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Acceptance and Commitment Therapy: Application in a Real-World Alcohol and Other Drug Community Setting

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Ψ

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ABSTRACT

Treating addictive behaviours in alcohol and drug populations in real-world settings carries a range of issues: standardised treatment approaches have been criticised for their complexity and inaccessibility, their failure to retain clients over the course of therapy, and their inability to address the range of coexisting difficulties present. The development of transdiagnostic third wave therapies has recently emerged as an alternative to traditional approaches. One such therapeutic approach is Acceptance and Commitment Therapy (ACT). ACT has proven to be effective in the treatment of several mental illnesses such as anxiety disorders, mood disorders, psychotic symptoms, and personality disorders; it has been found to be effective with medical issues such as chronic pain, cancer, epilepsy, and weight loss; and, importantly, it has been applied across a variety of challenging conditions and evidence of its effectiveness in treatment of addictive behaviours is promising and growing. The current study aims to examine the effectiveness of a manualised ACT-based group treatment programme applied in a real-world Alcohol and Other Drug (AOD) community setting. It was hypothesised that ACT would lead to reductions in alcohol use, substance use and cravings, and common co-occurring symptomology such as anxiety and stress. It was also hypothesised that there would be an increase in mood management skills and mindfulness tendencies. Findings suggest ACT is a promising approach to treating AOD communities as it is well-regarded by clients and it elicits a reduction in several substance use behaviours; however, several outcomes were not statistically significant for many of the comparisons which is likely due to the study being underpowered. In addition, most coexisting problems reduced by post-group and improvements to mood management were evident. However, a rebound effect was found at the three-month follow-up in which the mood management skills reduced, and coexisting stress and anxiety increased. Mindfulness tendencies demonstrated an accumulative effect and showed significant increases by follow-up. These results, although not statistically significant, still provide support

for future development and implementation of transdiagnostic approaches such as ACT, particularly in AOD services that commonly deal with dual diagnosis.

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PROLOGUE

The story of how this research project came to be

Substance Use Disorders (SUDs) have always fascinated and interested me. Through my master's degree I sought to understand the neuro-psycho-pharmacological explanations of addiction via animal models in the laboratory. This provided the foundation of understanding the brain mechanisms in the development of addictions. While intensely fascinating, I felt my main calling was to work with people. So, I moved from the laboratory setting to the clinical face to face setting and began working as an AOD Counsellor. Throughout my work as an AOD counsellor the overwhelming presentation of people with coexisting mental health and addiction problems was starkly evident. I noted an obvious gap in treatments targeting the underlying processes evident in both presenting issues. I believe that the prevalence of comorbid problems will continue to rise, and treatment approaches need to be able to address both problems effectively and services (mental health and addiction) need to work together for the benefit of their clients.

Therefore, when I was accepted into the Wellington Doctoral Clinical Psychology Programme, I sought to further research addictions alongside coexisting mental health problems. However, there were no research supervisors who had experience or interest in SUDs in Wellington. I put the call out to several potential supervisors and asked fellow students if they knew of any staff members within the Massey University's three campuses that conducted addiction-based research. This proved to be fruitful as a fellow pre-first year doctoral student gave me the name of Dr Shane Harvey from the Palmerston North campus who was running group treatment programmes that targeted AOD problems, amongst other issues, in the NZ army. In December 2014 I made my first contact with Dr Shane Harvey to foreshadow my interest in SUDs and asked if he had any projects I could be a part of and if he was willing to

be my supervisor for my doctoral research. Although there was no specific project developed, Shane explained he had an agreement with the Palmerston North AOD Service to develop and run research into ACT group therapy or to evaluate the existing group therapy already established at the AOD service. Contact with the principal psychologist, Guy Breakwell, at the Palmerston North AOD service in early January 2015 consolidated the project and he became the co-supervisor for my doctoral research. Dr Simon Bennett joined the project as my Wellington Campus Supervisor. From this point, the basis for the current research was developed. The NZ Army Wellbeing Course written and facilitated by Dr Shane Harvey and Doug Dickson was used as a starting point to begin research and development of ACT group treatment programme for the AOD service.

The specific research design varied throughout the project. There was a preference for the ACT group treatment programme study to include active comparison groups as well as control groups. Through an established relationship with another District Health Board (DHB), an addiction service that was already running therapy groups was approached to gather data for a comparison group. Several meetings planning the implementation of the same measures across groups were had whereby the ACT group treatment programme was going to be compared to a CBT group for anxiety within the context of an addiction service. The comparison group ran twice in 2016. Comparative measures were collected. Unfortunately, due to attrition rates and missing assessment points (mainly for mid-group assessment phase), the data were not able to be utilised, leaving no comparison group design for the ACT group research project. Another group that had originally planned to be compared to the ACT group was the Mindfulness Based Relapse Prevention Group run by the Palmerston North AOD Service. However, due to unforeseen circumstances the Mindfulness Based Relapse Prevention Group could not be continued in 2016, leaving no viable alternatives for comparison groups. From an ethical perspective the AOD service and researchers were uncomfortable with the

addition of waitlist or control groups that would result in clients not being able to access treatment as soon as possible. Therefore, the current research design was revised and resulted in a repeated measure design across four assessment phases. This was considered the best and most efficient way to present the effectiveness of the ACT group treatment programme with participants from the AOD service in Palmerston North, New Zealand.

To add to the current study's publishable quality an additional study that would complement the ACT group treatment programme was discussed. At the beginning of this journey a meta-analysis investigating ACT applied to SUDs had not been conducted and was initially planned as study one. The ACT group manual development and delivery and analysis following as the main study. However, at the end of 2015 Lee, An, Levin, and Twohig published their preliminary meta-analysis of ACT for SUDs (Lee et al., 2015). While there were limitations and future directions that the current research could have continued, this additional study was deemed as unfeasible within the short timeframe of two years to complete the doctoral research.

Thus, all efforts were used to research and develop a manual for ACT-based group treatment applied to SUDs. The effects of addiction are wide reaching; people from all cultures and backgrounds are not immune to developing addiction. Creating a group treatment programme that targets not only their addiction but also fosters skills that could help them with their related mental health concerns proved to be a very rewarding and worthwhile project that continues to reap benefits for the community. The success and popularity of the ACT group treatment programme developed from the current study has resulted in clients and staff at the AOD service continuing to implement the intervention outside of this research. I would anticipate that this is the next step towards such integrative and transdiagnostic approaches becoming the standardised treatment for coexisting problems in New Zealand.

