurring diagnoses, symptoms associated with these other diagnoses get exacerbated during the withdrawal process. Due to the intensity of both physical and

psychological symptoms during withdrawal, individuals will either refuse to seek treatment or struggle to remain in treatment through the detox process, restarting the cycle of use, relief, repeat. With only an estimated 7% of people who sought treatment, there are even fewer completers, as many patients drop out of treatment due to the severity of the withdrawal symptoms and associated discomforts (Palmer et al., 2009; National Institute of Drug Abuse [NIDA], 2020). Thus, patients with AUD continue to face untreated physical conditions, cognitive impairment, and struggle with maintaining a positive quality-of-life.

Yet, despite the severity and impact of the condition, AUD has not significantly decreased over the past few years (SAMHSA, 2020), with fears of increased rates of alcohol abuse since the beginning of the COVID-19 pandemic. These fears are due to increases in isolation, inactivity, or the dissemination of myths that alcohol can serve as a preventive or treatment for the COVID-19 virus (Pollards et al., 2020; World Health Organization [WHO], 2020). To best understand this, researchers have evaluated open-sourced data more closely to better understand possible underpinnings of the epidemiology of AUD and related outcomes. In a study by Edlund, Booth, and Han (2012), researchers ran secondary analysis of the National Survey of Drug Use and Health (NSDUH) and the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) to evaluate treatment seeking tendencies of individuals with AUD and any cooccurring use disorder. Of the total sample (n = 7,872) only around 8% of these individuals sought treatment within the past year, closely matching the recently analyzed 2019 datasets, reflecting the persistent challenges faced by clients over the course of the diagnosis. Researchers postulate that the low rate of treatment attendance/adherence could be contributed to multiple factors. First, that individuals with alcohol use disorder do not seek specialty care and are often seen by their primary care physician who do not specialize in substance use disorders

(McLellan et al., 2004), resulting in early dropout or misinformed care. Second, medications are the typical approach for AUD, and patients may not be offered psychotherapeutic services for their condition (Mark et al., 2009), leaving them to their own coping skills, which has been primarily alcohol use over the individual's lifetime. Lastly, treatments may not be accessible in primary care settings due to lack of resources, despite primary care settings being the initial visited setting for SUD, including AUD (Edlund et al., 2012; O'Connor, 2011). This lack of accessibility to resources in primary care settings results in patients being referred elsewhere for care, taking weeks before they are seen by recovery-specialized providers, or not at all.

Approaches to Alcohol Detoxification and Treatment

When offered the option of specialty treatment for a SUD, patients may be presented with a variety of services. These services range from outpatient services and community approaches (e.g., AA, NA, SMART Recovery, Dharma Recovery, etc.) to more intensive modalities such as substance use and mental health rehabilitation centers. Outpatient approaches are typically adapted to the individual level and provide patients with 1-on-1 care and may be supplemented by group therapy. Meanwhile, substance rehabilitation centers provide structured programming that includes therapeutic services, medical and pharmaceutical care, and resources for healthy living (e.g., food, rooming, physical activities, etc.).

One major factor that impacts the treatment choice point is the need for detox. Due to the risks associated with early substance detox, it is highly recommended that individuals receive monitored supervision throughout their detox, specifically those going through alcohol detoxification. The reason for supervised AUD detoxification is because alcohol withdrawal is one of the most dangerous processes to endure for substance treatment, as it may result in death if poorly done. Unlike many other drug classes, depressants (e.g., alcohol, barbiturates,

benzodiazepines, etc.) induce severe physical symptoms through the detox process such as hallucinations, intense vomiting, delirium tremens, and seizures. To account for the severity of symptoms the American Society of Addiction Medicine (ASAM) recommends that patients who seek to abstain from alcohol and seek treatment for AUD receive medication to provide a safe transition into physical stability during their detox. These prescribed medications commonly include Valium or Ativan conjoined with other medications (e.gs., anxiolytic, anti-hypertensives, mood stabilizers, etc.) to assist in the early recovery process (Bayard et al., 2004; Lindsay et al., 2020).

Current Barriers to Substance Use Treatment

Even with the availability of medications, patients still struggle with intensive rumination, confusion, isolation, guilt, and shame as they detox. Drug rehabilitation centers, criminal justice facilities, and even hospitals isolate their detox patients, putting patients in a room without access to therapeutic services, exacerbating uncomfortable and challenging withdrawal symptoms. During this time patients struggle to work with the ongoing symptoms that arise as their main coping skill is no longer accessible, unable to work through the challenges they endure up to seven days at a time. Due to the lack of adaptive coping, patients will seek to leave treatment to relieve their symptoms by returning to their use cycle (Lail & Fairbairn, 2018). The Center for Substance Abuse Treatment, Detox and Substance Abuse Treatment recommends that to ease patient concerns and support them during this difficult time, that pharmacotherapy be offered during the detox process, to best serve the patient and ease their early concerns (Center for Substance Abuse Treatment, 2006).

The intense issues faced by the patient throughout the detox process are only some of the barriers faced within the field of SUD treatment. Another major barrier is the level of burnout of

mental health providers within the field. Due to the nature of substance abuse treatment (e.g., co-occurring disorders, high relapse rates, overdose/death rates of clientele, etc.), substance abuse counselors and specialists endure emotionally taxing and time-draining workloads (Elman & Dowd, 1997; Oser et al., 2013; Vilardaga et al., 2011). These factors contribute to significantly high levels of burnout and turnover, directly impacting the providers and the organizations they work for, as well as reduced care for their patients. Due to the overloaded schedules and workloads pushed onto providers, there is minimal time to deliver typical hour-long therapeutic treatment for incoming patients. Sadly, because of these listed barriers, staff quit early within their professional career at a facility, resulting in organizational financial hardship due to excessive recruitment cost, hiring, and onboarding of new staff (Landrum, Knight, & Flynn, 2011; Eby & Rothrauff-Laschober, 2012).

Between the patient's strenuous experience, and the challenges faced by the staff in healthcare settings, a balance must be achieved in approaching therapeutic care and allowing for staffing to have the time, space, and training to effectively work within this population. Thus, a brief and effective treatment is needed to fill the gap within substance abuse organizations as well as primary care health settings for acute withdrawal. The goal of the current system is to provide support for patients while they wait for longer-term specialty care and give providers a non-demanding and low-resource structured approach to provide the necessary care in a timely and effective manner.

Acceptance and Commitment Therapy

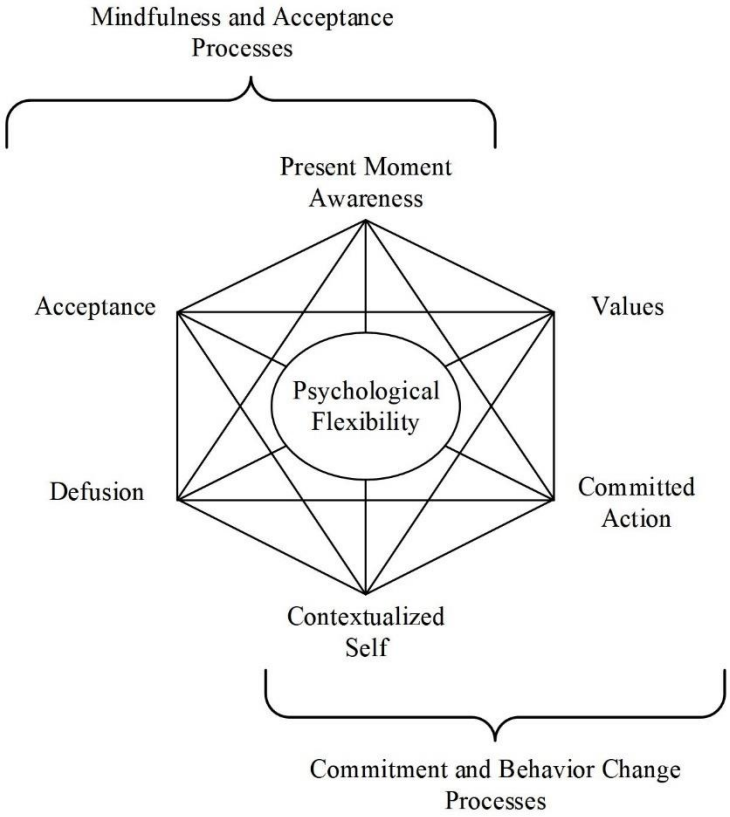
Acceptance and Commitment Therapy (ACT) has been found to be an evidence-based approach that is effective in addressing substance use (Lee et al., 2015) physical discomfort (Veehof et al., 2016), and alcohol-related and co-occurring mental health diagnoses (Petersen &

Zettle, 2009). ACT is an empirically based treatment that looks to increase psychological flexibility by teaching a combination of mindfulness, acceptance, and values-based activities (Hayes et al., 2011). The rationale of ACT seeks to help patients navigate their uncomfortable experiences and work towards living a more meaningful life despite the emotional and physical barriers. Unlike other therapeutic approaches, ACT does not promise the reduction of the intensity of the discomfort; rather, it aims to have the patient more engaged with a life during times of emotional and physical distress.

The process of psychological flexibility consists of six interrelated, mutually dependent core constructs. Due to the multi-faceted, interrelated nature of ACT, the ACT model is often represented by what is known as the "hexaflex" (Figure 1). As indicated in Figure 1 the hexaflex is broken down into six constructs, two main processes, and one combined goal. On the left-hand side of the hexaflex includes skills that focus on covert behaviors by employing mindfulness and acceptance strategies and consist of acceptance, cognitive defusion, present moment awareness, and the contextualized self. The right side of the hexaflex is focuses on overt behavior change strategies, consisting of the contextualized self, combined with two behavioral action components: values identification and committed action. All six processes are essential in producing behavior change in a person's life in the presence of uncomfortable experiences. The development of psychological flexibility involves the contribution of all constructs, but not necessarily equally (see Figure 1).

Figure 1

The ACT Hexaflex



(Hayes, Strosahl, & Wilson, 1999; 2011)

Evidence for Acceptance and Commitment Therapy

Acceptance and Commitment Therapy has preliminary evidence supporting its use for substance use disorders. For example, ACT has evidence of its support for patients struggling with opioid detox and withdrawal. In a pilot study by Stotts et al., (2012) a 24-session ACT-based opioid detox was developed and tested for patients attending a methadone clinic compared to a Drug Counseling group. Findings from this study indicated no difference between conditions on opioid use during treatment; however, participants in the ACT condition were more successful in completing detox (55% completion in ACT versus 37% in Drug Counseling) and

participants in the ACT condition presented significant reductions on the Fear of Withdrawal scale, indicating increased willingness to uncomfortable withdrawal symptoms compared to the Drug Counseling condition.

In another pilot study, Meyer et al. (2018), found that a 12-session ACT-based protocol was found to help the recovery process for individual struggling with co-occurring PTSD and AUD symptoms. Individuals who received the treatment completed outpatient at higher rates that other comparable studies. Second, that there was consistent reduction on all alcohol-related measures, including total drinks, heavy drinking days, and clinician and self-reported drinking days. Lastly, it was also found that these changes, and decreases in PTSD and depression related symptoms, were associated with engagement in ACT-related constructs and reduction in experiential avoidance and psychological inflexibility.

Brief Acceptance and Commitment Therapy has also been shown to have positive outcomes after a single session. Baretto, Tran, and Gaynor (2019) have found that a single-session of ACT resulted in positive effects for health-related behaviors. Researchers in this study conducted a brief clinical interview on participant's targeted behavior and completed an ACT-matrix that identified internal and external barriers to the individual's progress. Upon identifying the barriers, researchers introduced ACT-consistent exercises to assist the participant in overcoming physical or psychological challenges that may arise throughout the month while also setting SMART goals to provide a concise, yet detailed outline to help the participant stay on track towards their targeted change. Lastly, researchers promoted motivation for change by asking participants to create a commitment statement based on their desired behavior change over 30 days. Results found that within the targeted domains participant showed significant positive change in the ACT condition compared to Waitlist in physical exercise, healthy eating

habits, and quality of sleep. These results, coupled with the preliminary finding found for substance use and detox indicate that the use of brief psychotherapy can be beneficial in making significant changes in patient's lives and ease the daily workload of mental health providers.

Despite the growing evidence, there is still a large gap in the literature for Acceptance and Commitment Therapy for AUD alone or, more specifically, alcohol detoxification. At the time of the initial meta-analysis in the Lee et al., (2015) review of ACT for Substance use disorders, it is marked that there was only one published RCT for AUD. Authors believed that the efficacy found in this review suggest that ACT may be a viable option for SUDs and that continued investigation of ACT for AUD is needed to better understand its efficacy in the field of addiction and recovery.

Statement of Purpose

The purpose the current study was to examine the incremental efficacy of adding a psychotherapeutic program based in Acceptance and Commitment Therapy (ACT) for individuals struggling with withdrawal during alcohol detoxification in a residential rehabilitation center. Researchers sought to evaluate if participants who were randomized to the ACT+TAU protocol would present with increased psychological flexibility and reduced subjective intensity of withdrawal symptoms associated with alcohol use disorder compared to a medication-only treatment protocol within a residential detox facility. Researchers hypothesized that (a) the participants in the ACT+TAU condition would present with lower disruption from withdrawal intensity compared to the TAU condition, (b) that patients enrolled in the ACT+TAU condition would have higher values clarity after the detox protocol, and (c) show overall higher psychological flexibility.

CHAPTER II

METHODS

Design

A between-group randomized controlled design was used wherein participants were stratified by gender identification and then randomly assigned to either TAU or ACT+TAU. Randomization was done by having the written numbers *1* and *2* put into blocks of six, for three groups (gender stratified). Upon agreement of the consent document research assistants randomly pulled the written slips from labeled blocked envelopes with the pre-allocated numbers from the blocks before they met with the participant and assigned them to the designated condition. Participants who received a *1* were assigned to the TAU condition and those who received a *2* were be assigned to the ACT+TAU condition. Blocking of six was used to assist in keeping both groups equal in size throughout the study. Individuals in the ACT+TAU condition received the same medical treatment as the TAU condition and two 30-minute ACT+TAU sessions and 5-minute pop-in skill sessions. All data was collected and withheld on-site in a locked drawer in a locked office; until the completion of the study where it was transported to a secure lab on Western Michigan University's campus.

Participants

Participants were recruited from a local rehabilitation facility that focused on substance use and mental health treatment by members of the research team. The facility shall remain unnamed to maintain anonymity of the facility and its patrons. Dates of data collection shall also not be stated as to maintain anonymity as the number of administered patients on any given day are small. Recruitment, consent process, therapy sessions, and data collection were all provided within private offices or in secluded areas for the coaching sessions (e.g., the patient's room).

Recruitment was within the first 12 hours of the patient's arrival to the facility and interviewed for eligibility by the facility's medical team. Inclusionary criteria for this study included (a) diagnosis of Alcohol Use Disorder according to DSM-5 criteria; (b) scored an 8 or higher on the AUDIT; (c) agreed to the TAU facility protocol with medication recommendations from the medical staff for Alcohol Use Disorder as suggested by the American Society of Addiction Medicine (Bayard et al., 2004; ASAM, 2020); (d) must have attended the facility of their own volition; (e) currently experiencing early withdrawal symptoms associated with alcohol use disorder. Exclusion from the study included (a) any current health issues that would result in hospitalization or early termination of the detoxification period; (b) under the age of 21; (c) No co-occurring substance use that may impact current alcohol use withdrawal (d) currently under the influence of any substance outside of alcohol.