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LIST OF ABBREVIATIONS

ACBS	Association for Contextual Behavioral Science
ACC	Accident Compensation Corporation
ACT	Acceptance and Commitment Therapy
AOD	Alcohol and Other Drug
APA	American Psychiatric Association
AUDIT-C	Alcohol Use Disorders Identification Test-Consumption
BLOCS	Brief Locus of Control Scale
BPD	Borderline Personality Disorder
CBS	Contextual Behavioural Science
CBT	Cognitive Behavioural Therapy
DBT	Dialectical Behavioural Therapy
DHB	District Health Board
DNA	Did Not Attend
DSM	Diagnostic and Statistical Manual of Mental Disorders
DT	Distress Tolerance
FAP	Functional Analytic Psychotherapy
GAD	Generalised Anxiety Disorder
GAD-7	Brief General Anxiety Disorder Screen
GBD	Global Burden of Disease
GRS	Group Rating Scales
GT	Group Therapy
ITSF	Intensive 12 Step Facilitation
MDD	Major Depressive Disorder
MMT	Methadone Maintenance Treatment
NRT	Nicotine Replacement Therapy
NZ	New Zealand
OCD	Obsessive Compulsive Disorder
PSS-10	Perceived Stress Scale-10
PTSD	Post-Traumatic Stress Disorder
RCT	Randomised Control Trial
RFT	Relational Frame Theory

RPI	Resistance to Peer Influence
SAD	Social Anxiety Disorder
SD	Standard Deviation
SEM	Standard Error of the Mean
SRS	Session Rating Scales
ST	Standard Treatment
SUDs	Substance Use Disorders
TAU	Treatment As Usual
TMMS	Trait Meta-Mood Scale
UK	United Kingdom
USA	United States of America
WHO	World Health Organisation
WHO-ASSIST V3.0	World Health Organisation-Alcohol, Smoking, Substance Involvement Screening Test Version 3.0
	Substance Labels **ALC Section B –** Alcohol Use Section B
	TOB – Tobacco
	CAN – Cannabis
	AMPH – Amphetamine
	SED – Sedatives
	OPI – Opioids
YLDs	Years Lived with Disability
YYLs	Years of Life Lost to Premature Mortality

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CHAPTER ONE

LITERATURE REVIEW

Group facilitator: "What has your substance use (addiction) cost you in your life?"

Group participants: "my friends and family…I lost them all. I became so unreliable and unpleasant to be around" … "I 'can't work' because substances are 'more important' … "I stopped having a social life… Too embarrassed to drink in public" … "My children hated seeing me drink, worried about my actions"

– Anonymised quotes, ACT Group

For many, addiction to substances, including alcohol, begins as a way to manage emotions. Substances can be used to enhance positive feelings such as euphoria or avoid negative emotions such as stress. As these quotes illustrate, the pursuit to control emotions is costly. These people report pursuing substances to the extent that their friends and family were abandoned, and they became unreliable and unpleasant to their loved ones, yet reliable to the substance. They struggled to focus on work yet could focus on where and when they will source their next drink or use. Undesirable and uncomfortable emotions and experiences were strongly avoided, and these were actively removed from their own thoughts, feelings/emotions, and bodily sensations (which also includes withdrawal symptoms from the substances). In this pursuit of pleasurable experiences, or in many cases, the pursuit of avoiding discomfort, the initial relief sought from the substance often led to the violation of personal values and actions.

Many therapeutic approaches have been developed to treat substance addiction, but this remains one of the hardest disorders to treat. Treatment effectiveness is variable, with Alcohol and Other Drug (AOD) problems and high relapse rates and comorbidity a service reality (Drake, Mueser, Brunette, & McHugo, 2004; Dutra, Stathopoulou, Basden, Leyro,

Powers, & Otto, 2008; Prendergast, Podus, Finney, Greenwell, & Roll, 2006). Therefore, transdiagnostic therapies that aim to target common underlying psychological processes are called for in attempts to improve treatment efficacy with oft-complex cases comorbid with other disorders. A common theme amongst emerging transdiagnostic therapies is the emphasis on value violation and experiential avoidance as contributory underlying mechanisms for a range of psychopathology, including substance use disorders (SUDs), anxiety disorders, and mood disorders (Hayes, Strosahl, Luoma, Smith, & Wilson, 2004). This is because a common coping approach thought to underlie all these coexisting conditions is an individual attempting to control aversive emotions and experiences, with self-medication seen as one such control strategy. This thesis explores the use of an emerging therapy, Acceptance and Commitment Therapy (ACT), with people who struggle with alcohol and other drugs as well as comorbid problems.

ACT is a transdiagnostic therapeutic approach that at a fundamental level most psychological disorders are the product of experiential avoidance or fusion to unhelpful thoughts. Transdiagnostic therapies target core underlying psychological processes that precipitate and perpetuate many mental health disorders, including SUDs. Therefore, ACT is positioned to effectively target SUDs where common triggers such as anxiety and mood problems can also be simultaneously treated. Hence, this literature review provides the ground work for why such coexisting problems with SUDs warrant investigation and why ACT is an important therapy to consider when addressing alcohol and other drug (AOD) problems comorbid with mental health problems. To do this, the current chapter is divided into four sections. Section one presents the background information on the prevalence and problems, including coexisting mental health conditions, associated with SUDs in New Zealand (NZ) and overseas. Section two provides an overview of the history of development of ACT and a summary of the research on ACT for various health conditions. Section three dissects the

literature on ACT specifically applied to addictions (SUDs), and lastly, section four outlines the rationale for the current study.

SECTION ONE: Defining the Problem – A Global and Local Profile of Substance Use Disorders

Definitions and Terminology

The word addiction originates from the root word "*addico*", a Latin term used to describe the action or occurrence of "giving over", where one feels devoted to something (Alexander & Schweighofer, 1988, p. 151). While there have been many debates and various definitions of addiction over several decades, even centuries, addiction, in the context of using substances such as alcohol and drugs has been depicted since the early 19th century. This development saw the inclusion of descriptive and diagnostic terms such as substance dependence, substance abuse, tolerance, and withdrawal symptoms (Alexander & Schweighofer, 1988; Sussman & Sussman, 2011). Addiction in the Diagnostic and Statistical Manual of Mental Disorders, from DSM I to DSM 5, has seen various changes to terminology, where the word addiction is rarely used. For the purposes of the current study, an important overview outlining the changes to the diagnostic criteria for a substance use disorder is briefly presented.

The relatively recent release of the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) (American Psychiatric Association (APA), 2013) has seen changes in the identification of substance-related and addictive disorders. Instead of distinguishing between abuse and dependence as required in the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (DSM-IV-TR) (APA, 2006), the DSM-5 now uses the overarching term substance use disorder (SUD) on a continuum from mild to severe (APA, 2013). The DSM-5 presents ten different classes of substances: alcohol, caffeine, cannabis, hallucinogens, inhalants, opioids, anxiolytics, stimulants, tobacco, and other (or unknown) substances. The specific substance, or the primary substance, one uses is used to label the substance disorder, for example, alcohol use disorder or opioid use disorder.

Furthermore, each substance can be diagnosed as substance use disorders (SUDs) or substance-induced disorders (SIDs). Substance-induced refers to intoxication, withdrawal, and other substance or medication induced mental disorders (i.e. substance-induced psychosis). The term addiction has been removed and the addition of drug cravings and elimination of legal problems has been implemented produce to the same overall criteria for each substance (APA, 2013). Table 1 presents the overarching criteria across all substance classifications for a diagnosis of a SUD and is adapted from the DSM-5 (APA, 2013).

Table 1.

Summary of DSM-5 Diagnostic Criteria for Substance Use Disorders.

	Impaired control
1:	The person takes substance in larger amounts or over a longer period than was originally intended.
2:	The person may express a persistent desire to cut down or regulate substance use and may report multiple unsuccessful efforts to decrease or discontinue use.
3:	The person may spend a great deal of time obtaining the substance, using the substance, recovering from its effects. (In severe cases daily activities revolve around the substance).
4:	Craving is manifested by an intense desire or urge for the drug that may occur at any time but is more likely when in an environment where the drug was previously obtained or used. (Classical conditioning, activation of specific reward structures in the brain, can be a sign of impending relapse, best to query urges/cravings).
	Social impairment
5:	Recurrent substance use may result in a failure to fulfil major role obligations at work, school, or home.
6:	The person may continue substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance.
7:	Important social, occupational, or recreational activities may be given up or reduced because of substance use. (Person may withdraw from family activities or hobbies in order to use the substance).
	Risky use
8:	Recurrent substance use in situations in which it is physically hazardous.
9:	The person may continue to use the substance despite knowing persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.
	Pharmacological
10:	Tolerance is signalled by requiring a markedly increased dose of the substance to achieve the desired effect or a markedly reduced effect when the usual dose is consumed.
11:	Withdrawal syndrome that occurs when blood or tissue concentration of a substance decline in an individual who had maintained prolonged heavy use of the substance. Each substance has its own set of withdrawal features.

Note: The criteria above is generalised to fit all substances rather than specific substances that the DSM-5 outlines such as Alcohol Use Disorder (pg. 491, APA, 2013).

The DSM-5 severity continuum identifies a mild SUD by the presence of at least two or three symptoms, whereas four or five symptoms are needed for a moderate diagnosis. A severe SUD is endorsed by the presence of six or more criteria as listed above (APA, 2013).

Global Prevalence and Costs of Substance Use Disorders

The worldwide costs of SUDs are not limited to the costs of health care and law enforcement to social harm. Social harm includes the social, economic, psychological, and environmental effects SUDs have on society. In 2008 the World Health Organisation (WHO) reported 125 million people worldwide suffer from some form of alcohol use disorder. Of those affected by alcohol use disorders 40.5% were diagnosed as moderate or severe. The global prevalence[1] rate for a drug use disorder was 11.8%. Worldwide reports among SUDs found that men were nearly seven times more likely than females to have an alcohol or drug use disorder (World Health Organization, 2008). The Global Burden of Diseases (GBD), Injuries, and Risk Factors study conducted in 2010 reported an increase of 37.6% between 1990 (the first GBD study conducted) and 2010 for the burden due to mental health disorders and SUDs, in combination increases in alcohol, opioids, and cocaine use were also identified during this period (Whiteford et al., 2013). These statistics were further broken down, in which mental health disorders and SUDs (20 types included) accounted for 189.9 million disability-adjusted life years (DALYS) and were the leading cause of years lived with disability (YLDs) (Whiteford et al., 2013).

Specific substances, excluding alcohol and tobacco, that had the highest burden worldwide were opioids and amphetamines, with the United States of America (USA), United Kingdom (UK), Russia, and Australia reported the highest rates of burden due to overall substance use (Degenhardt et al., 2013). Years of life lost to premature mortality (YLLs) due to SUDs accounted for 81.1% of the 8.6 million reported for both mental health disorders and SUDs (Whiteford et al., 2013). Further data from the GBD study analysed by Charlson, Baxter, Due, Degenhardt, Whiteford, and Vos (2015) reported 110, 000 deaths were estimated to be directly attributed to alcohol as 110 000, with alcohol as the underlying cause of death

[1] Prevalence is defined as an epidemiological measure of how commonly a disease or condition occurs in a population at a particular point in time. It is often reported as number of cases per 100 000 of the population (Le & Boen, 1995)

significantly increasing to over 5 million for the year of 2010. Illicit drug use related deaths were estimated at over 700 000 in which most deaths were due specifically to opioids (Charlson et al., 2015). This summary of the worldwide impact of SUDs provides brief detail of the extent and costs of such problems. Although the data presented here reflect mostly health related costs and premature deaths due to substance use, they do not encompass the costs of the justice system, which further presents a strain on countries and communities globally. Continued research into prevention and interventions for such relevant and significant problems is clearly warranted.

Local Prevalence and Costs of Substance Use Disorders

Global findings were reflected in the 2006 NZ Mental Health Survey (Te Rau Hinengaro) where the scale of the impact of mental health disorders and SUDs was evident. The survey reported that 39.5% of the NZ population met criteria for a DSM-IV-TR disorder (including SUDs) with a lifetime prevalence of 46.6% and a 12-month prevalence of 20.7%. The lifetime prevalence for any SUD was 12.3% and the 12-month prevalence was 3.5%. The same global sex differences were reported in NZ findings, where males had higher prevalence rates for SUDs compared to females (5.0% and 2.2% respectively, see Table 2). Further to this, 22% of those suffering from SUDs were young (16-24 years), Māori men. These statistics shed light on who, in NZ, is experiencing SUDs, and highlights the ongoing SUD issue for NZ, which in turn impacts on the types of prevention and interventions provided and tailored towards people with SUDs in NZ (Oakley-Browne, Wells, Scott, & McGee, 2006; Wells, Oakley-Browne, Scott, McGee, Baxter, & Kokaua, 2006). These figures alone provide a reason to conduct research that addresses these problems that are so commonly seen in NZ, and to develop a treatment programme that can help men and women from all walks of life.

Table 2.

Lifetime Prevalence of Substance Use Disorders among Adults in New Zealand.

Substance use disorders	Prevalence (95% CI)	Number of adults (approx.)
Alcohol abuse		
Male	16.3 (15.1-17.6)	518 565
Female	6.9 (6.2-7.7)	219 546
Alcohol dependence		
Male	5.6 (2.9-6.4)	178 157
Female	2.6 (2.2-3.0)	82 727
Drug abuse		
Male	7.3 (6.5-8.2)	232 274
Female	3.5 (3.0-4.0)	111 364
Drug dependence		
Male	2.9 (2.4-3.5)	92 273
Female	1.5 (1.2-1.9)	47 727
Any substance use disorder		
Male	17.3 (16.1-18.6)	550 457
Female	7.7 (6.9-8.5)	245 001

Note: Data taken from the 2006 New Zealand Health Survey collected between 2003-2004 with 12 992 completed interview utilising DSM-IV-TR criteria for substance use disorders (73.3% response rate) (Oakley-Browne et al., 2006).

Another poignant issue, demonstrated in the global and local data, is the rate of comorbidity of mental health problems and SUDs. The prevalence of coexisting problems further supports the development of treatment programmes that address multiple problems many New Zealanders struggle with simultaneously. The NZ Mental Health Survey identified 37% of the population experiencing two or more disorders, mental health and physical health (12-month prevalence). People who reported lower education levels and lower socioeconomical status were also found to have higher prevalence rates for mental health problems. Out of the 12.3% of people diagnosed with a SUD, 40% also suffered from anxiety disorders and 29% suffered from any mood disorder. Although mood disorders were reported as the most disabling, SUDs was highlighted as one of the most concerns to safety, given that SUDs and comorbid mental and physical conditions are associated with increased rates of suicidal ideation, suicide planning, and suicide attempts (Oakley-Browne et al., 2006; Wells et al., 2006).