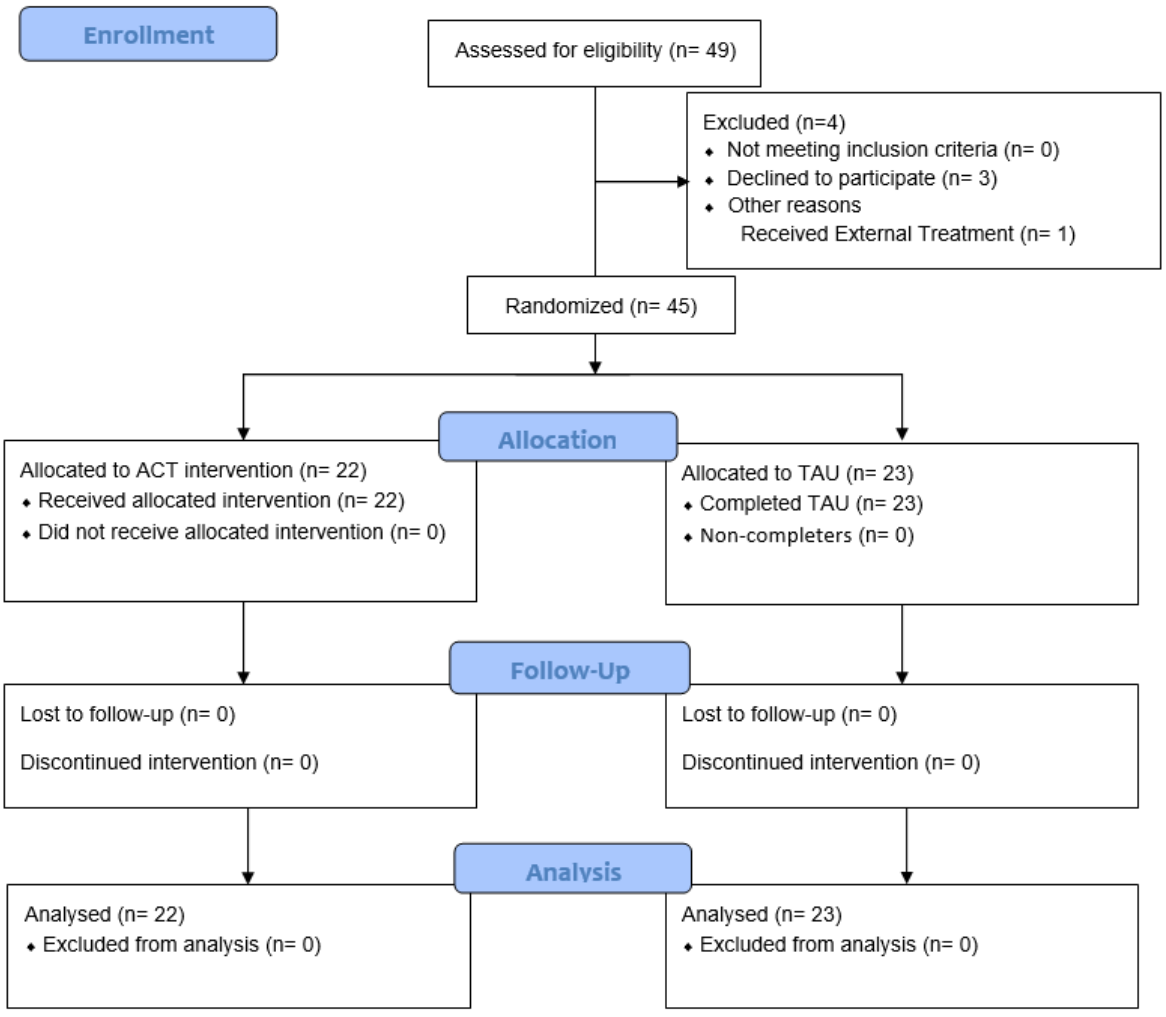
After determining eligibility, participants were medically checked for health concerns that may impede the treatment protocol (e.g., current reoccurring seizures, impaired cognitive functioning, etc.). Upon receiving medical team approval, the research therapist or research assistants introduced themselves and asked if the patient would be interested to participate in a study focusing on a brief protocol for alcohol use withdrawal symptoms.

Sample size estimates were calculated using the approach discussed in the D'Amico et al., study (2001) for a repeated measures design. The study's original desired samples size was 30 individuals per group, totaling 60 for the study, to meet the necessary power for significance to be seen between groups; however, due to changes within the facility's detox procedure outside of the researcher's control, the study protocol stopped recruitment at 45 completed participants. Outlined below in Figure 2 is the flow process of all participants, with 49 individuals assessed for eligibility with three individuals declining to participate, one being disqualified, and 45

enrolled and completed in their respective conditions. Twenty-three individuals were randomized to TAU with 22 individuals randomized to the ACT+TAU condition. The disqualified participant was due to a change in the detox protocol at the facility at the end of the study where patients started receiving psychotherapeutic interventions during their detox that was not related to the study. Thus, participant recruitment stopped as the changes to the detox protocol would interfere with the adherence of the study's methods.

Figure 2

CONSORT Participant Recruitment and Randomization



Consent Process

A HSIRB approved consent document (Appendix A) was presented to the participant upon meeting eligibility criteria and medical approval. While the research therapist or research assistant read the consent form aloud, the participant followed along, ensuring that the document was read thoroughly and completely. Participants were invited to ask questions regarding the research project during or after the review of the consent document. The consent document reviewed inclusion and exclusion criteria, the nature and duration of the time commitment participation entails, the assessment procedure, the general focus of the treatment, risks and benefits, confidentiality and the limits of confidentiality, and the right to withdraw at any time for any reason without penalty. After the review, the individual was invited to sign the consent document. The signed copy served as documentation of consent. The participant was given an unsigned copy for their records or future reference. The consent process for this study was progressive; meaning, consent was asked before every interaction and assessment period. The process of consent for this study due to its inclusion of individuals who experience intoxication and withdrawal followed the standards and suggestion made by Aldridge & Charles (2008) with the requirement of the patient's blood alcohol content (BAC) being under the legal limit of .08 as tested by an on-site breathalyzer. If the individual was over the legal limit upon arrival, the research team calculated the length of time in which the individual would be below the legal limit and be able to consent to the study.

Conditions

Treatment as Usual Condition

The TAU condition included programming orientation and a medical check by the medical staff of the facility. Orientation included the rules and regulations of the facility, facility

buildings and affiliations, and any offices that the patient would attend throughout their treatment stay. During this time, patients were provided non-therapeutic reading material, access to television shows and streaming, and outdoor areas. Patients also had access to a gym, pre-made meals, and snacks. Patients were also allowed to smoke during their detox within assessment-only areas. All patients diagnosed with alcohol use disorder were prescribed the same medication as necessary by the ASAM criteria (Bayard et al., 2004) which includes a short-term valium taper of 5mg dose four times daily for day 1 and 2; 5mg three times daily for day 3 and 4; and 5mg twice daily on day 5. Additional to the valium taper, all patients were prescribed a sleep-aid (Trazodone or Remeron) Clonidine, and Vistaril for their detox stay.

Acceptance and Commitment Therapy with TAU Condition

The ACT+TAU intervention included two individual sessions and multiple brief check-ins throughout the participant's detoxification additional to the medical treatment received by the TAU condition. The initial 45-minute session included preliminary assessments, rationale of the treatment, and the Matrix protocol. This protocol used an adapted ACT Matrix (Figure 3; adapted from Polk & Schoendorff, 2014; Barreto & Gaynor, 2018, 2019; Appendix B) for recovery during detox. The primary rationale for this protocol is to help reduce the challenges (e.g., negative thinking, inactivation, isolation, etc.) often associated with withdrawal symptoms, with any changes in withdrawal symptoms being a secondary outcome.

Moving counter-clockwise through the matrix, the therapist walked the patient through the four-quadrants based on a semi-structured single-session ACT protocol (Appendix C). The therapist started at the top left quadrant and identified Behavioral Barriers (e.g., isolation, withdrawal, overeating, etc.) that made the patient's detox additionally challenging. Afterwards, the therapist guided the participant to the Internal Obstacles (e.g., negative self-thought, regret,

shame, hopelessness, etc.) they were experiencing. After identifying both overt and covert barriers, the therapist provided skills outlined in Table 2 that best fit to the difficulties stated on the left side of the matrix. After practicing the exercises together, the therapist shifted to the bottom right-hand quadrant focusing on values clarification (e.g., family, independency, parenting, etc.) to help motivate or find reasons for recovery. Finally, the therapist constructed an action plan for the next 1, 3, 6, and 12 hours with the patient targeting therapeutic exercises or values-based actions. In addition to filling out the matrix, the therapist would introduce a brief skill outlined in Table 2 to help with any current struggles that the participant might be experiencing in that moment.

Figure 3

Recovery-Oriented ACT Matrix

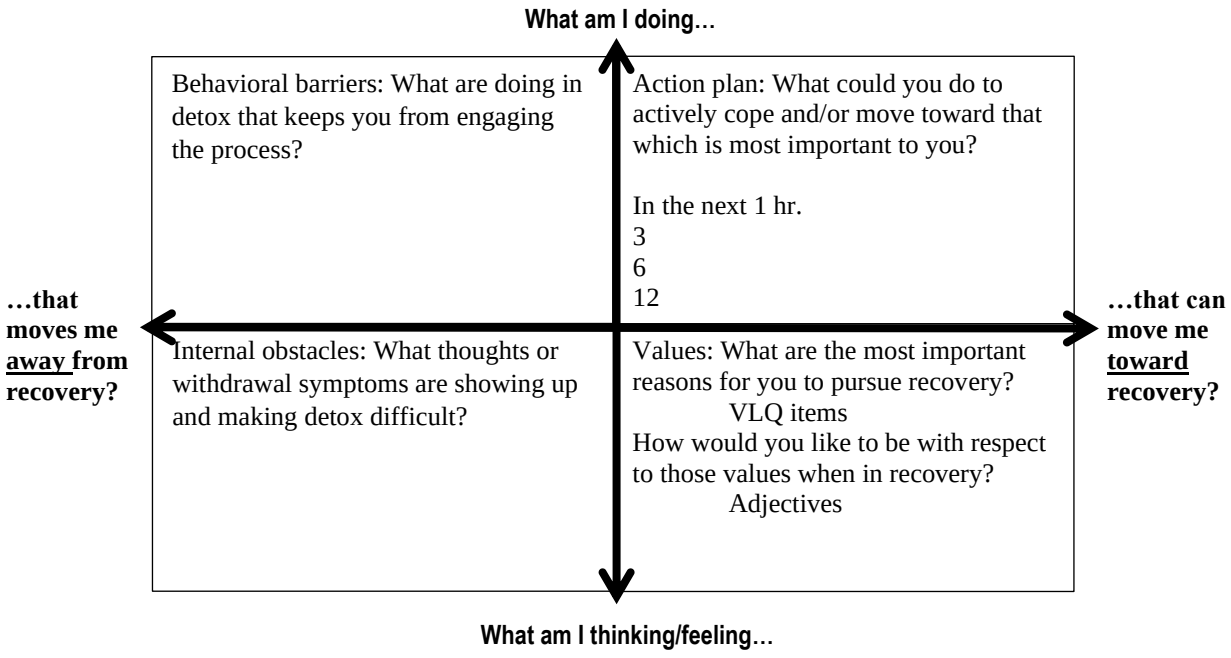


Table 2

ACT Constructs and Associated Skills

Defusion + Self as Context
(Notice that you are bigger than the thought, memory, image... You are the container that holds the thought)
Word repetition (addict; Appendix D)
Contents on cards
Labelling content – "I'm having the thought that…, I'm remembering…, I'm imagining"
Vocalizing – say it… slow, different voice, as a song, newscast/sportscast
Mindfulness + Present Moment Awareness + Self as Context
(Practice being where you are, tuning your awareness to the current environment – inside and outside your body, from the perspective of observing self)
(For all use an open body position – stand/sit tall, shoulders back, head up, eyes open and fixed or gently closed, arms and legs loose, palms up, feet flat on the floor)
Breath counting (Appendix E)
Square breathing (Appendix F)
Senses awareness-54321 (Appendix G)
Sensation seeking – find sensations in your body; give it shape-edges, hot/cold, tense/calm, rough/soft, color, texture, movement, etc. (Appendix H)
Values + Committed Action
Rediscuss Values on the individualized Matrix
Revamp Action Plan
Values on Cards

After the initial session, the therapist asked if there were any further questions and helped the patient return to their room or commons areas. Throughout the rest of the patients detox the therapist provided multiple (1-3) daily 5-10-minute coaching skill sessions. During this time, the therapist checked in on the participant and see if they were willing to engage in a brief 5-10-

minute skill session. Upon agreement, the therapist asked their current struggles and used the previously filled out matrix, identifying the associated area of concern. Upon identification of the associated area, the therapist provided a related exercise that was previously covered or a new skill that targeted the current concern of the participant as previously outlined in Table 2.

At the end of the detox phase, as the patient moved onto residential or was looking to discharge from the facility, the second session took place in which the therapist constructed another Matrix with the participant. This matrix focused on long-term recovery, including any revisions to the overt and covert barriers to recovery, revisions on values, and a longer-term action plan for the next two and four weeks. Additional to the post-detox matrix, the participant filled out a Commitment Statement (Appendix I) where they reflected on their past and made a brief statement on who they want to be in the next two and four weeks. The purpose of the post-matrix and Commitment Statement are for possible post-hoc analyses to evaluate possible relationships between long-term goals in detox and success post to rehabilitation treatment.

Measures

Upon consenting to the study, all participants received a demographic form (Appendix J), Acceptance and Action Questionnaire – Substance Abuse (AAQ-SA), Alcohol Use Disorders Identification Test (AUDIT), Clinical institute Withdrawal Assessment for Alcohol Scale – Revised (CIWA-Ar), Short Alcohol Withdrawal Scale (SAWS), Acceptance and Commitment Daily Report (ACT-DR), and Multidimensional Psychology Flexibility Inventory (MPFI). The Short Alcohol Withdrawal Scale (SAWS), Clinical institute Withdrawal Assessment for Alcohol Scale – Revised (CIWA-Ar) and ACT Daily Check-In were administered daily. The Clinical institute Withdrawal Assessment for Alcohol Scale – Revised (CIWA-Ar) was also independently administered on arrival by nursing staff for both visual and verbal validity of

observable withdrawal symptoms. For the final day of detox all participants received the same measures administered on their initial day, while also receiving the Engaged Living Scale (ELS), and Consumer Satisfaction Questionnaire (CSQ).

Outcome Measures

Engaged Living Scale

The Engaged Living Scale (ELS; Trompetter et al. 2013; Appendix K) is a measure of the process of engaged living, defined by Acceptance and Commitment Therapy (ACT) as the evaluation and performance of valued life activities. This measure of engaged living presents two factors including, Valued Living and Life Fulfilment. For this study, due to the setting, the Life Fulfilment factor will be excluded and only the Valued Living Questions will be included on the questionnaire. This measure was administered only at the completion of the participant's detox. Literature has found that the ELS-16 (16 items) and the shorter ELS (9 items) presented adequate to good psychometric properties.

Acceptance and Commitment Daily Check-In

This daily check-in measure was created by the Behavior Research and Therapy Lab at Western Michigan University **(**Appendix L**)**. This measure asks participants to rate the degree to which they have engaged in coping skill use related to the processes of the Psychological Flexibility model over the past 24 hours. Participants rated each of six-items on a five-point Likert scale from 0 (not at all) to 4 (extremely). Each item reflects one of the six components of the ACT Hexaflex. These components include self as context, acceptance, committed action, defusion, values, and present moment awareness. This measure was administered each day. The initial administration was before the first individual session, and subsequent administrations

occurred near the end of the day, with the last administration at the completion of their detox stay.

Because this measure was created by the Behavior Research and Therapy Lab for this study (to serve as a brief, daily, repeated measure of the effects of ACT skill implementation), it is lacking in psychometric data. In addition to the questions, which we view as face validly relating to the ACT processes specified in the Hexaflex Model, to justify the use of the ACT-DR we examined its concurrent validity by correlating the initial ACT-DR with the other ACT measures taken prior to entering the protocol. The correlations were strong and consistent. The ACT-DR correlated negatively with the AAQ-SA (r = -.72, p < .001) and MPFL Inflexiblity scale (r = -.56, p < .001) and positively with the MPFI Flexibility scale (r = .85, p < .001).