The profile for specific substances, amphetamines and cannabis, in NZ has also been investigated as they are one of the most problematic substances (other than alcohol and tobacco) that New Zealanders struggle with. The Ministry of Health investigation into amphetamine use found that 0.2% of those aged between 16 and 64 years old reported using amphetamine monthly, finding no significant sex differences. This figure increased to 0.9% prevalence of amphetamine use over a 12-month period, equating to approximately 25 000 New Zealanders reporting use of this drug (Ministry of Health, 2013). Māori were four times more likely to report using amphetamines, and the average age of use was 29 years old. However, underreporting was a key consideration in this investigation; therefore, a careful interpretation of results is needed. A similar investigation into cannabis use in NZ reported that cannabis is the most commonly used illicit substance with a 12-month prevalence of 11% of the population and a lifetime prevalence of 42%. Again, Māori males were more likely to report problems with cannabis (Ministry of Health, 2015). Taking all the information provided from nationwide studies of the impact of mental health and SUDs, the statistics provide an overview of the demographics of individuals struggling with these co-occurring problems and can be utilised as key considerations when developing a treatment programme that will be meaningful for an AOD population.

In line with global findings, SUDs in NZ are considered a significant economic burden on society due to rising health care costs, lost outputs (unemployment and employment problems), justice sector demands (crime, prison, and other legal problems), and road crashes. The Ministry of Health and the Accident Compensation Corporation (ACC) found approximately $661 million costs for joint alcohol and drug use in NZ over a 12-month period (2005-2006). The report claimed that 50% of these costs could be avoided. One way costs of SUDs could be avoided was through the use of interventions that targeted supply and demand of the substances as well as interventions that aim to reduce harmful use of substances (Slack,

Nana, Webster, Stokes, & Wu, 2009). In terms of specific costs to NZ, the Ministry of Health (2015) report specifically outlined how high rates of cannabis use impacted on learning and productivity. This impact resulted in reductions in educational achievements and employment opportunities, and an increase in the negative effects of use on mental health, prevalent legal problems involving the possession, use, cultivation, manufacture and supply of cannabis, and problems with driving under the influence (Ministry of Health, 2015). This issue further highlights the necessity of a therapeutic approach that is cost effective and time efficient and that can be applied to a variety of people struggling with a range of disorders.

The New Zealand Drug Foundation (2018) reported that 44% of New Zealanders at some point in their life will use an illicit substance and 93% will try alcohol. Of those who use substances, only 45,000 people are estimated to seek help to address their substance use issues each year, which is thought to represent approximately a third of people who have a SUD. The Drug Foundation (2018) also provides updated estimates of specific substances such as cannabis and methamphetamine. Accordingly, Cannabis is considered the most common illicit substance used in NZ and causing the most harm to younger users. Over the last five years methamphetamine use has been stable, although specific communities may sustain more harm from methamphetamine use compared to other substances. Illicit substance use reportedly costs New Zealand approximately $1.8 billion per year, the majority of costs stemming from law enforcement. Recent marketing initiatives involve addressing alcohol and other drug use in NZ, with television and other media campaigns targeting alcohol free pregnancies, alcohol free teenagers, and promoting harm reduction strategies, with many resources incorporating Māori and Pacific Island needs. The focus continues to be on prevention and education, harm reduction, intervention, and community support, all with the intended purpose of decreasing the impact of SUDs on NZ as a whole (Health Promotion Agency, 2018).

One last consideration in the profile of SUDs includes a specific type of barrier to accessing treatment services for people with SUDs. That is self-stigma, when a person feels marginalised and does not approach services for treatment. At a societal level, stigma perpetuates social alienation and can negatively impact a range of different areas in a person's life such as decreased job opportunities, housing, and social relationships. At a treatment service level, stigma has a significant relationship with poor physical and mental health, increased risky behaviour, increased dropout rates in treatment setting (non-completers of treatment) and delayed recovery and poor reintegration (Luoma, Kohlenberg, Hayes, & Fletcher, 2012). Therefore, a treatment programme that is sensitive to this issue may produce higher therapy retention rates and promote a prompt recovery.

It is clear from both global and local reports that the costs and prevalence of SUDs are relevant concerns for modern society. This suggests a strong rationale to further investigate potential treatments that may address the problem of SUDs locally and globally. An individual with a SUD often experiences mental health issues co-morbidly, which makes the treatment of these coexisting problems a complicated and complex challenge to those assigned to treat them. Not only does the individual suffer from the chronic enduring nature of these problems, but the families and communities surrounding the individual are also affected. These rippling effects further support the rationale for investigating and examining potential treatments for SUDs. A new therapy approach that has gained traction over the recent decades is Acceptance and Commitment Therapy (ACT). The evidence base for this therapy is growing and found to be effective for a wide range of problems including mental health issues and various other health conditions, as well as the self-stigma barrier commonly observed with SUDs. The following section will introduce ACT and briefly outline its theoretical foundations in Relational Frame Theory (RFT) as well as provide an overview of the current empirical stance of ACT.

SECTION TWO: Acceptance and Commitment Therapy Origins

This section provides an overview of the history of development of ACT and presents the evidence for ACT applied to various mental health and physical conditions. A comprehensive review of Contextual Behavioural Science (CBS) and Relational Frame Theory (RFT) are beyond the scope of this thesis; however, a brief overview of the philosophical and scientific approach is presented to help the reader to understand and acknowledge the theoretical underpinnings of ACT and how it came to be what it is today.

Acceptance and Commitment Therapy Foundations

The fundamental frameworks for both RFT and ACT are rooted in CBS and were first developed in the early 1980s by Steven Hayes and associates. CBS is a broad approach to research and practical development that is multi-dimensional (in that, it considers social, neurological, and behavioural factors) and multi-methodological (in that, several types of methods are implemented to analyse and understand human behaviour and human suffering in relation to language and cognition). It incorporates applied behaviour analysis, cognitive behaviour therapy, and evolutionary science to reach the underlying goal of predicting and influencing behaviour (Hayes, Strosahl, & Wilson, 1999; Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013; Vilardaga, Hayes, & Schelin, 2007). The term *functional contextualism*, according to CBS, is the process of predicting and influencing behaviour that is based on interactions between psychological events and context (both historical, that focuses on past learning, and situational, that focuses on antecedents and consequence relationships and verbal rules) that gives that particular behaviour purpose. The functional aspect refers to what function the behaviour is serving in a particular context and how it works for the individual (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Functional contextualism and CBS are considered the philosophical science behind RFT and ACT, in

which the focus is on a basic analysis of verbal behaviour and its impact on psychological wellbeing (Hayes, Strosahl, & Wilson, 2012).

Relational Frame Theory. RFT is a psychological theory of language and cognition that builds upon behavioural theory by B.F. Skinner, in which he states that verbal behaviour is learnt through gradual shaping by successive approximation and through rule-governed behaviour as a mode of learning and relating (Skinner, 1957 as cited in Hayes et al., 1999). The first ACT training was presented in 1982 as a functional contextual treatment approach that detoured from traditional behavioural therapy and cognitive therapy (first wave and second wave therapies, respectively). Cognitive behavioural therapy (CBT) was seen as the original third wave therapy (Hayes, 2016). Nevertheless, research utilising ACT was not pursued until the early 2000s as the founders of ACT wanted to first establish a thorough understanding of the theoretical details (Hayes, Strosahl, & Wilson, 2011; Zettle, 2005; Zettle & Hayes, 1986). In this sense, ACT is considered part of the third wave therapy family (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Hayes, 2016; Öst, 2008). Throughout the 1990s, Hayes and associates continued to publish articles promoting the development and understanding of RFT and ACT, before delving into practical applications of the theory and therapy in order to provide a concrete backdrop to the scientific mechanisms first described in RFT and ACT (Biglan & Hayes, 1996; Hayes, Hayes, & Reese, 1988; Hayes & Wilson, 1993; Hayes et al., 1996).

Hayes, Barnes-Holmes, and Roche (2001) stipulate that language is the key to understanding human behaviour, and that this is achieved through analysis of verbal behaviour and how verbal rules guide behaviour. There are three forms of rule-governed (also referred to as relational networks) behaviour called *pliance, tracking,* and *augmenting* that are based on verbal understanding. *Pliance* is a verbal rule learned from previous examples of socially mediated consequences between two or more people. For example, a person obeys

the speed limits to avoid a speeding ticket. *Tracking* is the correspondence of natural consequences and the rule. Natural consequences can be described as the resulting consequence of behaviour in a particular situation. A simplified example of tracking would be following the verbal directions to get to the library where the rule and location of the library correspond. Lastly, *augmenting* is a term used to describe the changes to the function of a consequence that are contingent on following rules. Augmenting is used to establish the control of abstract, imagined, or never previously experienced consequences through reinforcers and punishers. There are two subtypes of augmentals, *motivative augmentals* and *formative augmentals* (Hayes et al., 2001; Hayes et al., 1999). *Motivative augmentals* are rules that can increase a person's motivation to obtain the suggested consequence that has been produced by a verbal rule. For example, a person suggesting chocolate would be a nice treat today would increase the other person's motivation to obtain the chocolate regardless of availability to the chocolate. *Formative augmentals* is a term referred to relational networks that use new events as having an important consequence (Hayes et al., 2001; Hayes et al., 1999). An example of a formative augmental is if a person is told vouchers can be used at the supermarket, the vouchers now serve as a reinforcer. Therefore, the new event (receiving a voucher) now has an important consequence (can use at supermarket). These concepts explain how humans learn behaviour and the relationship language has with people's behaviours. RFT refers to people learning to respond relationally to various stimulus events (Hayes et al., 2001).

The theory of learned behaviour originally proposed by Skinner (Skinner, 1966 as cited in Hayes et al., 2001) described how behaviour is learned through the relational frames. There are three main properties of relating that include *mutual entailment, combinatorial entailment*, and *transformation of stimulus functions*. *Mutual entailment* refers to when individuals learn that A relates in a particular way to B in a particular context, which then

additionally means some relation correspondingly exists between B and A in that same context. These relations (between A and B) show *combinatorial entailment*, meaning that if in a particular context A relates to B, and B relates to C, then some type of mutual relation between A and C in this particular context must exist. The relations between A, B, and C can transform the functions *(transformation of stimulus functions)* of another stimulus without additional learning if situated amongst related stimuli. As such, these derived stimulus relations are learned without explicit training and are brought under contextual control by the particular context in which they are experienced (Hayes et al., 2001; Barnes-Holmes, Barnes-Holmes, & Cullinan, 2000; Hayes & Wilson, 1996). Once verbal relations are formed they cannot be eliminated from a person's repertoire; you can add new information to them but these relations will not be completely removed (Hayes et al., 1999). From these relational networks, a verbal event can be said to have psychological functions because it participates in a relational frame. Human language is based on relational frames, particularly derived stimulus relations, in which the weakening of the literal underpinnings of verbal events requires a weakening of relational frames in specific contexts. For example, a person who is told they are not good enough would take the literal meaning of the language and relate it to their overall worth which would have a psychological function in this context. Therefore, the view that language is at the core of many psychological disorders gives rise to therapies that work on weakening these relational frames, and one such therapy that developed and aims to do this is ACT (Hayes et al., 2001; Hayes, 2016)

Experiential Avoidance. It is from the perspective of how language and cognition influence human suffering that RFT can be understood in the context of psychopathology. A person unwilling to experience or accept their private events (that is, emotions, thoughts, memories, or bodily sensations) is said to engage in experiential avoidance. Experiential avoidance encompasses both emotional avoidance and cognitive avoidance and is a process in

which an individual takes actions to avoid or alter the frequency of these unwanted experiences (Hayes et al., 1996). Suppression and situational escape or avoidance are considered the main forms of experiential avoidance (Hayes & Strosahl, 2004). These strategies to control or suppress and escape or avoid often lead to detrimental effects on an individual's overall wellbeing (Hayes et al., 1999; Hayes et al., 2004). The concept of experiential avoidance is not exclusive to RFT or ACT and is an idea important to most modern behavioural therapies, for example, Dialectical Behavioural Therapy (DBT) (Linehan, 1993; 1994, as cited in Hayes et al., 1999). Through the avoidance of these internal states there is short-term relief from discomfort and thus the avoidance behaviour is maintained through negative reinforcement, so the individual is likely to become trapped in a perpetuating cycle of avoidance that typically leads to poorer psychological wellbeing (Hayes et al., 1996).

***Control is the problem, not the solution*.** By attempting to suppress or control unwanted experiences a paradoxical effect occurs, in that, suppression often leads to an increase in experiencing whatever is attempting to be controlled (Cioffi & Holloway, 1993; Sharp, Wilson, & Schulenberg, 2004; Wegner, Schneider, Carter, & White, 1987, as cited in Hayes et al., 1999). Control and suppression techniques are frequently programmed into people, typically in the Westernised world, whereby people are told that they ought to be able to control any unwanted or uncomfortable private event. People can become stuck or rigid in their avoidance strategies and become fused with beliefs and evaluations of unwanted private experiences thus leading to an overall lower quality of life. This pattern is often observed in those who suffer from mental illness and considered by many as behaviours that are "unworkable" in the long term. This unworkable way of living is presented in the ACT literature as the FEAR acronym which stands for Fusion, Evaluation, Avoidance, and Reason giving (Hayes et al., 1999). Fusion is the process whereby a person becomes "fused"

(excessively attached) to their content of unwanted private events. This process typically draws attention away from the present moment and is often experienced as thoughts or emotions from the past or about the future. Evaluation is the judgements and appraisals of self, others, and the world, whereby people view these evaluations as “good or bad”. Avoidance can be viewed as the same experiential avoidance as outlined previously. And lastly, reason giving is when a person attempts to justify or rationalise the continued use of an unworkable strategy and as a result, lessens their ability to address the consequences of said unworkable strategy in their immediate environment. This algorithm leads to further psychological rigidity and limited quality of life (Hayes & Wilson, 1994; Hayes et al., 1996; Hayes et al., 2004).