Acceptance and Action Questionnaire – Substance Abuse

The AAQ-SA (AAQ-SA; Luoma et al., 2011; Appendix M) is an 18-item scale containing two subscales, Values Commitment, and Defused Acceptance. It measures psychological flexibility in relation to substance use related thoughts, feelings, and urges. The focus of the AAQ-SA is on one's relation to or the functions of private events, versus the content of the events themselves. Participants completed this measure once at the beginning of the study and once at the completion of their detox. When evaluating scores, the higher the score on the AAQ-SA, the less psychologically flexible they are; thus, a lower score equates to higher psychological flexibility. Psychometric properties of the AAQ-SA indicate good internal consistency with a Cronbach's α = .85, with an average mean = 78.87 with a standard deviation = 13.18 for individuals reporting substance use.

Consumer Satisfaction Questionnaire

The Consumer Satisfaction Questionnaire (CSQ; Attkisson & Greenfield, 2004; Appendix N) was first constructed to measure and assess consumer satisfaction with health and human services. For this study this measure was administered post-detox to evaluate the participant's satisfaction of services during their detox stay. The CSQ-8 has no subscales and reports a single score measuring a single dimension of overall satisfaction. This measure was administered only at the completion of the participant's detox.

Multidimensional Psychology Flexibility Inventory

The Multidimensional Psychology Flexibility Inventory (MPFI; Rolffs, Rogge, and Wilson 2018; Giulia et al., 2021; Appendix O) was used to assess global psychological flexibility and its constituent six core processes (acceptance, present moment awareness, self-as-context, defusion, values, committed action). Participants were asked to refer to the past two weeks and respond on a 6-point Likert scale from 1 "never true" to 6 "always true." (Giulia et al., 2021). For this study, to reduce assessment fatigue, researcher utilized the short form of each section of the MPFI reducing the question load from 60 questions to 24 which has shown good internal validity and consistency (Grégoire et al., 2020). Upon receiving the form in their post, the wording was changed to "during your time in detox" to best capture the change throughout their detox rather than the past two weeks. Participants completed this measure once at the beginning of the study and once at the completion of their detox. The composite 12-item subscales showed good high internal consistency with Cronbach's α ranging from .87 to .91. Normative scores typically ranged between 40-60. Scores below 40 on the Flexibility subscale are regarded as "Notably Impaired" and scores greater than 40 on the Inflexibility subscale also being regarded as "Notably Impaired."

Symptom Measures

Short Alcohol Withdrawal Scale

The Short Alcohol Withdrawal Scale (SAWS; Elholm et al., 2010; Gossop et al., 2002; Appendix P) is a self-report scale measuring the subjective intensity of withdrawal symptoms within the same 10 areas as the CIWA-Ar over the last 24 hours. Patient reports the level of intensity ranging from 0 = "none" to 3 = "severe" in each area. Scores range from 0 to 30. Scores below 12 points are reported as mild and any score 12 or higher is severe. The SAWS was administered daily throughout detox by the research team until detox completion. Reviews of the scale have found good validity in outpatient clinics (Elholm et al., 2010).

Clinical Institute Withdrawal Assessment for Alcohol Scale – Revised

The Clinical Institute Withdrawal Assessment for Alcohol Scale – Revised (CIWA-Ar; Sullivan et al., 1989; Appendix Q) is a commonly used 10-item alcohol withdrawal scale including areas such as nausea, tremors, anxiety, irritation, etc. The scale scores range between 0 and 67. Scores less than 10 are considered mild; 11 to 15 as moderate, and anything above 16 as severe withdrawal. This measure was first given by nursing staff upon an individual's arrival, when most participants were under the influence at the time of administration; then administered daily by the research team. There has been seen high validity for this scale and is used as common practice for alcohol detox (Muncie et al., 2013; Saitz et al., 1994).

Criterion Measure

The Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993; Appendix R) The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item screening tool developed by the World Health Organization (WHO) to assess alcohol consumption, drinking behaviors, and alcohol-related problems. Both a clinician-administered version (page 1) and a

self-report version of the AUDIT (page 2) provided below. Patients are encouraged to answer the AUDIT questions in terms of standard drinks. A chart illustrating the approximate number of standard drinks in different alcohol beverages is included for reference. A score of 8 or more is considered to indicate hazardous or harmful alcohol use. The AUDIT has been validated across genders and in a wide range of racial/ethnic groups and is well suited for use in primary care settings. This measure was given before randomization as an eligibility criterion measure.

Confidentiality of Data

To maintain confidentiality, all data was kept on the facility in a locked office. To maintain anonymity in responses, participants were randomly assigned a code number that was pre-selected, randomly generated, ranging from 1-999. To associate the medical staff's CIWA-Ar reports and the primary and secondary measures administered by the research therapist the signed consent will have their generated number. The signed consent documents and a master sheet containing the participant's name and matching participant number is stored in a separate locked file cabinet, both in the locked office within the facility's main office building. Upon completion of the study, data was transported to Western Michigan University's Behavior Research and Therapy Lab where it is kept in a locked office for a period of seven years.

Treatment Integrity

A graduate student who is in an APA-accredited clinical psychology doctoral program served as a therapist for all individual therapy and coaching sessions. The therapist has had didactive experience with ACT and has attended multiple workshops, colloquiums, and trainings in ACT. The ACT protocol was constructed with a Ph.D. licensed psychologist who has had extensive training in ACT and experience in using ACT in both clinical and research settings.

Analytic Approach

Demographics and clinical characteristic between groups differences were identified using independent samples *t* tests for continuous variables and Pearson's Chi-square tests for categorical variables. Outlined below in Table 3, demographics and relevant clinical characteristics of each group are outlined with the associated statistic for between group analyses presenting means and standard deviations where appropriate. Pretreatment clinical characteristics are presented in Table 4, outlining participant's history of rehabilitation, age of first use, number of days in detox, and blood alcohol on arrival. Additionally, pretreatment measures between group differences are reported in Table 4 for the AUDIT, AAQ-SA, ACT Daily Report, MPFI subscales, CIWA-Ar, and SAWS.

To measure group differences at post detox completion for the consumer satisfaction and value clarity, researchers ran an independent sample *t* test on the CSQ and ELS total scores at post. For all other measures (AAQ-SA, MPFI-Flexibility Subscale, MPFI-Inflexibility Subscale, ACT-Daily Report, SAWS, and CIWA-Ar) researchers conducted a 2 (time) X 2 (condition) repeated measures ANOVA to examine group mean differences between pre and post detox completion. In addition, ANCOVA analyses were ran if the p-value was significant. This was calculated with the outcome scores being the dependent variable and the number of detox days being the covariate to account for time in detox as a main variable of change. Originally, researchers planned to evaluate results through a formal two-tailed levels of significance at .05; however, due to the lower than desired sample size (n = 60) compared to the actual sample size (n = 45) informal 1-tail levels of significance are subsequently reported for scores that were approaching significance as to not risk a Type II error, including mediation analysis at both the

95% and 90% confidence interval. Group means, standard deviations, and associated *p* values are listed below.

A Pearson Correlation analysis was run for all outcome measures and variables of interest. Shown below in Table 5, a correlation table is presented that includes the number of days in detox, total coaching sessions, ELS and CSQ exit scores, and standardized residual change scores for the CIWA-Ar, AAQ-SA, MPFI (flexibility and inflexibility subscales), ACT Daily Report, and SAWS. Residual change scores were calculated by utilizing termination scores, regressed on intake scores. Presented in the table includes the Pearson Correlation statistic, 2-tail level of significance between measures, and the total sample size for each measure. The Pearson correlation ranges between -1 to 1 indicating the strength and direction of the relationship between measures with 0 indicating no relationship and significance being retained at a level of $p < .05$.

Researchers calculated the standardized residual scores for process and symptoms measures by regressing the exit scores on the intake scores, with standardized residuals having a mean of 0 and a standard deviation of 1. Standardized residual scores were used to calculate Cohen's *d* to translate test values into effect sizes; where the results of Cohen's *d* can be interpreted as small (d = .2 to .49), medium (d = .5 to .79), and large ($d \geq 0.80$). Standardized residuals were also used to run mediator analyses to look at direct and indirect effects of the treatment specific processes on overall consumer satisfaction and symptom change.

Following the Pearson Correlation, contingent on a significant relationship, mediator analyses were done using the PROCESS procedure for SPSS (S.C. Hayes, Long, Levin, & Follette, 2013) to conduct simple mediation models. This test was used to examine the significance in direct (e.g., treatment → change) and indirect (treatment → mediator → change)

paths. A point estimate based on 10,000 bootstrapped samples, with a 95% bias corrected confidence interval that did not include zero, was used to indicate a significant indirect effect ($p < .05$) suggesting a mediating relationship (A.F. Hayes, 2013; Preacher & Hayes 2008). The first set of analyses tested the direct and indirect relationship between the treatment condition and consumer satisfaction with ACT process engagement, via the ACT-DR standardized residual scores, being the mediating factor. A second set of mediational analyses evaluated the direct and indirect paths of the treatment condition and reported symptoms (SAWS and CIWA-Ar standardized residual scores) with ACT-DR residual change scores being the plausible mediating factor.

Within the data set there were two missing data points. One data point was a CSQ overall score for an individual within the TAU condition. This was due to it being incomplete and upon recognizing this, researchers were unable to collect the individual's response due to them completing the study and taking part in the residential programming. The other missing data point was a total coaching score for an individual in the ACT+TAU condition. Researchers were unable to locate the tracking sheet for the individual upon their completion of the study. Thus, analyses containing either of these two measures should be carefully reviewed, as they may be impacted in the change in sample size.

CHAPTER III

RESULTS

Effects of Randomization

A total of 45 participants were included in the study, where they were randomly allocated to ACT+TAU (n = 22) or TAU condition (n = 23). Three eligible participants declined to participate in the study. One participant was disqualified (and removed from analyses) due to receiving therapeutic services outside of the protocol after consenting to participate. As presented in Table 3, the ACT+TAU and TAU conditions were not significantly different in their gender identification, ethno-racial identification, employment, marital status, age, and number of children. Thus, randomization produced two groups of similar size that did not differ in their demographic characteristics. The average age of participants was in the early forties, with slightly more male (53%) than female participants, the vast majority of whom were white (84%). See Table 3 for a full presentation of the demographic data.

Table 3

Demographic Characteristics of Each Condition

	ACT+TAU *n* = 22		TAU *n* = 23			
	n	**%**	***n***	**%**	**Test Statistic**	***p***
Gender (Female)	10	45.5	11	47.8	$\chi^2 = .03$	$p = .87$
Euro-American/White	18	81.8	20	87		
African American/Black	0	0	1	4.3		
Asian-American	1	2.2	0	0		
Hispanic-American/Latinx	0	0	1	4.3		
American Indian	2	4.4	0	0		
Arab American	0	0	1	4.3		
Other	1	2.2	0	0	$\chi^2 = 7.09$	$p = .31$

Table 3—Continued

	ACT+TAU *n* = 22		TAU *n* = 23			
	n	**%**	***n***	**%**	**Test Statistic**	***p***
Employment						
Full-Time	15	68.2	13	56.5		
Part-Time	0	0	1	4.3		
Unemployed	7	31.8	9	39.1	$\chi^2 = 1.37$	$p = .50$
Marital Status						
Single	8	36.4	6	26.1		
Domestic Partnership	2	9.1	3	13		
Married	6	27.3	6	26.1		
Separated	2	9.1	1	4.3		
Divorced/Annulled	4	18.2	4	17.4		
Widowed	0	0	1	4.3		
Engaged	0	0	2	8.7	$\chi^2 = 3.8$	$p = .70$
	M	***SD***	***M***	***SD***		
Age	40.7	9.7	44.1	10.9	$t = 1.10$	$p = .43$
Children	1	1.4	1	1.5	$t = .21$	$p = .81$

Table 4 presents the pretreatment clinical characteristics. As shown, the ACT+TAU and TAU conditions were not significantly different on any factor. The average participant had a prior history of treatment in a rehabilitation center (62%), an early age of first alcohol use (15 years) and arrived legally intoxicated with blood alcohol concentrations (.166%) high enough to impair motor and speech functions. The mean score on the AUDIT (of 30) was well over the typical threshold of 15 or more indicative of a high likelihood of moderate-severe alcohol use disorder. Mean withdrawal symptoms were initially severe according to both the CIWA (22.4) and SAWS (17). Participants were relatively psychologically inflexible according to means on

both the AAQ-SA (74) and MPFI (43), reaching the recommended cutoff for notable impairment on the latter, while trending toward the cutoff for impairment in flexibility (43). In addition, participants reported only moderate use of coping skills related to ACT processes at pretreatment with a mean of 12 on a scale ranging from 0-24. The number of days in detox approached a statistically significant between-group difference. The ACT+TAU condition had an overall half-day longer stay in detox (4.68 days) compared to the TAU condition (4.09 days).

Table 4

Pretreatment Clinical Characteristics

	ACT+TAU *n* = 22		TAU *n* = 23			
	n	%	*n*	%	Test Statistic	*p*
History of Rehabilitation Center (Yes)	13	59.1	15	68.2	$\chi^2 = .39$	$p = .53$
	M	***SD***	***M***	***SD***		
Age of First Use	15.1	2.8	15.7	7.7	$t = .34$	$p = .21$
Number of Days in Detox	4.68	1.2	4.09	.79	$t = -1.96$	$p = .06$
Blood Alcohol Level on Arrival	.158	.13	.174	.11	$t = .45$	$p = .65$
AUDIT	30.68	6.37	30.70	5.66	$t = -.08$	$p = .99$
AAQ-SA	74.14	16.75	73.74	12.59	$t = -.09$	$p = .63$
ACTDR	11.73	6.43	12.35	6.14	$t = .33$	$p = .71$
MPFI-Inflexibility	44.5	11.455	42.09	8.2	$t = -.82$	$p = .12$
MPFI-Flexibility	44.61	11.92	41.652	12.38	$t = -.82$	$p = .50$
CIWA-Ar	24.05	7.5	20.74	9.31	$t = -1.31$	$p = .60$
SAWS	18.05	4.1	16.22	5.65	$t = -1.24$	$p = .18$

Condition Outcomes on Consumer Satisfaction and Values Clarity

Difference in CSQ Total Scores

The CSQ captured participants' self-reported satisfaction with the treatment they received after the completion of their alcohol detoxification. Comparing the ACT+TAU condition (M = 29.27, SD = 3.36) to TAU (M = 27.32, SD = 4.52), results did not reach the conventional level for statistical significance t (42) = -1.63, p = .11. However, because of the lower than desired sample size due to changes in the facility's detox protocol, which reduced statistical power and increased the likelihood of type II error, as well as the directional hypotheses, the CSQ data were also interpreted using a modified p-value (1-tail) consistent with the directional prediction (i.e., ACT+TAU > TAU). The adjusted p-value is at the threshold for conventional recognition of statistical significance (p =.05). These results coupled with the medium Cohen's d effect size (d = .48) suggests moderately greater CSQ scores for the ACT+TAU condition.

Difference in ELS Total Scores

The ELS assessed participant's values clarity after detox completion. Comparing ACT+TAU means (M = 37.64, SD = 8.85) to TAU (M = 32.43, SD = 8.50), an independent samples t-test was at the threshold for formal statistical significance favoring ACT+TAU t (43) = 2.01, p = .05, with a medium effect size (d = .60). Adjusting the p-value, due to the directional prediction, resulted in a statistically significant difference, p = .03 (see also Table 5).

Table 5

Post-treatment CSQ and ELS Effect Sizes

	ACT+TAU	TAU	Between group differences			
	(*n* = 22)	(*n* = 23)				
	M (*SD*)	*M* (*SD*)	*t*	*d*	*p* (2-tail)	*p* (1-tail)
CSQ	29.27 (3.36)	27.32 (4.52)	-1.629	0.48	.11	.05
ELS[1]	37.64 (8.85)	32.43 (8.5)	-2.012	0.60	.05	.03

[1] ELS mean, standard deviation, *t* score, and Cohen's *d* reflects TAU's sample size of 22 comparative to the condition's entire sample (n = 23) due to an incomplete participant measure.