Creative hopelessness is a concept that is used therapeutically when a person has the belief that there is a need to be in control of their emotions and other private events to have a good life. It is typically used when a person may be resisting or opposing the core concept of acceptance. This aspect of ACT centres on the idea of workability, which is whether the strategies a person is currently using is helping them build a good life in the long-term. In this context a sense of hopelessness is created in the person’s ability to control private events, which in theory and practice, angles the person towards the realisation that one cannot control internal unwanted experiences. If a person believes they can use control strategies then the ACT practitioner teaches the person that these strategies are only successful short-term and are often unworkable (Hayes et al., 2012; Hayes & Wilson, 1994; Ruiz, 2010). Essential questions asked to create this particular hopelessness includes “what have you tried?” and “how has that worked?” and “what has that cost you?” and “what is that life for you” and “are you open to trying something different?” Once a sense of creative hopelessness has been established then a new alternative way of relating to, rather than controlling, private events can be offered, which in this case, is the novel approach of ACT (Hayes & Strosahl, 2004).

A Definition of Acceptance and Commitment Therapy

Putting the previous concepts together (functional contextualism, RFT, cognitive fusion, and experiential avoidance) to offer an encompassing definition of the proposed therapy for the current research is a quote from Hayes and Strosahl (2004):

"ACT is a functional contextual intervention approach based on Relational Frame Theory, which views human suffering as originating in psychological inflexibility fostered by cognitive fusion and experiential avoidance. In the context of a therapeutic relationship, ACT brings direct contingencies and indirect verbal processes to bear on the experiential establishment of greater psychological flexibility through acceptance, defusion, establishment of a transcendent sense of self, being present, values, and building expanding patterns of committed action linked to those values." (p. 29)

One of the goals of therapy is to rework the FEAR acronym (outlined above) towards the ACT acronym (which stands for Accept, Choose, and Take Action[2]). Accept is often seen as the functional and workable strategy that involves accepting those unwanted private events (thoughts, feelings/emotions, memories, and sensations) as well as external events and view them as being unable to be controlled and rather let them be as they are without judgement. Choose is when an individual chooses what is important to them by focusing on values that would give the person meaningful life direction. Lastly, Take Action is when a person commits to behaviours and actions that are in line with their identified values. If a person can harness these skills then they are seen to have psychological flexibility which, briefly put, means the ability to consciously live in the present moment while achieving valued life goals (Hayes et al., 2004). Hayes, Strosahl, and Wilson (2012) state that "the ultimate goal of ACT is to bring verbal cognitive processes under better contextual control and to have the client

[2]The use of the acronym ACT for Accept, Choose, Take Action is not exclusive to the authors and founders of Acceptance and Commitment Therapy as stated in Hayes, Strosahl, & Wilson (1999); however, they utilise this acronym to simply summarise the main goals of Acceptance and Commitment Therapy.

spend more time in contact with the positive consequences of his or her actions immediately in the present as part of a valued life path" (p. 65).

The core concepts accept, choose, take action can be presented as the six principles of ACT. They form the Hexaflex model of ACT, in which psychological flexibility is the intended outcome (see *Figure 1.* below). The six processes of ACT allow a person to develop skills in no specific order while promoting acceptance, commitment, and action towards personally valued goals. This model depicts how each principle interacts with each other but it does not include several other key philosophies of ACT such as, control as the problem and creative hopelessness. These concepts, as outlined above, are pivotal in developing the foundations that the six core processes are utilised and may be missed due to their exclusion in the model. A model typically serves to describe the underlying functions of the theory and therapy proposed therefore these aspects would be necessary to include to present an overall visual of the working pieces involved in ACT. ACT is also essentially boiled down to two concepts; acceptance and commitment which does not specifically acknowledge the other core processes of the therapy. Other aspects to consider are that the similar concepts of defusion and self as context may be difficult to differentiate. Practical implementation of the principles of ACT are typically achieved through the use of metaphors, paradoxes, stories, exercises, behavioural tasks, and experiential processes (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes et al., 2004). Each core principle represents opportunities for clinical intervention. Present moment awareness, acceptance, defusion, and self as context are all considered mindfulness and acceptance-based behaviours and strategies whereas values and commitment action skills are change behaviours (Ciarrochi, Robb, & Godsell, 2005; Hayes et al., 1999; Hayes et al., 2006; Hayes et al., 2004). Mindfulness-based techniques are a central part of third wave therapies. Bringing awareness and acceptance of thoughts, feelings, and sensations whether they are comfortable or not is an important part of ACT. This can be achieved through several techniques which include attention

to breath (focusing and calming the mind), awareness of the present moment, and to not place judgement on thoughts, feelings, and sensations experienced (Bowen et al., 2014).