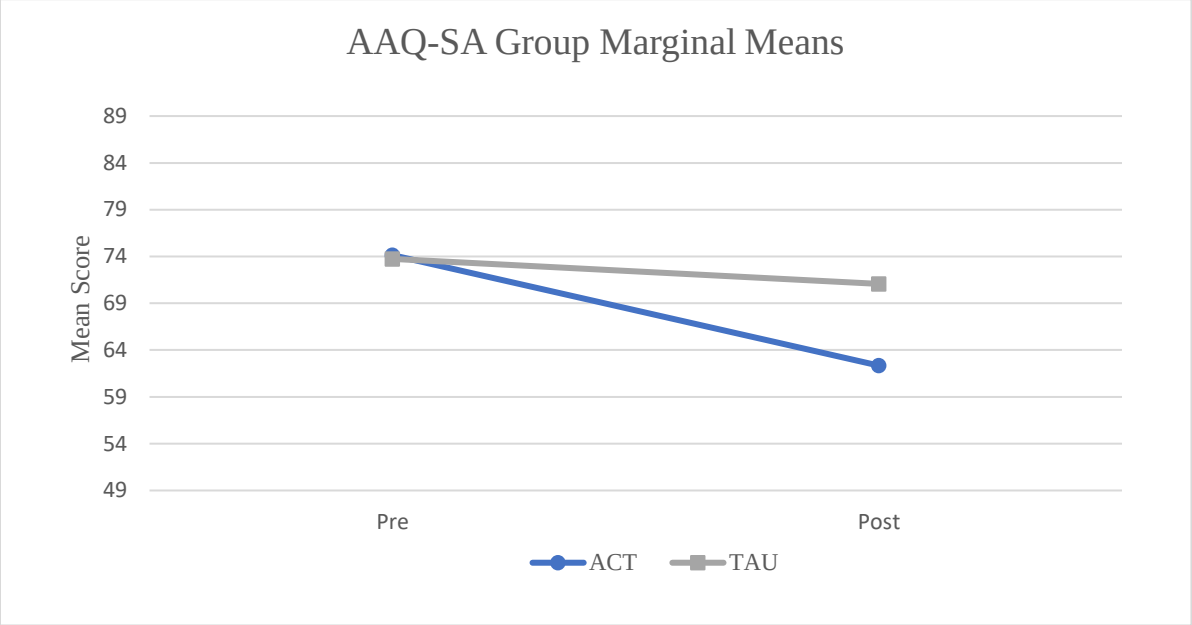
Effect of Treatment on ACT Measures

Changes in AAQ-SA Total Scores

Figure 4 illustrates the mean scores on the AAQ-SA for both the ACT+TAU and TAU conditions at the start and end of detoxification. A 2 (time points: pre and post) X 2 (condition: ACT+TAU and TAU) repeated measures ANOVA was conducted, with results indicating a significant time by condition interaction favoring ACT+TAU F (1,43) = 7.97, p = .01. The significant time effect, F (1,43) = 20.01, p < .00, is not interpreted given the significant interaction term and the condition effect was non-significant F (1,43) = .94, p = .34 (see Figure 4). Given the trend suggesting more days in detox for those in the ACT+TAU condition, a 2 X 2 ANCOVA was conducted using number of total detox days as a covariate, with AAQ-SA scores as the dependent variable, and condition as the independent variable. The results remained statistically significant with a time by condition effect favoring ACT+TAU F (1,43) = 8.42, p = .006.

Figure 4

Group Estimated Means on the Acceptance and Action Questionnaire – Substance Abuse



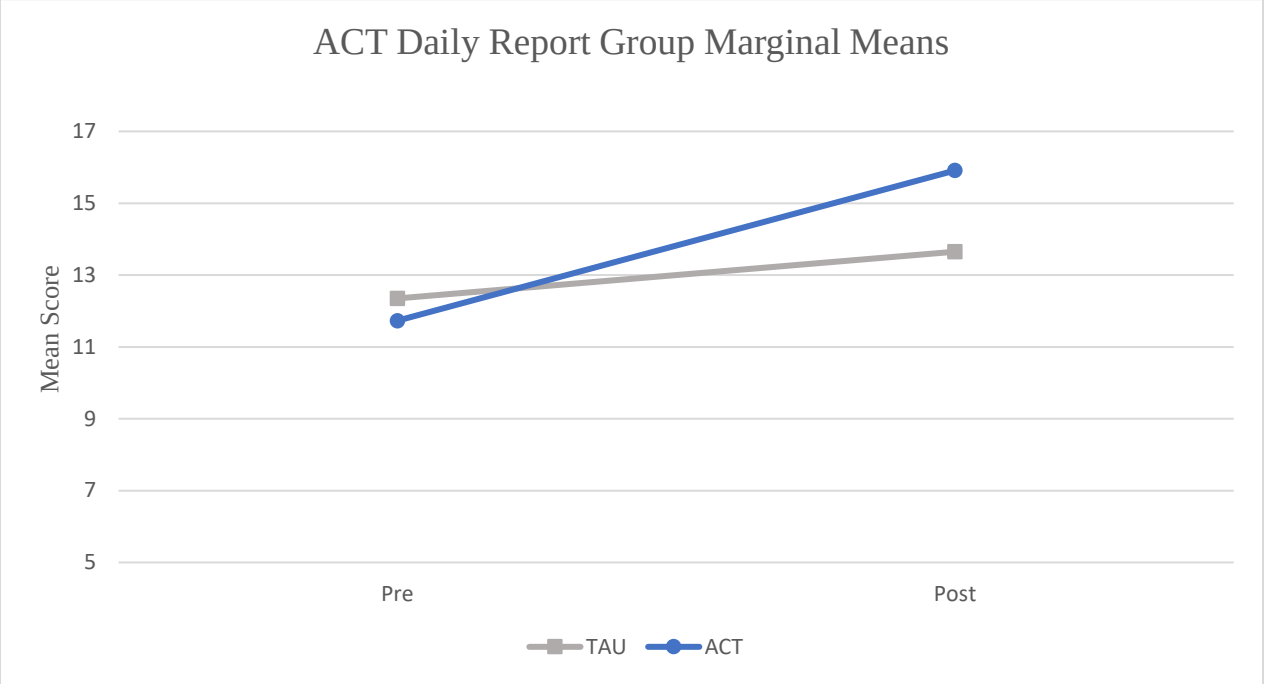
Note. Group estimated means on the Acceptance and Action Questionnaire – Substance Abuse scores for participant's at pre and post study completion. Lower scores presenting with higher psychological flexibility towards substance abuse related thoughts, cravings, or urges.

Changes in ACT-DR Total Scores

After detox completion, those in the ACT+TAU condition reported a mean increase in overall scores on the ACT-DR (M_{pre} = 11.73 SD = 6.43, M_{post} = 15.91, SD = 3.73) compared to TAU (M_{pre} = 12.35 SD = 6.14, M_{post} = 13.65, SD = 5.20). The 2 X 2 repeated measures ANOVA indicated a significant time effect *F* (1,43) = 16.80, p < .00, a non-significant condition effect F (1,43) = .30, p = .57, and a significant time by condition effect *F* (1,43) = 4.622, p = .04 (see Figure 5). Given the trend suggesting more days in detox for those in the ACT+TAU condition, an ANCOVA was conducted with number of total detox days as a covariate, with ACT-DR scores as the dependent variable, and condition as the independent variable. The results remained statistically significant with a time x condition effect favoring ACT+TAU, *F* (1,43) = 5.02, *p* = .03.

Figure 5

Pre-post Changes in Group Estimated Means on the Acceptance and Commitment Daily Report



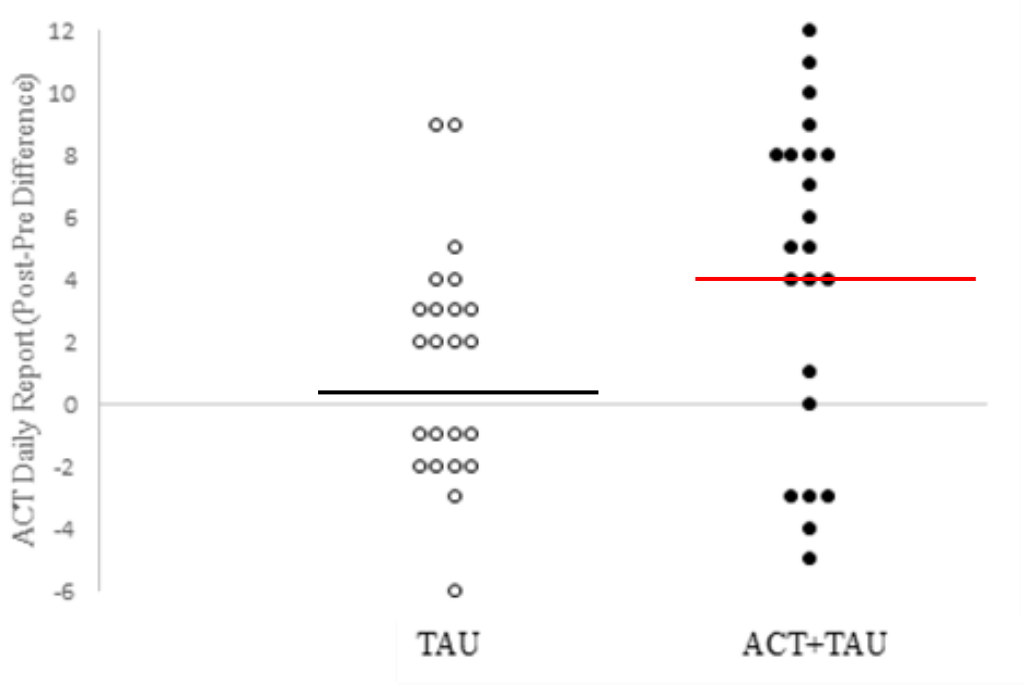
Note. Pre-post changes in group estimated means on the Acceptance and Commitment Daily Report at pre and post study completion. Higher scores represent higher overall engagement in processes related to Acceptance and Commitment Therapy.

Figure 6 presents individual change (post – pre difference) scores on the ACT-DR for the two conditions. Visual analysis of the distribution clearly favors the ACT +TAU condition as does the medium effect size (d = .64) based on the mean difference scores, ACT+TAU (M = 4.18, SD = 5.21) compared to TAU alone (M = 1.30, SD = 3.67). Closer examination of Figure 6 suggests a bimodal distribution in ACT+TAU, where 15/22 (68%) reported a change of 4 or more points in use of ACT skills, while 5/22 (23%) reported a decrease of 3 points of more. The TAU distribution was more normal in shape with the majority of TAU participants (13/23 or 57%) clustering within $\pm$ 3 points of change on the ACT-DR. It is interesting to note (as presented in Table 6), number of days in detoxification did not significantly correlate with

residual changes scores on the ACT-DR: full sample, r = .04, p = .77, ACT+TAU sample, r = .02, p = .92. However, for those in ACT+TAU the total number of ACT coaching sessions significantly correlated with residual change scores on the ACT-DR (r = .44, p < .05). It was not days in detox, but number of coaching sessions that associated with greater change in use of ACT coping skills.

Figure 6

Individual Change Scores Between Conditions on the Acceptance and Commitment Daily Report



Changes in MPFI Inflexibility and Flexibility Scores

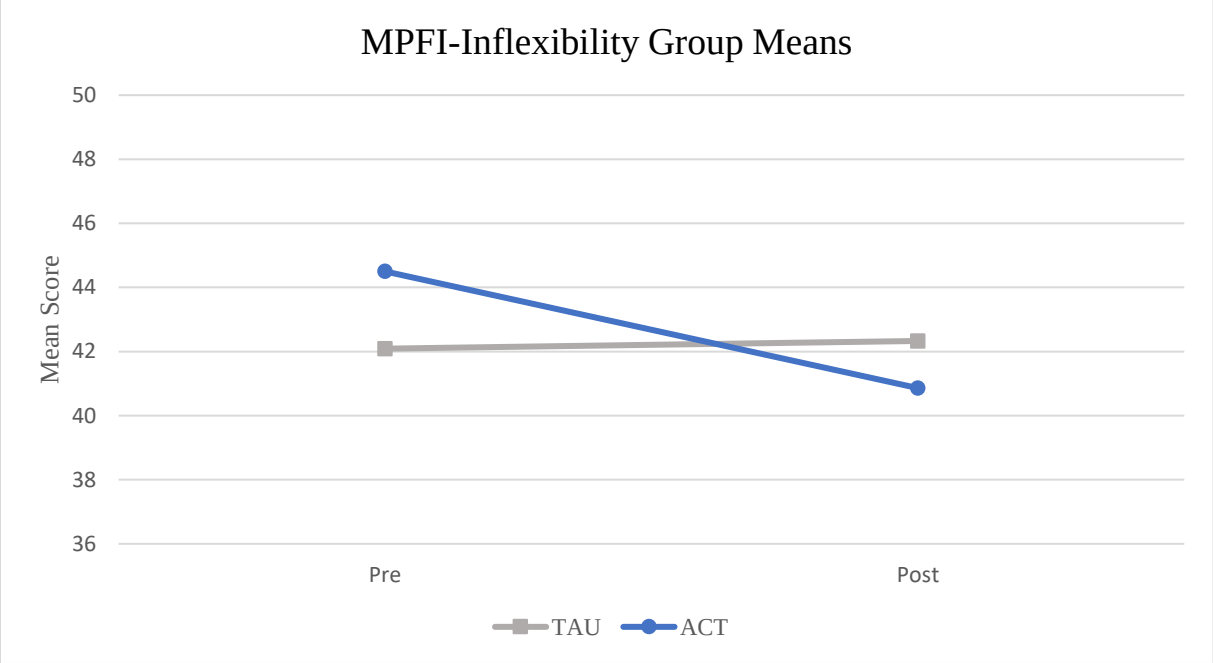
A 2 X 2 repeated measures ANOVA with MPFI-Inflexibility as the dependent variable produced a non-significant time effect F (1,43) = 2.23, p = .14, a non-significant condition effect F (1,43) = .04, p = .85, and a time x condition effect that was trending toward significance, F (1,43) = 2.92, p = .095. As is apparent in Figure 7, the post-treatment TAU mean was slightly higher (i.e., more inflexible) than at pretreatment (by .25 points), while the ACT+TAU group started out with a somewhat higher (but not statistically significantly higher) inflexibility score

than TAU, which decreased 3.64 points by post-treatment. When taking Number of Days in Detox into consideration, results of a 2 X 2 ANCOVA with detox days being the covariate, the time x condition effect further approached significance, F (1,43) = 3.9, p = .06, while the time (F [1,43] = 2.23, p = .14) and condition effects (F [1,43] = .04, p = .85) remained non-significant.

A 2 X 2 repeated measures ANOVA with MPFI-Flexibility as the dependent variable produced a significant time effect F (1,43) = 20.16, p < .001, a non-significant condition effect F (1,43) = 1.04, p = .31, and a non-significant time x condition effect, F (1,43) = 0.21, p = .65. As is apparent in Figure 8, the groups differed (non-significantly) by several points at pre-treatment but showed a similar trajectory with the TAU group increasing in flexibility ratings by 4.42 points and the ACT+TAU group by 5.41 points.