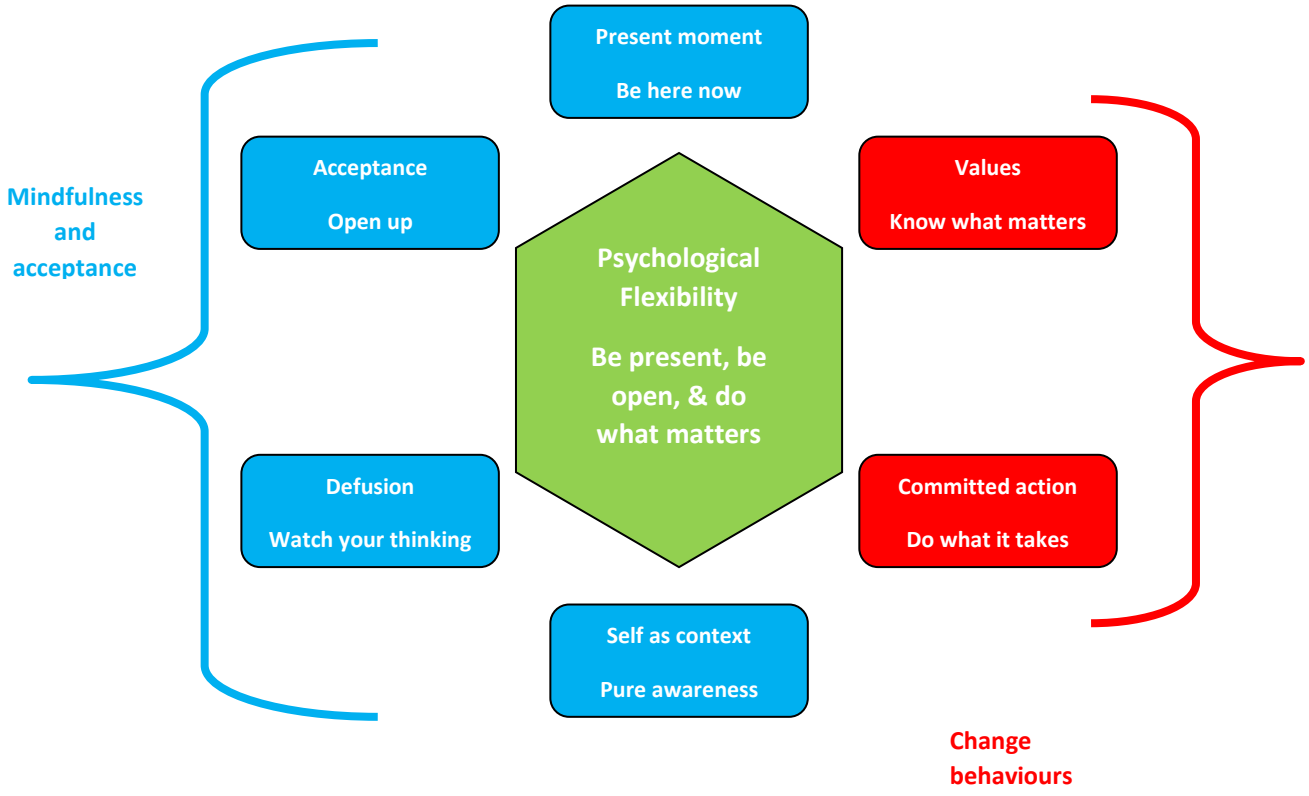

Figure 1. Hexaflex model promoting psychological flexibility via the six core processes of ACT (adapted from Harris, 2009 and Hayes et al., 2006).

Psychological flexibility versus psychological rigidity. A fundamental assumption underlying ACT is that human suffering is normal rather than abnormal, as such people should not try to control their thoughts, feelings, sensations, memories, or other private events but rather notice, accept, and distance or unhook from these experiences while focusing on what is deeply important to them (values) and taking actions towards those values to make their life more meaningful and vital (Hayes et al., 2012). If a person can do this, it demonstrates an ability to be psychologically flexible. Psychological rigidity is when human

suffering is worsened by a person's rigid ideas about themselves, lack of focus on what is important in their life, and their engagement in struggling to change their unwanted sensations, feelings, or thoughts that often produces greater levels of distress (Hayes et al., 2012). This psychological rigidity stops a person from being able to adapt to different contexts, both internal (thoughts, feelings, sensations) and external (environment, situations). Hayes et al. (2012) stipulates that a person's "verbal and cognitive processes tend to narrow human repertories in key areas through cognitive entanglement and experiential avoidance" (Hayes et al., 2012, p. 64). A key consideration for psychological flexibility is determining whether the verbal rules and cognitive processes are workable. Therefore, when people excessively fuse to unworkable verbal rules their behaviour and thoughts become narrowed. They lose contact with the direct consequences of their actions (that are guided by their rigid ideas of themselves and the use of their unworkable coping strategies) and cannot engage in alternative coping strategies when their existing strategies become unworkable. Through this, people lose touch with their personal values and instead they are controlled by external means such as social conformity or other people's expectations, so a person may attempt to please or pacify them, or they engage in experiential avoidance to avoid unwanted psychological pain. Over time, if this behaviour continues, a person becomes stuck in major areas of life. One may begin to withdraw, isolate themselves from others, or engage in unhelpful behaviours such as drinking, using substances, cutting, or overeating. Overall, these strategies lead to a lifestyle of pain and suffering or living a life on autopilot. The main contributor to this human suffering is the fusion to verbal rules (i.e., what we tell ourselves and the language we use). The problem is thought itself and how overidentifying with such verbal and cognitive processes is supported and modelled by society as a way of regulating a person's behaviour (Hayes et al., 2012; Hayes, 2016; Twohig, 2012).

Present moment awareness versus past or future focus. A fundamental mindfulness behaviour promoted in ACT is present moment awareness. John Kabat Zinn defined mindfulness as the practice of "paying attention in a particular way, on purpose, in the present moment, non-judgementally" (Kabat Zinn, 2003, p. 145). By practicing this technique, a person can bring attention to the present moment without judgement or placing evaluations on what they are experiencing, internally or externally. This skill emphasises full participation in each moment; however, acknowledges that a wandering mind is a normal human process that is almost guaranteed to occur. As such, the present moment skill (mindfulness) is encouraged to be practiced daily, multiple times throughout the day to help people live in the here and now rather than focus on the past or the future. People who focus on the past are more likely to suffer from depression and those who focus on future orientated thoughts are more likely to experience anxiety, for example (Harris, 2006). The key concept of present moment awareness is to pull people back into what they are experiencing right now, just as it is. In ACT, this concept teaches people to recognise and experience their private events (i.e., emotions or sensations or thoughts, or urges to act) without trying to suppress. Mindfulness has been found to help people manage emotions and build the skill of acceptance towards themselves and others (Hayes et al., 1999; Hayes & Strosahl, 2004).

Acceptance versus experiential avoidance. *Acceptance* or similarly *willingness and openness* is an abstract idea and a key ACT skill. The skill of acceptance orientates a person to make room and expand to accept their experiences as they are without struggling and engaging in behaviours and processes that make them worse (e.g., suppression or avoidance). This skill involves learning to accept unwanted experiences while making room for a flexible approach to behaviour and can lead to actions that are in line with a person's values. When defining acceptance, it is important to beware of the myths that are associated with the word itself. Acceptance is often considered as a person "wanting" or "approving" or "allowing"

their experiences. Or it can also be interpreted as resignation or “giving in” or “admitting defeat or failure”. Another important distinction is that acceptance does not mean tolerating unnecessary personal pain. Rather it means that a person has become able and willing to accept all unwanted psychological experiences that often produce feelings or sensations of discomfort. If a person is unable to foster the skill of acceptance the likelihood of engaging in avoidance behaviour of the discomfort produced by the unwanted private events is increased (Hayes et al., 1999; Hayes & Strosahl, 2004).

Defusion versus fusion. Defusion is the process where people learn to change their relationship with unhelpful or unworkable thoughts that lead to the engagement in behaviour that is not in line with their valued goals. Essentially, it is a different way of relating to thoughts or private events to lessen the influence and impact they have on a person’s wellbeing. It teaches people to step back from entangling (or fusing) themselves in private events (thoughts, emotions, memories, sensations) that people can often fall into the trap of believing their thoughts are reality and truth in which they become “hooked”. This skill gradually influences the content and style of thinking as well, although, not through logical reprogramming but rather through exposure to new learning experiences being fostered by cognitive flexibility and openness. If a thought is workable and helpful in a person’s life, then fusion to this thought can guide their actions towards their valued life direction. However, when a thought is unworkable and unhelpful then learning to defuse is recommended. There are three different levels of defusion; 1) *noticing* is simply noticing what a person’s thoughts are telling him or her which creates distance from the thought, 2) *naming* is labelling the thoughts, and 3) *neutralising* involves several defusion techniques designed to support the process of disconnecting from thoughts and feelings (Harris, 2009). This helps people see them for what they are, that is, a stream of words, passing sensations, and not facts or threats about oneself (Harris, 2009). An example of noticing and naming defusion, “I am noticing the

thought that I am not good enough" serves to place distance between the powerful sting of the thought "I am not good enough" by recognising that it is just a thought and a string of words that cannot hurt you. Whereas an example of a defusion technique designed to deliteralise language is Titchener's repetition exercise. This is the repetition of the thought out loud quickly and as many times as it takes for the words to lose their meaning thereby creating a disconnection from the unnecessary human suffering language can have on a person. Practicing the skill of defusion provides distance, separation, space from thoughts as well as letting them come and go. When applying the acceptance skill in conjunction with present moment skill people can learn to notice their current experience and be mindful of how they are interpreting it and in turn how that interpretation is affecting them and then make room for their experience as it is. The idea in developing this skill is that the unhelpful and unworkable thoughts will typically reduce in their frequency as a person is not giving them as much weight or focusing on them or suppressing them, which as previously outlined leads to the paradoxical effect of an increase. However, if defusion is used as an avoidance strategy then the thoughts are not likely to decrease, and the person will still be stuck in the perpetual cycle of avoidance. True defusion happens when a person engages in the present moment and learns to hold thoughts lightly while committing to valued actions (Hayes et al., 1999; Hayes & Strosahl, 2004).