Figure 7

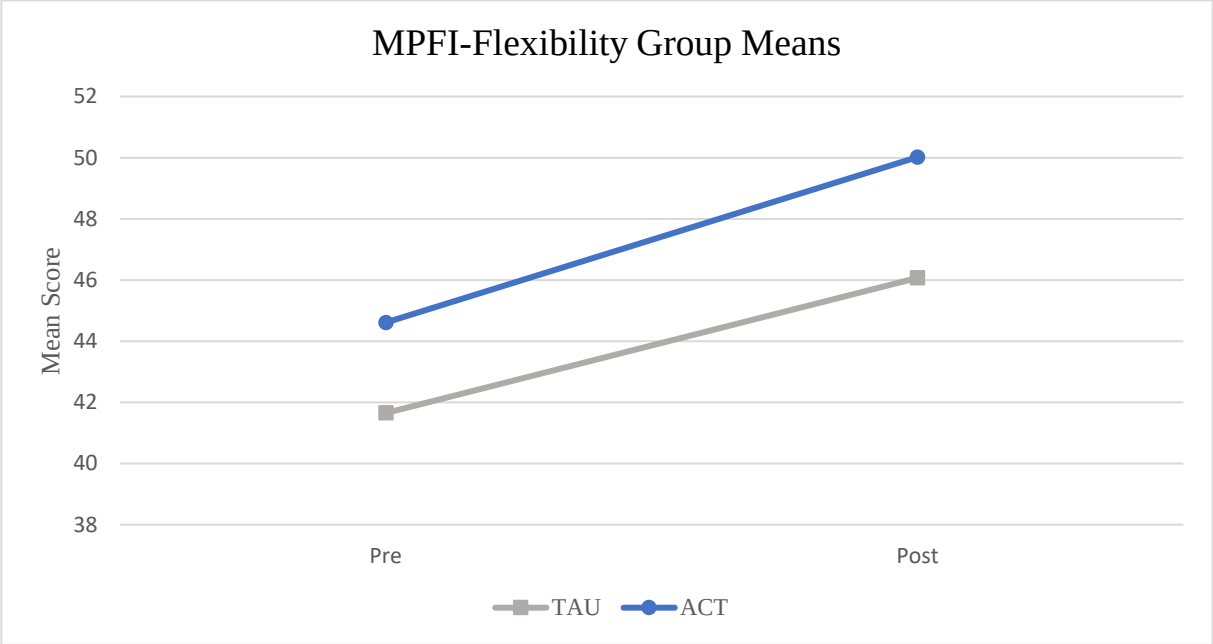
Group Estimated Means on the Multiphasic Psychological Flexibility Inventory – Inflexibility Subset



Note. Group estimated means on the Multiphasic Psychological Flexibility Inventory – Inflexibility Subset at pre and post study completion. Higher scores represent higher overall psychological inflexibility.

Figure 8

Group Estimated Means on the Multiphasic Psychological Flexibility Inventory – Flexibility Subset



Note. Group estimated means on the Multiphasic Psychological Flexibility Inventory – Flexibility Subset at pre and post study completion. Higher scores represent higher overall psychological inflexibility.

Effect of Treatment on Symptoms Measures

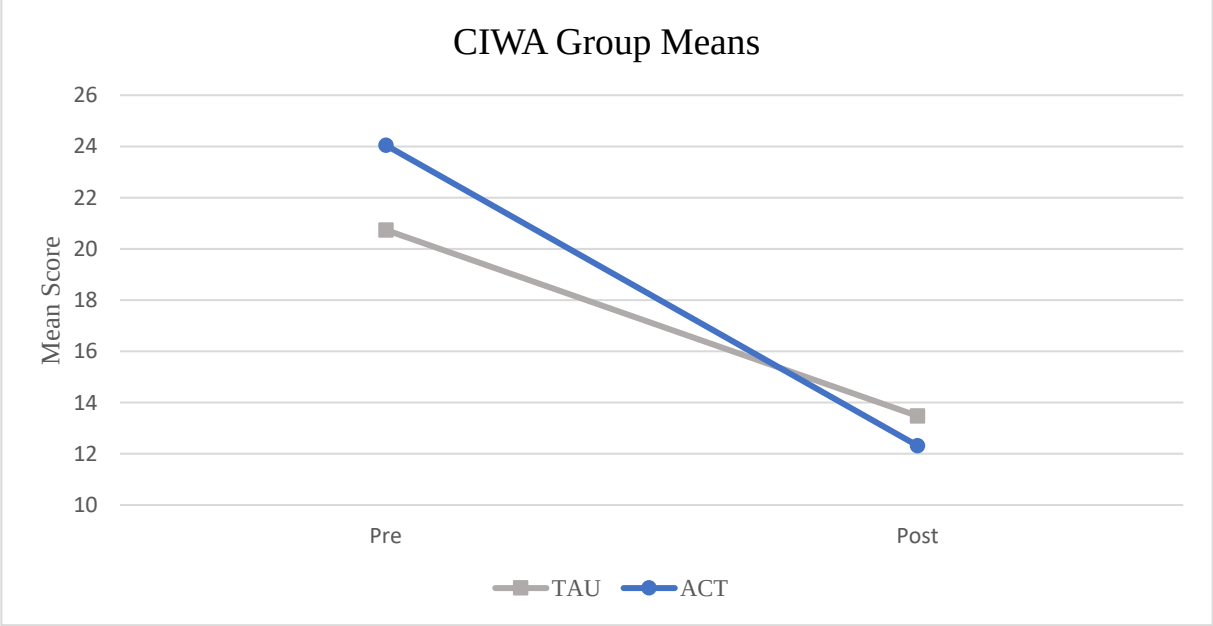
Change in CIWA-Ar Scores

A 2 X 2 ANOVA resulted in a significant time effect F (1,43) = 72.61, p = .00, non-significant condition effect F (1,43) = .25, p = .62, and a time x condition interaction that was at the conventional level below which is typically considered statistical significance, F (1,43) = 4.02, p = .05. To further examine the time by condition effect, an ANCOVA was conducted with number of detox days as a covariate, which, again, was right at the threshold for statistical significance, F (1,43) = 4.05, p = .05. Mean CIWA-Ar scores for both groups decreased from the severe range to the moderate range. The ACT+TAU group had a mean change of 11.73 points

for a post-detox CIWA-Ar score of 12.32 (*SD* = 7.12), while the TAU group had a mean change of 7.26 points for a post-detox mean of 13.48, (SD = 8.12), comparing residual change scores between groups produced a medium effect size, *d* = .44.

Figure 9

Group Estimated Means on the Clinical Institute Withdrawal Assessment Alcohol Scale Revised



Note. Group estimated means on the Clinical Institute Withdrawal Assessment Alcohol Scale Revised at pre and post study completion. Higher scores represent higher severity of withdrawal symptoms.

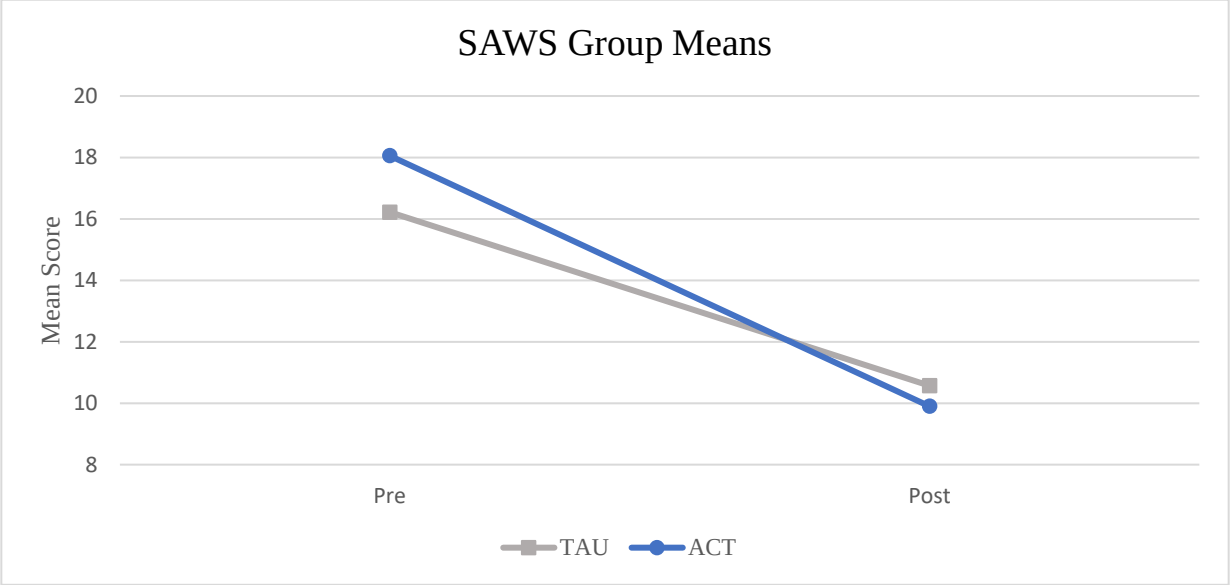
Change in SAWS Scores

The patterning of the SAWS scores were similar to that observed with the CIWA-Ar. The ACT+TAU group started with a non-significantly higher mean (*M* =18.05, *SD* = 4.1) compared to TAU (*M* = 16.22, *SD* = 5.65), while at post-detox the mean SAWS scores in the ACT+TAU condition (*M* = 9.90, *SD* = 3.87) were once again, slightly lower than TAU (*M* = 10.57, *SD* = 5.20). A 2 X 2 ANOVA resulted in a significant time effect *F* (1,43) = 105.09, *p* = .000, a non-significant condition effect *F* (1,43) = .22, *p* = .65, and non-significant trend for the time x

condition interaction, F (1,43) = 3.42, p = .07. An ANCOVA with number of detox days as a covariate, produced a non-significant time x condition interaction, F (1,43) = 2.22, p = .144. Mean SAWS scores for both groups decreased from the severe range to the mild range. The ACT+TAU group had a mean change of 8.14 points, while the TAU group had a mean change of 5.65 points. Comparing residual change scores between groups produced a medium effect size, d = .41.

Figure 10

Group Estimated Means on the Short Alcohol Withdrawal Scale



Note. Group estimated means on the Short Alcohol Withdrawal Scale at pre and post study completion. Higher scores represent higher severity of withdrawal symptoms.

Correlations Between Detox Days, Coaching Sessions, Process, and Symptom Measures

As presented in Table 6 there were multiple significant correlations found among outcome measures and variables of interest. First, researchers evaluated if the number of days a participant stayed in detox shared any relationship with any outcome measures. As seen, the only variable significantly correlated with number of days in detox was the number of coaching sessions a participant in the ACT+TAU condition received, r = .56, p = .009.

Interestingly, the only variable that total coaching sessions correlated significantly with was the standardized residual changes scores on the ACT-DR, $r = .44$, $p = .049$. More coaching sessions lead to report of great daily use of ACT coping skills, possibly referring to implementation during the coaching session, but also could include use outside the coaching session. Greater use of ACT coping skills was significantly associated with consumer satisfaction (CSQ: $r = .38$, $p = .01$), values clarity (ELS: $r = .33$, $p = .03$), and changes in psychological inflexibility (AAQ-SA: $r = -.32$, $p = .04$), and withdrawal symptoms (CIWA-Ar: $r = -.35$, $p = .02$; SAWS: $r = .65$, $p < .001$). While these analyses do not allow for the establishment of temporal precedence, they are consistent with a sequence where coaching sessions led to skill use, which contributed to positive changes in values clarity, psychological inflexibility, and the experience of withdrawal symptoms.

Variables measuring overlapping domains generally correlated with one another. Change on the AAQ-SA was negatively correlated with the ELS ($r = .36$, $p = .02$), MPFI Flexibility ($r = -.41$, $p = .01$), and correlated positively with MPFI Inflexibility change scores ($r = .36$, $p = .02$). Change on the CIWA-Ar correlated significantly with the SAWS ($r = .65$, $p < .001$).

The only variable (in addition to ACT-DR) to correlate with the CSQ was the ELS, $r = .33$, $p = .03$, suggesting values clarity about why one was undertaking detoxification was more closely linked with consumer satisfaction than change in withdrawal symptoms. Change in withdrawal symptoms on the on the SAWS correlated significantly with changes on the AAQ-SA ($r = .42$, $p < .01$) and the MPFI Flexibility ($r = -.37$, $p = .01$), but not MPFI Inflexibility, scale. Among a subset of variables changes in psychological (in)flexibility were associated with reduced withdrawal symptoms.

Table 6

Correlational Relationships Between Variables of Interest, Process, and Symptoms Measures

Variable		Number of Days in Detox	Total Coaching Sessions	ELS Exit Score	CSQ Exit Score	CIWA Standardized Residuals	AAQ Standardized Residuals	MPFI Flexibility Standardized Residuals	MPFI Inflexibility Standardized Residuals	ACTDR Standardized Residuals	SAWS Standardized Residuals
Number of Days in Detox	Pearson Correlation										
	Sig. (2-tailed)										
	N										
Total Coaching Sessions	Pearson Correlation	**.555****									
	Sig. (2-tailed)	**.009**									
	N	21									
ELS Exit Score	Pearson Correlation	.204	.230								
	Sig. (2-tailed)	.180	.316								
	N	45	21								
CSQ Exit Score	Pearson Correlation	-.035	.359	**.331***							
	Sig. (2-tailed)	.823	.110	**.028**							
	N	44	21	44							
CIWA Standardized Residuals	Pearson Correlation	.110	-.269	-.025	-.120						
	Sig. (2-tailed)	.473	.238	.869	.437						
	N	45	21	45	44						
AAQ Standardized Residuals	Pearson Correlation	-.015	.025	**-.359***	-.236	.245					
	Sig. (2-tailed)	.921	.914	**.016**	.123	.105					
	N	45	21	45	44	45					
MPFI Flexibility Standardized Residuals	Pearson Correlation	.007	.088	.180	.257	-.220	**-.413****				
	Sig. (2-tailed)	.966	.705	.237	.092	.147	**.005**				
	N	45	21	45	44	45	45				
MPFI Inflexibility Standardized Residuals	Pearson Correlation	.267	.358	-.023	.003	.187	**.359***	-.049			
	Sig. (2-tailed)	.076	.111	.882	.985	.219	**.016**	.752			
	N	45	21	45	44	45	45	45			
ACTDR Standardized Residuals	Pearson Correlation	.044	**.435***	**.328***	**.383***	**-.349***	**-.315***	.255	-.103		
	Sig. (2-tailed)	.772	**.049**	**.028**	**.010**	**.019**	**.035**	.091	.500		
	N	45	21	45	44	45	45	45	45		
SAWS Standardized Residuals	Pearson Correlation	-.081	-.174	-.147	-.168	**.651****	**.420****	**-.368***	.145	**-.339***	
	Sig. (2-tailed)	.598	.451	.335	.276	**.000**	**.004**	**.013**	.341	**.023**	
	N	45	21	45	44	45	45	45	45	45	

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

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

Mediating Relationships to Symptom Measures

There was a significant difference between the ACT+TAU and TAU conditions on the ACT-DR (treatment → mediator). Changes on the ACT-DR were significantly associated with the post-detox CSQ and residual change scores on the CIWA-Ar and SAWS (mediator → outcome). Finally, there were 2-tailed trends toward, and 1-tailed, statistical significance between treatment condition and CSQ, CIWA-Ar and SAWS (treatment → outcome). Given these treatment → mediator, mediator → outcome, and treatment → outcome relationships, we examined the capacity for the ACT-DR to serve as a statistical mediator use Hayes (2013) PROCESS procedure for SPSS.

The first mediator model employed condition as the independent variable, residual change scores on the ACT-DR as the potential mediator, and the CSQ exit score (n = 44) as the dependent variable. There were significant effects between condition and CSQ (F = 3.84, p = .03) and condition and ACT-DR (F = 7.27, p = .01). Moreover, the indirect effect between condition and CSQ, when mediated by ACT-DR, was significant (point estimate = 1.05, $p < .05$, 95% CI [.09, 3.07]) rendering the direct relationship between condition and CSQ scores non-significant (point estimate = .91, p = .47, 95% CI [-1.61, 3.42]). The increased use of ACT skills mediated the relationship between treatment condition and consumer satisfaction.

The second mediator model entered condition as the independent variable, residual change scores on the ACT-DR as the potential mediator, and the residual change scores on the CIWA-Ar as the dependent variable. As expected, there were marginally significant effects between condition and CIWA ($F = 3.16$, $p = .05$) and statistically significant effects between condition and ACT-DR ($F = 7.03$, $p = .01$). However, the indirect effect between condition and CIWA-Ar, when mediated by ACT-DR, failed to reach statistical significance (point estimate = -

.23, $p > .05$, 95% CI [-.73, .19]). The increased use of ACT skills did not mediate the relationship between treatment condition and changes in withdrawal symptoms on the CIWA-Ar.

The third mediator model entered condition as the independent variable, residual change scores on the ACT-DR as the potential mediator, and the residual change scores on the SAWS as the dependent variable. As expected, there were marginally significant effects between condition and SAWS ($F = 2.91$, $p < .07$) and statistically significant effects between condition and ACT-DR ($F = 7.03$, $p = .01$). Moreover, the indirect effect between condition and SAWS, when mediated by ACT-DR, was significant (point estimate = -.23, $p < .05$, 95% CI [-.65, -.01]) with the direct relationship between condition and SAWS scores non-significant (point estimate = -.17, $p = .58$, 95% CI [-.79, .44]). The increased use of ACT skills mediated the relationship between treatment condition and change in withdrawal symptoms on the SAWS.

CHAPTER IV

DISCUSSION

This study sought to explore the added benefit of a brief ACT protocol offered in a residential alcohol detoxification setting. A randomized controlled trial examined whether combining ACT with the facility's medication-management protocol (ACT+TAU) produced better results than TAU alone. The goals of the study were to investigate whether the combined treatment enhanced consumer satisfaction, reduced withdrawal symptoms, and impacted targeted repertoires (i.e., use of ACT skills, values clarity, and psychological inflexibility/flexibility). Consistent with hypotheses, the results indicated that engaging in two 30-minute ACT sessions (based on a recovery-oriented version of the ACT Matrix and done at the start and end of detoxification) with supplemental brief coaching sessions in-between, when added to medication-management, improved consumer satisfaction, use of ACT coping skills and psychological inflexibility and reduced withdrawal symptoms. The effect sizes were reliably medium (or larger) despite *p* values sometimes hovering around, but not fully reaching, conventional levels of statistical significance (discussed in more detail below). The current results add to the evidence base suggesting ACT as a viable component to SUD treatment (Hayes, Strosahl, & Wilson, 1999; Heffner et al., 2003), including substance detoxification (Stotts, Masuda, and Wilson, 2009).

The AUDIT, CIWA-Ar, and SAWS data suggest a sample that was engaging in excessive and harmful patterns of drinking and were highly alcohol dependent at entry. For such individuals, alcohol detoxification inevitability involves physical and emotional discomfort. Common withdrawal symptoms include experiences of nausea, muscle pain, stomach and headaches, shakiness, restlessness, unease, anxiety, and agitation. Medication management can

help reduce acute withdrawal symptoms and promote the physical adaptation that occurs over time with continued abstinence. As such, it is important to note that TAU was effective. The average TAU recipient was quite satisfied with their detoxification experience and reported a decrease in withdrawal symptoms from the severe to moderate-mild end of the scale during their time in detox.

The high satisfaction and clear efficacy of TAU make the incremental effects of the brief ACT protocol more striking. Dealing with withdrawal symptoms is not only a physical process, but also a psychological one, where individual differences in internal awareness, tolerance of discomfort, and thoughts about the meaning and tolerability of discomfort can be influential. It is for these reasons that in much of the ACT substance use literature, addiction is seen as involving experiential avoidance (Luoma et al., 2011; Wilson et al., 2005) and increases in psychological flexibility processes are suggested as helpful in supporting patients in working through their uncomfortable detoxification experiences (Stotts et al., 2012; Stotts et al., 2009).

Thus, it is interesting to note that the largest between-group differences were on three ACT-related measures: the ACT-DR, AAQ-SA, and ELS. There was some movement on these measures in the TAU group, which is not entirely surprising. Because the psychological flexibility model underpinning ACT is a general model of human functioning, some naturalistic changes associated with detoxification might be expected. However, when psychological flexibility processes were directly targeted, via the addition of the ACT protocol, significantly larger changes were observed on the ACT-DR, AAQ-SA, and ELS than in TAU. Moreover, change on the ACT-DR, a measure of the daily use of ACT coping skills, mediated group differences in consumer satisfaction and changes on one measure of withdrawal symptoms (i.e., the SAWS). The pattern of results was consistent with a sequence wherein coaching sessions led

to skill use, which contributed to positive changes in values clarity, psychological inflexibility, and a reduction in the experience of withdrawal symptoms. It is important to highlight that what is being identified is a conceptually consistent set of findings that imply a temporal ordering of events, while recognizing that the available data do not allow for the temporal ordering of the change process to be specified (Gaynor, 2017). Thus, the process results might be best interpreted conservatively as demonstrating that the conceptual model (treatment → targeted process → outcome; specifically receipt of ACT → skills use → satisfaction / reduced withdrawal symptoms) did not fail, rather than viewing the results as strong evidence supporting the sequence (Hayes et al., 2017).

It could be argued that the between-group differences were not ACT specific. The argument would be that the results favoring ACT+TAU were due to the extra time spent with an attentive listener who provided a rationale and set of related strategies for addressing relevant concerns, regardless of the specifics of the rationale and strategies. The current design does not allow this conclusion to be definitely ruled-out. To do so would require added comparison conditions, such as a group that received TAU along with a (so-called) psychological placebo intervention or an alternative psychosocial intervention. These are potential directions for future research. Arguing in favor of ACT specific effects were the findings (within the ACT+TAU group) that number of coaching sessions correlated only with changes in ACT daily skills use. Changes in ACT skills use, but not number of coaching sessions (see Table 6), correlated with change in withdrawal symptoms (significantly on the CIWA-Ar, $r_{[22]} = -.49$, $p = .02$ and trending on the SAWS, $r_{[22]} = -.39$, $p = .07$). If time with a concerned listener offering a rationale and strategies was the key variable, then number of coaching sessions should have been as closely associated with change in the withdrawal measures as was the ACT-DR, but it was not. The

mediation findings – changes in ACT daily skills use mediated the relationship between condition and consumer satisfaction and condition and reduced withdrawal symptoms on the SAWS – provide indirect support for ACT specific effects. Inclusion of variables measuring alternative, competing mediators, against which ACT measures could be tested in multiple mediator analyses, is a direction for future research that could further strengthen the case for ACT specific effects.

ACT does not emphasize changing the frequency or content of negative sensations/feelings and thoughts, but rather how one relates to them (Hayes et al., 2004; Harris, 2006). While therapist's refrain from focusing their interactions with patients on reduction in negative feelings and thoughts as a primary goal, empirically ACT does produce symptom reduction (Kanter, Baruch,& Gaynor, 2006). For instance, several meta-analyses suggest small-medium effect sizes favoring ACT over comparison conditions for reduction in depression and anxiety symptoms (A-Tjak et al., 2015; Gloster et al., 2020). The same may apply to reductions in withdrawal symptoms. Eliminating withdrawal symptoms is impossible. However, if one can learn to shift attention to breathing (in the face of anxious sensations), or identify 5 things they can see, 4 they can smell, etc., (when feeling agitated) or say "miserable" repeatedly and quickly until it becomes mainly a funny sound and series of lip movements (when having the thought "This is miserable"), then withdrawal symptoms may be experienced less intensely. In addition, identification of the values related to pursuing recovery may help to change the meaning of withdrawal symptoms, increasing tolerance for working through them. For instance, laboratory studies using a cold pressor task (where participants are asked to submerge their hand in painfully cold water) found incorporating exercises that related personal values to the task (e.g.,

imagine swimming in cold water to save a loved one) significantly increased pain tolerance (Branstetter-Rost, Cushing, & Douleh, 2009; Smith et al., 2019).

At exit from detox those in the ACT+TAU condition reported greater values clarity. Previous research has found that values identity plays a key role in substance use treatment, suggesting that when engaging in valued living, that substance use is significantly reduced (Heffner et al., 2003). The initial findings from Heffner and colleagues suggest that even brief 30-minute sessions can initiate the value-clarity process and support patients in finding ways to engage in values-based activities. This kindling of values can then augment further recovery treatment, and even provide reasoning to continue in recovery-focused care. Whether those in the ACT+TAU condition went on to greater success in their subsequent rehabilitation treatment than those in TAU is unknown and represents a limitation of the current study and a direction for future research. Ultimately, success in ACT is defined by living according to one's values. The goal is for the greater values clarity and ACT skills learned in detox to be carried forward, facilitating greater success in residential rehabilitation treatment, which then increases success in transitioning back to daily life. The current study was only able to examine the initial step. Studying whether focusing on values-engagement, and ACT skills for changing how patients' relate to their withdrawal symptoms, increases subsequent treatment engagement and completion is an important next step.

Another limitation of the present study was the lower than desired sample size. The residential rehabilitation facility in which the study took place altered their detox protocol three-quarters of the way into the study. Treatment as usual at the facility was changed. The change, initiated at the request of associated insurance companies (and which, interestingly, was generally consistent with what the results of the present study might suggest), required

detoxification patients be seen by a staff therapist. Thus, all patients in detox would now be receiving some mandatory psychosocial services. This change would fundamentally alter the TAU condition, and, by necessity, the ACT+TAU condition. ACT would be added to a TAU condition that involved some contact with a staff therapist. We considered altering the study protocol to continue recruitment. However, adding two new groups, with no possibility of increasing the sample size of our initial two groups, would have required an increase in sample size that was untenable. Thus, enrollment had to be discontinued 15 patients shy of the goal of 60 established by our *a priori* power analyses. Viewed in this light, the number of statistically significant effects, and effects with *p* values hovering around, but not fully reaching, conventional levels of statistical significance, suggests the additive value of the ACT intervention.

Lastly, even though these preliminary results are promising, measures were mainly self-report. While these measures appeared appropriate to capturing alcohol withdrawal-related symptoms and ACT constructs, there exist a level of vulnerability to potential biases and a reliance on participants' perceptions and awareness (Aldridge & Charles, 2008; Sobell & Sobell, 1990; Zarling, Lawrence, & Marchman, 2015). For instance, maybe going through the ACT protocol oriented participants to desirable patterns of responding. That is, a patient may have self-reported greater ability to make space for difficult feelings or sensations, or keep in mind what is most important in their life, not because they were actually doing so, but because to say so cohered with the narrative established with the therapist.

In conclusion, despite being under-powered, the weight of the evidence suggested that ACT had clear incremental value when added to a standard of care, medication-management, TAU condition for alcohol detoxification offered in a residential rehabilitation setting. TAU

participants were satisfied with their services and experienced significant reductions in withdrawal symptoms. However, ACT+TAU participants were even more satisfied, had larger reductions in withdrawal symptoms, and were introduced to ACT skills for increasing openness, awareness, and engagement, the effects of which mediated the group differences in satisfaction and changes in (one measure of) withdrawal symptoms. ACT appears as a potentially useful component of detoxification protocols.

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Appendix A

Consent Document
Western Michigan University

Psychology Department

Principal Investigator: Scott Gaynor, Ph.D.

Student Investigator: Taylor R. Weststrate, M.A.

Title of Study: A Brief Acceptance and Commitment Therapy Protocol for Alcohol Withdrawal Symptoms: A Randomized Controlled Trial for Inpatient Detoxification Patients

You are invited to participate in this research project titled "A Brief Acceptance and Commitment Therapy Protocol for Alcohol Withdrawal Symptoms: A Randomized Controlled Trial for Inpatient Detoxification Patients"

STUDY SUMMARY: This consent form is part of an informed consent process for a research study and it will provide information that will help you decide whether you want to take part in this study. Participation in this study is completely voluntary. The purpose of the research is to evaluate the effects of a brief Acceptance and Commitment Therapy protocol in assisting in the coping of alcohol withdrawal during detox and will serve as Taylor Weststrate's Dissertation requirements of the Doctor of Philosophy in Clinical Psychology. If you take part in the research, you will be asked to disclose information about yourself that ranges from demographic information to psychological barriers to behavior change, fill out self-report measures regarding withdrawal and psychological distress, track daily behaviors, and meet multiple times throughout your detoxification. Your time in the study can be as minimal as 2 hours and 30 minutes and can be extended longer depending on your time within detoxification. Possible risk and costs to you for taking part in the study may be possibly experiencing some discomfort from answering sensitive questions and the time required for participation and potential benefits of taking part may be receiving a free brief psychotherapy intervention for alcohol withdrawal.

The following information in this consent form will provide more detail about the research study. Please ask any questions if you need more clarification and to assist you in deciding if you wish to participate in the research study. You are not giving up any of your legal rights by agreeing to take part in this research or by signing this consent form. After all your questions have been answered and the consent document reviewed, if you decide to participate in this study, you will be asked to sign this consent form.

What are we trying to find out in this study?

The purpose of this research study is to evaluate the effects of a brief Acceptance and Commitment Therapy protocol in assisting the detoxification process for individuals struggling with Alcohol Use Disorder.

Who can participate in this study?

Inclusionary criteria for this study includes (a) must have a diagnosis of Alcohol Use Disorder according to DSM-5 criteria; (b) scored an 8 or higher on the AUDIT; (c) agree to the TAU facility protocol with medication recommendations from the medical staff for Alcohol Use Disorder as suggested by the American Society of Addiction Medicine (Bayard et al., 2004; ASAM, 2020); (d) must have attended the facility of their own volition; (e) currently experiencing early withdrawal symptoms associated with alcohol use disorder. Exclusion from the study included (a) any current health issues that would result in hospitalization or early termination of the detoxification period; (b) under the age of 21; (c) any co-occurring substance use over the past six months; (d) currently under the influence of any substance outside of alcohol

Where will this study take place?

This study will take place at the recovery facility you are currently at. Sessions will take place in individual therapy rooms and measures will be administered either by the student investigator or by the facility's staff. All sessions will be done on-site and in privacy.

What is the time commitment for participating in this study?

It is anticipated that the study will start recruitment December 1st, 2020. Participants will be asked to attend a total of two 45-minute meetings and additional 5-10-minute coaching sessions throughout detox. Participants will meet with the researcher/therapist each time. The first meeting consists of the consent process, approximately 15 minutes, and the Initial Matrix Session, approximately 45 minutes, for a total of approximately 60 minutes. The second meeting, Follow-Up Matrix session, will be held when the patient moves out of the detox period and last approximately 60 minutes. Additional to the first and second sessions, there will be supplemental coaching skill check-ins that range between 5-10 minutes long and will be done randomly throughout each day for the patients with an estimated of 5-7 coaching sessions per day.

What will you be asked to do if you choose to participate in this study?

Should you agree and qualify to participate in this study, you will be asked to meet for two sessions with the research therapist, complete assessments, and track daily therapeutic related behaviors. This includes:

- Assessment Questionnaires estimated to require 30 minutes. A demographic questionnaire, and a brief questionnaire asking about your personal values, thoughts, and feelings.
- Daily Tracking Questions estimated to require 5 minutes
- Two ACT intervention sessions that require 60 minutes each
- Multiple random daily skill coaching sessions

At the conclusion of the study, if you would like to continue services, your therapist will provide you with a list of referrals within the community. You are free to stop participating in the research protocol for any reason at any time.

What information is being measured during the study?

This section will describe the measurements that we are going to take during your participation in the study. The questionnaires that we are going to ask you to complete during your participation in the study will ask for general information, such as your age, race, education level, etc. as well as more personal questions assessing your report of your daily withdrawal experiences as well as personal values, thoughts, and feelings. You will also be asked about your daily therapeutic skill engagement over the course of your detox.

What are the risks of participating in this study and how will these risks be minimized?

As with any intervention, it is possible you will not improve, and this could lead to negative feelings. Meeting the researcher will help you contextualize this outcome based on current models of addiction and recovery-oriented behaviors. If you do not improve and would like to consider a more comprehensive intervention, your therapist can provide you with referral sources as needed. Any costs related to transportation or psychological treatment outside of this study will be your responsibility. Participation will require a minimum of about 2 hours and 30 minutes of your time, in addition to, daily tracking of therapeutic behaviors and skill coaching sessions. There is no financial cost associated with this study; all sessions are free of charge to participants.

As in all research, there is a risk associated with the disclosure of personal information. This risk will be minimized by encrypting participant information on all data procedures. Your name will not be recorded on any assessment measures or audio recordings; these will only be labeled with participant code number. The master list of participant names and numbers will be stored in a locked cabinet in Dr. Gaynor's laboratory, and only the primary and student investigator will have access to the master list to ensure participants privacy and personal information.

What are the benefits of participating in this study?

One way in which you benefit from this study is receiving a free brief intervention targeting health-related behavioral change, which may help improve your current symptoms and

functioning. However, we cannot guarantee a positive outcome and it is possible that your health-related behavior symptoms will not change because of your participation in this study.

An indirect benefit of your participation is that others, who experience similar struggles with health-related behaviors, may benefit from the knowledge that is gained from this research. The study will help us understand this treatment approach as a brief intervention for college students and, thus, will provide knowledge to the field of psychology. Once the study is completed, you may receive a general summary of the results if you wish.

Are there any costs associated with participating in this study?

There are no costs associated with participating in this research study.

Is there any compensation for participating in this study?

There is no financial compensation for participating in this study.

Who will have access to the information collected during this study?

All the information collected, including the results of the assessment measures and treatment, is strictly confidential. To further maintain anonymity in responses, you will be randomly assigned a code number that will be a pre-selected, randomly generated, code number ranging from 1-999. This number will be used on all assessments. Your name will only appear on the consent form and the contact information sheet, a form that includes your first name, last name, and telephone number. At no time will your name be placed alongside the code number on questionnaires or video recordings.

Paper copies and paper documents will be stored in a locked file cabinet in Dr. Gaynor's lab at WMU, room 2527 of Wood Hall. The signed consent documents and a master sheet containing the participant's name and matching participant number will be stored in a separate locked file cabinet, both in the locked laboratory of Dr. Gaynor. Only the primary and student investigator will have access to the master sheet, contact information, and the data and all data will be maintained in Dr. Gaynor's laboratory for at least five years after the end of the study.

All database computer files related to the study will include only participants' code numbers and will not contain any identifying information. Participants will not be personally identified in any reports or publications that may result from this study. Only study staff approved by the HSIRB will have access to the computer files. While we think that the likelihood of the coder knowing the participant in some capacity is small, should this happen he or she will immediately stop the audio recording and inform Taylor Weststrate or Dr. Gaynor, at which point another coder will be assigned or another participant's video recording selected.

What will happen to my information or biospecimens collected for this research project after the study is over?

After information that could identify participants has been removed, de-identified information collected for this research may be used by or distributed to investigators for other research without obtaining additional informed consent from the participants.

What if you want to stop participating in this study?

If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or additional treatment will be made available to you except as otherwise stated in this consent form.

Should you have any questions prior to or during the study, you can contact the primary investigator, Dr. Scott Gaynor, at (269) 387-4482 or scott.gaynor@wmich.edu or the student investigator, Taylor Weststrate at taylor.r.weststrate@wmich.edu. You may also contact the Chair, Human Subjects Institutional Review Board at (269) 387-8293 or the Vice President for Research at (269) 387-8298 if questions arise during the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

Please Print Your Name

_____ _____

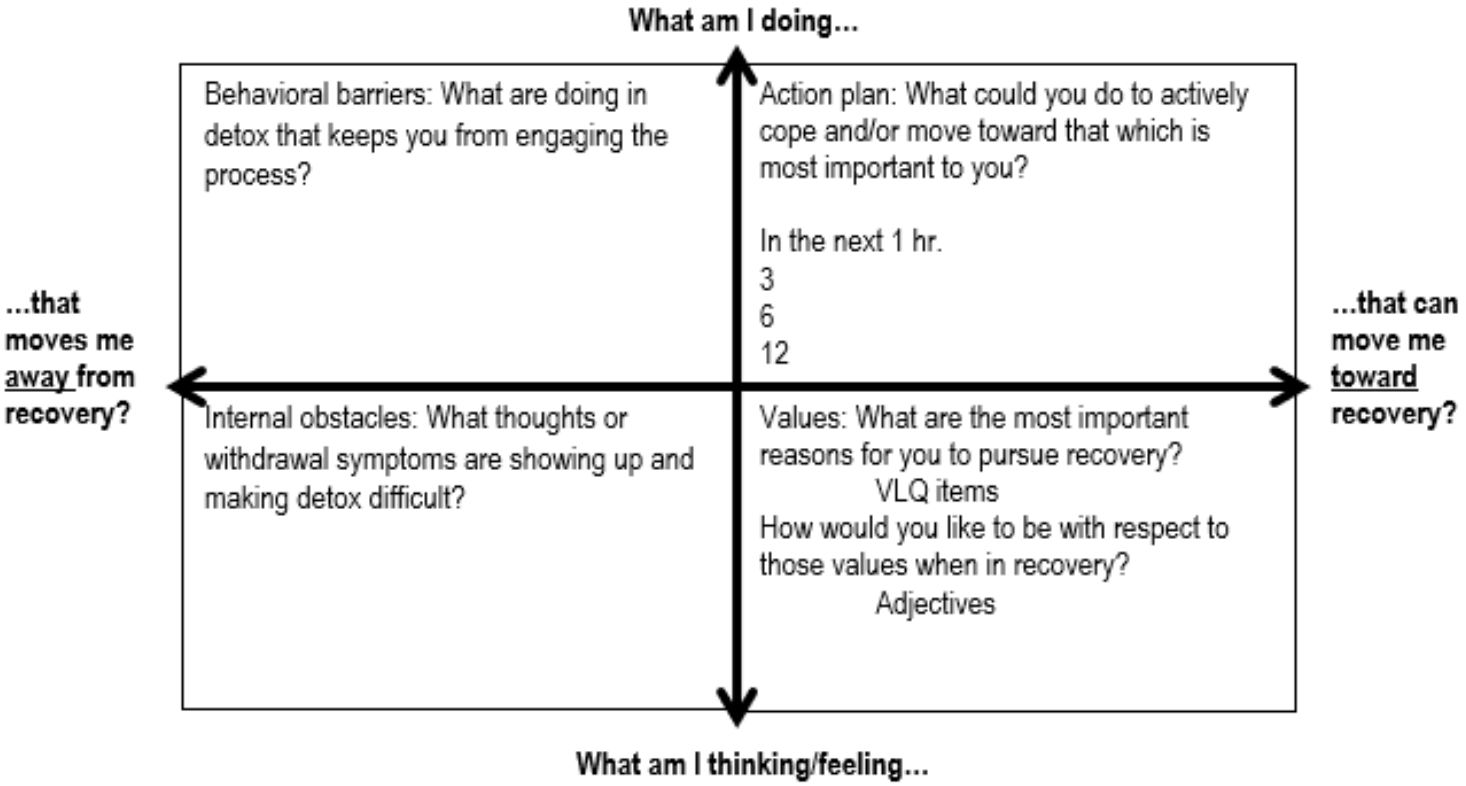
Participant's signature Date

_____ _____

Student Investigator's signature Date

Appendix B

Recovery Matrix



Appendix C

Single-session ACT Protocol

Introduce the recovery-related ACT matrix worksheet to participant (1 min)

> This worksheet will help us organize your personal motivation for making recovery-related behavior changes, the barriers and obstacles that often come up during detox, and how to try to cope with these challenges.

Collaboratively complete the "Behavioral barriers" and "Internal obstacles" sections of the matrix (5 mins)

Introduce defusion as way of creating space/separation from negative thoughts and reducing their behavior regulatory functions (1–5 min)

Engage participant in one of the following defusion exercises (10 min)

Word repetition (addict)

Disobey on purpose

Contents on cards

Labelling content – "I'm having the thought that…, I'm remembering…, I'm imagining"

Vocalizing – say it… slow, different voice, as a song, newscast/sportscast

Introduce acceptance as a way of relating to internal experiences with openness and awareness rather than avoidance (1–5 min)

Engage participant in mindfulness exercise (5–10 min)

Complete the "Values" section of the matrix (1–5 min)

> "Success in ACT is defined as living consistently with your values. Values related to recovery? What validates going through the discomfort of detox? How would you like to be with respect to those values when in recovery?"

Establish the action plan with the participant (5–10 min)

> 1hr., 3hrs., 6hrs., and 12 hrs., SMART (specific-meaningful-adaptive-realistic-time specified) goals written on matrix

Appendix D

Word Repetition

Defusion Exercise with "Lemon":

Therapist: If you're willing to do so, I'd like us to do a little exercise together. Say the word "lemon."

Client: Lemon.

Therapist: What came to mind when you said that?

Client: A yellow, oblong-shaped fruit. Fairly small, not too big.

Therapist: So you could almost see it. What else?

Client: I don't know.

Therapist: How about smell?

Client: Yeah, it smells like a lemon— lemony.

Therapist: What else?

Client: Well, the taste of a lemon— you know, kind of sour.

Therapist:

> So notice what happened when you said the word "lemon." It's as if a lemon was actually here— you could see it, smell it, and taste it. There's no lemon actually here, but it was here psychologically. Now comes the silly part of this exercise. I want you, along with me, to say the word "lemon" over and over again as fast as we can. Let's just do it and see what happens.

Therapist:

> [Rapidly repeats the word "lemon" with the client for at least 30 seconds.] What happened?

Client: It just sounds like some silly blabber, like nonsense.

Therapist: What happened to the sour -tasting, lemony-smelling, yellow, oblong fruit that was just here a little while ago?

Client: It's gone.

Therapist: Let's try the same thing with a different word. Several times now I've noticed that you call yourself an addict.

Client: Well, I am. I'm just trying to be honest with myself.

Therapist: Are you ready? Let's go. ["Addict" is rapidly repeated aloud with the client.]

**Note to therapist: You do not need to spend much time processing this exercise with the participant, simply ask what their experience was like and clarify and questions or confusion.

Appendix E

Breath Counting

(develop ability to flexibly shift attention to breath)

1-2 inhale / 1-2-3-4-5 exhale (covert) = 1 (overt)

Count a predetermined number (shaping – start where client can have success on first try)

- Varying iterations: 9 then 5 then 8 then 2 etc.
- Alternate counts: Count odd or count even
- Practice (Establishing or maintaining) Stimulus control -- In the face of imagined challenges/provocations
- Notice you there noticing the counting

Appendix F

4 Square Breathing

Count a predetermined number (shaping – start where client can have success on first try)

Exhale all your air out.

Gently inhale through your nose for a count of 4 -- 1-2-3-4.

Hold at the top of the breath for a count of 4.

Gently exhale through mouth for a count of 4.

Pause at the bottom of the breath and hold for a count of 4.

Notice you there noticing the counting

4 second inhale in nose, hold for 4, 4 exhale out mouth, hold for 4.

Therapist: “That’s one”

Appendix G

54321 – 5 senses awareness

Notice 5 things you can see – find some things that may otherwise go unnoticed. Notice you there seeing them. You are greater that what you perceive.

Notice 4 things you can feel. Notice you there feeling them. You are greater than your feelings.

Notice 3 things you can hear. Notice you there noticing them. You are greater than your hearing.

Notice 2 things you can smell/taste. Notice you there smelling and tasting. You are greater than your olfactory and gustatory sensations.

Notice 1 positive thing you can say about yourself. Notice that is another aspect of you. You are greater than the sum of your sensations, thoughts, and feelings. You are where they all come together, you have room for them all, and can use your attention to bring anyone under the spotlight.

Appendix H

Objectifying and Normalizing Emotion

OBJECTIFY

Therapist: Imagine this feeling is an object ... As an object, what shape does it have? ... Is it liquid, solid, or gaseous? ... Is it moving or still? ... What color is it? ... Transparent or opaque? ... If you could touch the surface, what would it feel like? ... Wet or dry? ... Rough or smooth? ... Hot or cold? ... Soft or hard? (Pause 10 seconds.) Observe this object curiously, breathe into it, and open up around it ... You don't have to like it or want it. Just allow it ... and notice that you are bigger than this object, ... no matter how big it gets, it can never get bigger than you. (Pause 10 seconds.)

NORMALIZE

Therapist: This feeling tells you some valuable information ... It tells you that you're a normal human being with a heart ... it tells you that you care ... that there are things in life that matter to you ... And this is what humans feel when there's a gap between what we want and what we've got ... The bigger the gap, the bigger the feeling

Appendix I

Commitment Statement

What do you want to be saying to yourself 14 days from now?

Here is what I was about…

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

I'm done with that, 14 days from now I will be…

_____
_____
_____
_____
_____
_____
_____
_____

And in 30 days from now I will be…

_____
_____
_____
_____
_____
_____
_____

Appendix J

Demographic Questionnaire

1. Pt. Study ID #: _____

2. What is your age? _____

3. What is your gender? Male _____ Female _____ Other _____

4. What is your ethnicity? _____ Hispanic or Latino _____Not Hispanic or Latino

5. What is your race? (Mark the most appropriate):
   _____ Euro-American/White _____ African-American/Black
   _____ Hispanic-American/Latino(a) _____ Asian-American
   _____ American-Indian _____ Arab-American
   _____ Alaskan American _____ Multiracial
   _____ International/Non-US resident _____ Other

6. Are you employed? Full Time _____ Part Time _____ No _____

7. Marital Status (Mark the most appropriate):
   _____ Single _____ Married
   _____ Domestic Partnership _____ Separated
   _____ Widowed _____ Divorced/Annulled
   _____ Engaged _____ Other

8. Number of children for whom you are a legal guardian/parent:
   a. 0 1 2 3 4 5 6 7 8 9 +10

9. What is your preferred substance? _____

10. First time you used this substance. _____

Appendix K

Engaged Living Scale

Values are what you believe to be most important in your life, what makes it all worthwhile and what motivates you.

Please rate your agreement with each of the following statements	1 - completely disagree	2	3	4	5 - completely agree
I have values that give my life more meaning.					
I know what motivates me in life.					
I believe that I've found important values to live according to.					
I know exactly what I want to do with my life.					
I make choices based on my values, even if it is stressful.					
I know how I want to live my life.					
I know what I want to do with my life.					
I believe that my values are really reflected in my behavior.					
I believe that how I behave fits in with my personal wants and desires.					
My emotions don't hold me back from doing what's important to me.					

Appendix L

Acceptance and Commitment Daily Report

Please rate your coping and behavior over the last 24 hours

In the last 24 hours I was _____	0-- Not At All	1--Somewhat	2--Moderately	3--Mostly	4--Extremely
Able to make space for difficult feelings or sensations					
Able to keep in mind what is most important to me in life					
Able to step back from upsetting memories or unwanted thoughts					
Able to do what was most important for me to do right now					
Able to see myself as more than particular memories, thoughts, or feelings					
Able to live in the moment, be in the here and now					

Appendix M

Action and Acceptance Questionnaire – Substance Abuse

Question	Never True - Always True						
I can do things that are important to me even when I'm feeling urges to use substances.	1	2	3	4	5	6	7
My urges and cravings to use get in the way of my success.	1	2	3	4	5	6	7
If I have urges to use substances, then I am a substance abuser.	1	2	3	4	5	6	7
I try to achieve my sobriety goals, even if I am uncertain that I can.	1	2	3	4	5	6	7
I work towards things I value, even though at times I feel cravings to use substances.	1	2	3	4	5	6	7
I am not very aware of what occurs around me when I am thinking of using substances.	1	2	3	4	5	6	7
I can set a course in my life and stick to it, even if I have doubts about my sobriety.	1	2	3	4	5	6	7
Memories of my substance abuse history make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
If I get bored working toward my recovery, I can still take the steps necessary to succeed.	1	2	3	4	5	6	7
If I feel uncertain about my recovery, I can still make a choice and take action.	1	2	3	4	5	6	7
If I promised to do something, I'll do it, even if later I don't feel like it.	1	2	3	4	5	6	7
Having some worries about substance use will not prevent me from living a fulfilling life.	1	2	3	4	5	6	7
I would rather achieve my goals than avoid thoughts and feelings about substances.	1	2	3	4	5	6	7

Urges and cravings cause problems in my life.	1	2	3	4	5	6	7
I'm afraid of my positive feelings about a substance I've abused.	1	2	3	4	5	6	7
When I think of substance use my mind is often on "automatic pilot", not fully involved in what I am doing in the moment.	1	2	3	4	5	6	7
I worry about not being able to control my urges and cravings.	1	2	3	4	5	6	7
Feeling sad or anxious makes me want to use substance.	1	2	3	4	5	6	7

To score the AAQ-SA, you will add up your scores on each item. For the following items, you should "reverse score" them, so a 7 becomes a 1, a 6 becomes a 2, etc., before adding them to your total: 1, 4, 5, 7, 9, 10, 11, 12, 13. The higher your total score, the less psychological flexibility you currently have with regard to substance use. The lower your score, the more psychological flexibility you are demonstrating.

Appendix N

Consumer Satisfaction Questionnaire

Please help us improve our treatment by answering some questions about the services you have received. We are interested in your honest opinions, whether they are positive or negative. Please answer all of the questions. We also welcome your comments and suggestions. Thank you very much; we really appreciate your help.

Circle your answer:

1. How would you rate the quality of the treatment you have received?
   4 3 2 1
   Excellent Good Fair Poor
2. Did you get the kind of treatment you wanted?
   1 2 3 4
   No, definitely No, not really Yes, generally Yes, definitely
3. To what extent has the treatment met your needs?
   4 Almost all of my needs have been met
   3 Most of my needs have been met
   2 Only a few of my needs have been met
   1 None of my needs have been met
4. If a friend were in need of similar help, would you recommend this treatment to him or her?
   1 2 3 4
   No, definitely not No, I don't think so Yes, I think so Yes, definitely
5. How satisfied are you with the amount of help you have received?
   1 2 3 4
   Quite dissatisfied Mildly dissatisfied Mostly satisfied Very satisfied
6. Has the treatment you received helped you to deal more effectively with your problems?
   4 Yes, they helped a great deal
   3 Yes, they helped
   2 No, they really didn't help
   1 No, they seemed to make things worse
7. In an overall general sense, how satisfied are you with the treatment you have received?
   4 3 2 1
   Very satisfied Mostly satisfied Mildly dissatisfied Quite dissatisfied
8. If you were to seek help again, would you make use of this treatment again?
   1 2 3 4
   No, definitely not No, I don't think so Yes, I think so Yes, definitely

Appendix O

Multidimensional Psychological Flexibility Inventory

Since the START of detox	**Never TRUE**	**Rarely TRUE**	**Occasionally TRUE**	**Often TRUE**	**Very Often TRUE**	**Always TRUE**
I was receptive to observing unpleasant thoughts and feelings without interfering with them.	O	O	O	O	O	O
I tried to make peace with my negative thoughts and feelings rather than resisting them	O	O	O	O	O	O
I was attentive and aware of my emotions	O	O	O	O	O	O
I was in tune with my thoughts and feelings from moment to moment	O	O	O	O	O	O
Even when I felt hurt or upset, I tried to maintain a broader perspective	O	O	O	O	O	O
I carried myself through tough moments by seeing my life from a larger viewpoint	O	O	O	O	O	O
I was able to let negative feelings come and go without getting caught up in them	O	O	O	O	O	O
When I was upset, I was able to let those negative feelings pass through me without clinging to them	O	O	O	O	O	O
I was very in-touch with what is important to me and my life	O	O	O	O	O	O
I stuck to my deeper priorities in life	O	O	O	O	O	O

Even when I stumbled in my efforts, I didn't quit working toward what is important	O	O	O	O	O	O
Even when times got tough, I was still able to take steps toward what I value in life	O	O	O	O	O	O
When I had a bad memory, I tried to distract myself to make it go away	O	O	O	O	O	O
I tried to distract myself when I felt unpleasant emotions	O	O	O	O	O	O
I did most things on "automatic" with little awareness of what I was doing.	O	O	O	O	O	O
I did most things mindlessly without paying much attention.	O	O	O	O	O	O
I thought some of my emotions were bad or inappropriate and I shouldn't feel them	O	O	O	O	O	O
I criticized myself for having irrational or inappropriate emotions	O	O	O	O	O	O
Negative thoughts and feelings tended to stick with me for a long time.	O	O	O	O	O	O
Distressing thoughts tended to spin around in my mind like a broken record.	O	O	O	O	O	O
My priorities and values often fell by the wayside in my day to day life	O	O	O	O	O	O
When life got hectic, I often lost touch with the things I value	O	O	O	O	O	O
Negative feelings often trapped me in inaction	O	O	O	O	O	O
Negative feelings easily stalled out my plans	O	O	O	O	O	O

Appendix P

Short Alcohol Withdrawal Scale

Please rate the intensity of your withdrawal symptoms in the last 24 hours

Item	None	Mild	Moderate	Severe
Anxious				
Miserable				
Feeling confused				
Restless				
Memory problems				
Tremors or shakes				
Nausea				
Heart pounding				
Sleep disturbance				
Sweating				

Scoring:

Score 0: None

Score 1: Mild

Score 2: Moderate

Score 3: Severe

Interpretation:

Score <12: Mild Alcohol Withdrawal

Score 12+: Moderate to severe Alcohol Withdrawal

Appendix Q

Clinical Institute Withdrawal Assessment for Alcohol

Nausea/Vomiting - Rate on scale 0 - 7

0 - None
1 - Mild nausea with no vomiting
2
3
4 - Intermittent nausea
5
6

Tremors - have patient extend arms & spread fingers. Rate on scale 0 - 7.
0 - No tremor
1 - Not visible, but can be felt fingertip to fingertip
2
3
4 - Moderate, with patient's arms extended
5
6
7 - severe, even w/ arms not extended

Anxiety - Rate on scale 0 - 7
0 - no anxiety, patient at ease
1 - mildly anxious
2
3
4 - moderately anxious or guarded, so anxiety is inferred
5
6
7 - equivalent to acute panic states seen in severe delirium or acute schizophrenic reactions.

Agitation - Rate on scale 0 - 7
0 - normal activity
1 - somewhat normal activity
2
3
4 - moderately fidgety and restless
5
6
7 - paces back and forth, or constantly thrashes about

Paroxysmal Sweats - Rate on Scale 0 - 7.
0 - no sweats

1- barely perceptible sweating, palms moist
2
3
4 - beads of sweat obvious on forehead
5
6

Orientation and clouding of sensorium - Ask, "What day is this? Where are you? Who am I?" Rate scale 0 - 4

0 - Oriented
1 – cannot do serial additions or is uncertain about date

2 - disoriented to date by no more than 2 calendar days

3 - disoriented to date by more than 2 calendar days

Tactile disturbances - Ask, "Have you experienced any itching, pins & needles sensation, burning or numbness, or a feeling of bugs crawling on or under your skin?"
0 - none
1 - very mild itching, pins & needles, burning, or numbness
2 - mild itching, pins & needles, burning, or numbness
3 - moderate itching, pins & needles, burning, or numbness
4 - moderate hallucinations
5 - severe hallucinations
6 - extremely severe hallucinations
7 - continuous hallucinations

Auditory Disturbances - Ask, "Are you more aware of sounds around you? Are they harsh? Do they startle you? Do you hear anything that disturbs you or that you know isn't there?"
0 - not present
1 - Very mild harshness or ability to startle
2 - mild harshness or ability to startle
3 - moderate harshness or ability to startle
4 - moderate hallucinations
5 - severe hallucinations
6 - extremely severe hallucinations
7 - continuous hallucinations

Visual disturbances - Ask, "Does the light appear to be too bright? Is its color different than normal? Does it hurt your eyes? Are you seeing anything that disturbs you or that you know isn't there?"
0 - not present
1 - very mild sensitivity
2 - mild sensitivity
3 - moderate sensitivity
4 - moderate hallucinations
5 - severe hallucinations
6 - extremely severe hallucinations
7 - continuous hallucinations

Headache - Ask, "Does your head feel different than usual? Does it feel like there is a band around your head?" Do not rate dizziness or lightheadedness.

0 - not present
1 - very mild
2 - mild
3 - moderate
4 - moderately severe
5 - severe
6 - very severe
7 - extremely severe

Procedure:

1. Assess and rate each of the 10 criteria of the CIWA scale. Each criterion is rated on a scale from 0 to 7, except for "Orientation and clouding of sensorium" which is rated on scale 0 to 4. Add up the scores for all ten criteria. This is the total CIWA-Ar score for the patient at that time. Prophylactic medication should be started for any patient with a total CIWA-Ar score of 8 or greater (ie. start on withdrawal medication). If started on scheduled medication, additional PRN medication should be given for a total CIWA-Ar score of 15 or greater.
2. Document vitals and CIWA-Ar assessment on the Withdrawal Assessment Sheet. Document administration of PRN medications on the assessment sheet as well.
3. The CIWA-Ar scale is the most sensitive tool for assessment of the patient experiencing alcohol withdrawal. Nursing assessment is vitally important. Early intervention for CIWA-Ar score of 8 or greater provides the best means to prevent the progression of withdrawal.

Assessment Protocol a. Vitals, Assessment Now. b. If initial score □ 8 repeat q1h x 8 hrs, then if stable q2h x 8 hrs, then if stable q4h. c. If initial score < 8, assess q4h x 72 hrs. If score < 8 for 72 hrs, d/c assessment. If score □ 8 at any time, go to (b) above. d. If indicated, (see indications below) administer prn medications as ordered and record on MAR and below.													
	Date												
	Time												
	Pulse												
	RR												
	O2 sat												
	BP												
Assess and rate each of the following (CIWA-Ar Scale):		**Refer to reverse for detailed instructions in use of the CIWA-Ar scale.**											
Nausea/vomiting (0 - 7) 0 - none; 1 - mild nausea ,no vomiting; 4 - intermittent nausea; 7 - constant nausea , frequent dry heaves & vomiting.													
Tremors (0 - 7) 0 - no tremor; 1 - not visible but can be felt; 4 - moderate w/ arms extended; 7 - severe, even w/ arms not extended.													
Anxiety (0 - 7) 0 - none, at ease; 1 - mildly anxious; 4 - moderately anxious or guarded; 7 - equivalent to acute panic state													
Agitation (0 - 7) 0 - normal activity; 1 - somewhat normal activity; 4 - moderately fidgety/restless; 7 - paces or constantly thrashes about													
Paroxysmal Sweats (0 - 7) 0 - no sweats; 1 - barely perceptible sweating, palms moist; 4 - beads of sweat obvious on forehead; 7 - drenching sweat													
Orientation (0 - 4) 0 - oriented; 1 - uncertain about date; 2 - disoriented to date by no more than 2 days; 3 - disoriented to date by > 2 days; 4 - disoriented to place and / or person													
Tactile Disturbances (0 - 7) 0 - none; 1 - very mild itch, P&N, ,numbness; 2-mild itch, P&N, burning, numbness; 3 - moderate itch, P&N, burning ,numbness; 4 -													

moderate hallucinations; 5 - severe hallucinations; 6 – extremely severe hallucinations; 7 - continuous hallucinations												
Auditory Disturbances (0 - 7) 0 - not present; 1 - very mild harshness/ ability to startle; 2 - mild harshness, ability to startle; 3 - moderate harshness, ability to startle; 4 - moderate hallucinations; 5 severe hallucinations; 6 - extremely severe hallucinations; 7 - continuous.hallucinations												
Visual Disturbances (0 - 7) 0 - not present; 1 - very mild sensitivity; 2 - mild sensitivity; 3 - moderate sensitivity; 4 - moderate hallucinations; 5 - severe hallucinations; 6 - extremely severe hallucinations; 7 - continuous hallucinations												
Headache (0 - 7) 0 - not present; 1 - very mild; 2 - mild; 3 - moderate; 4 - moderately severe; 5 - severe; 6 - very severe; 7 - extremely severe												
Total CIWA-Ar score:												
PRN Med: (circle one) Diazepam Lorazepam	**Dose given (mg):**											
	Route:											
Time of PRN medication administration:												
Assessment of response (CIWA-Ar score 30-60 minutes after medication administered)												
RN Initials												

Scale for Scoring:

Total Score =

0 – 9: absent or minimal withdrawal 10 – 19: mild to moderate withdrawal more than 20: severe withdrawal

Indications for PRN medication:

a. Total CIWA-AR score 8 or higher if ordered PRN only (Symptom-triggered method).

b. Total CIWA-Ar score 15 or higher if on Scheduled medication. (Scheduled + prn method) Consider transfer to ICU for any of the following: Total score above 35, q1h assess. x more than 8hrs required, more than 4 mg/hr lorazepam x 3hr **or** 20 mg/hr diazepam x 3hr required, or resp. distress.

Patient Identification (Addressograph)

Appendix R

Alcohol Use Disorders Identification Test (AUDIT)

The Alcohol Use Disorders Identification Test: Interview Version

Read questions as written. Record answers carefully. Begin the AUDIT by saying

" Now I am going to ask you some questions about your use of alcoholic beverages during this past year." Explain what is meant by "alcoholic beverages" by using local examples of beer, wine, vodka, etc. Code answers in terms of "standard drinks" . Place the correct answer number in the box at the right.

1. How often do you have a drink containing alco- hol? (0) Never [Skip to Qs 9-10] (1) Monthly or less (2) 2 to 4 times a month (3) 2 to 3 times a week (4) 4 or more times a week	6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily
2. How many drinks containing alcohol do you have on a typical day when you are drinking? (0) 1 or 2 (1) 3 or 4 (2) 5 or 6 (3) 7, 8, or 9 (4) 10 or more	7. How often during the last year have you had a feeling of guilt or remorse after drinking? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily
3. How often do you have six or more drinks on one occasion? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily *Skip to Questions 9 and 10 if Total Score for Questions 2 and 3 = 0*	8. How often during the last year have you been unable to remember what happened the night before because you had been drinking? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily	9. Have you or someone else been injured as a result of your drinking? (0) No (2) Yes, but not in the last year (4) Yes, during the last year

5. How often during the last year have you failed to do what was normally expected from you because of drinking? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily	10. Has a relative or friend or a doctor or another health worker been concerned about your drink- ing or suggested you cut down? (0) No (2) Yes, but not in the last year (4) Yes, during the last year
	Record total of specific items here
If total is greater than recommended cut-off, consult User's Manual.	

The Alcohol Use Disorders Identification Test: Self-Report Version

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.
Place an X in one box that best describes your answer to each question.

Questions	**0**	**1**	**2**	**3**	**4**	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remem- ber what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10.Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

BEER or COOLER	
12 oz.  **~5% alcohol**	12 oz. = 1 16 oz. = 1.3 22 oz. = 2 40 oz. = 3.3
MALT LIQUOR	
8-9 oz. 	12 oz. = 1.5 16 oz. = 2 22 oz. = 2.5

	40 oz. = 4.5
~7% alcohol	
TABLE WINE	
5 oz.  **~12% alcohol**	a 750 mL (25 oz.) bottle = 5
80-proof SPIRITS (hard liquor)	
1.5 oz.	a mixed drink = 1 or more* a pint (16 oz.) = 11 a fifth (25 oz.) = 17 1.75 L (59 oz.) = 39
~40% alcohol	*Note: Depending on factors such as the type of spirits and the recipe, one mixed drink can contain from one to three or more standard drinks.

Appendix S

HSIRB Signed Approval Letter

WESTERN MICHIGAN UNIVERSITY

Human Subjects Institutional Review Board

Date: February 1, 2021

To: Scott Gaynor, Principal Investigator
Taylor Weststrate Student Investigator for dissertation

From: Barb Esch, Ph.D., Interim Vice-Chair

Re: WMU IRB Project Number 20-12-02

This letter will confirm that your research project titled "A Brief Acceptance and Commitment Therapy Protocol for Alcohol Withdrawal Symptoms: A Randomized Control Trial for Inpatient Detoxification Patients" has been **approved** under the **full** category of review by the Western Michigan University Institutional Review Board (IRB). The conditions and duration of this approval are specified in the policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved.
You must seek specific board approval for any changes to this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study"***). Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the IRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: **December 15, 2021**

251 W. Walwood Hall, Kalamazoo, MI 49008-5456
Phone: (269) 387-8293, Fax: (269) 387-8276