Self as context versus self as concept. *Self as context* is another abstract idea that is often referred to as the "observer self" or "pure awareness" (Harris, 2009). It is helpful to compare the term "thinking self or conceptualised self", which is defined by thoughts, beliefs, memories, judgements, or plans (private events) with the idea of self as context which is the observing self that is always noticing and aware of private events. In this way, self as context serves as a viewpoint from which thoughts and other private events can be observed without rigidly holding onto the roles and labels people give themselves and others. Self as context

fosters a person's ability to gain a different perspective and may provide reprieve from the unwanted content of their experiences. It is another way to build distance from unhelpful and unworkable private events and adds a deeper level of utility to the defusion skill, again whilst harnessing acceptance and present moment strategies as well (Hayes et al., 1999; Hayes & Strosahl, 2004).

Values versus absent or confused values. *Values* are considered what an individual holds as deeply important. The values principle is a critical part of ACT whereby a person identifies and clarifies their personal values and what is important in their life. Values are positively reinforcing as they serve to guide a person's actions and give meaningful direction to a person's life. They are different from goals in that they cannot be achieved but rather provide a guiding force for a person's life. Values provide meaning to potential experiences of pain associated with a person's values in the service of living a life more meaningful and vital. By holding onto values, people can learn to accept and hold their discomfort lightly while engaging in important areas of their life. The worth of values is that they allow actions to be coordinated and directed over long term timeframes. Values are more abstract and global than concrete goals and thus provide a kind of glue that makes a set of goals more coherent. This means, values are relevant and less subject to satiation and change, which in turn produces a useful kind of persistence whereby there is an increase in sustainability of behaviour change when driven by values that the therapy sorts to identify and bring forth. The values work in ACT is a way of moving out of the narrowed life focus that avoidance can produce. When living in line with one's values an inherent sense of purpose and vitality occurs that will make confronting unwanted experiences worthwhile (Hayes et al., 1999; Hayes & Strosahl, 2004).

Committed action versus inactivity, avoidance, and/or impulsivity. *Committed action* is the second core category, focusing on change behaviours in ACT. Committed action is a skill that centres on the behavioural activation towards a person's values while facing uncomfortable thoughts and feelings. Therefore, acceptance or willingness is a fundamental principle needed to carry out committed action, in that, people cannot commit to a behaviour when they are not completely willing. In the same vein, values are the cornerstone that give direction to people's committed action and what that will look like through their behaviours. The ACT approach is successful when acceptance-based skills are applied to a value-driven life (Hayes et al., 1999; Hayes & Strosahl, 2004).

Summary of Acceptance and Commitment Therapy processes. The underlying processes of ACT such as experiential avoidance, control as the problem, creative hopelessness, and psychological rigidity or flexibility can be applied to more than one condition, typically those that exhibit these common themes of human suffering. As such, the ACT skills serve to address multiple struggles and offer a new way of relating and being, aimed at reducing this human suffering and increasing the ability to live a vital and meaningful life. Therapies that have the ability to do this are considered transdiagnostic in nature. That is why ACT was chosen for the current study as emerging evidence continues to support the transdiagnostic qualities of ACT across a range of mental and physical health disorders.

The Empirical Status of Acceptance and Commitment Therapy

Since the inception of ACT, originally termed "comprehensive distancing" in the 1980s and the further theoretical development of ACT in the 1990s, empirical evidence supporting the use of the therapy began to rise in the early 2000s. This is clearly demonstrated when looking at the content of scientific research over the past few decades with a significant increase in

studies conducted as depicted in *Figure 2*. A literature search of Web of Science, psychINFO, Google Scholar, and Scopus was completed using the term; "Acceptance and Commitment Therapy" with the limits of published journal articles.

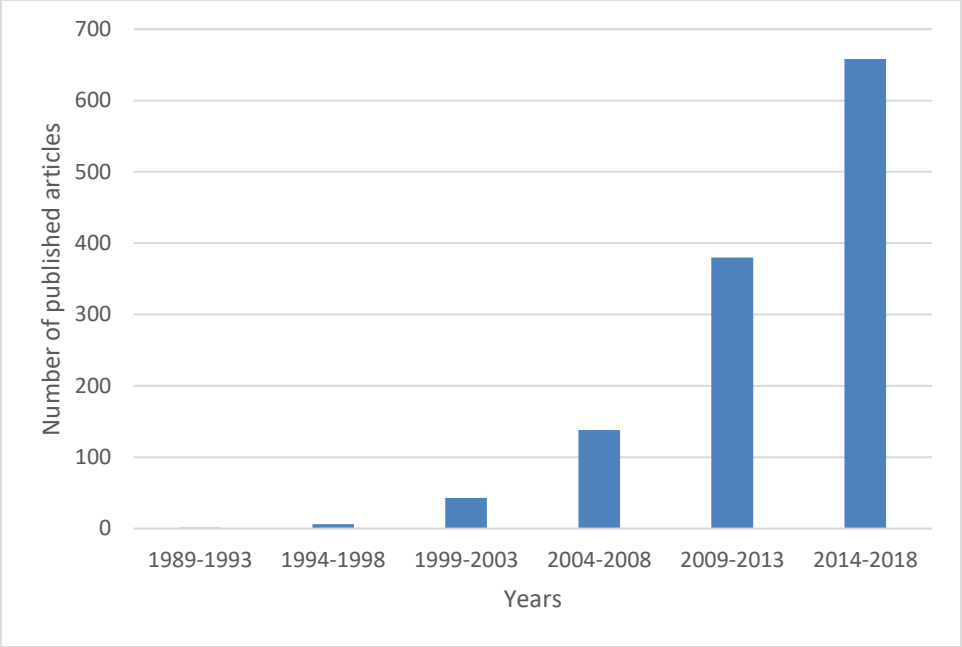

Figure 2. Number of published articles on Acceptance and Commitment Therapy since 1989.

ACT has been applied across a broad range of physical and mental health problems including chronic pain, mood disorders, obesity, work stress, personality disorders, cancer, and diabetes. Several meta-analyses and systematic reviews highlight progress and efficacy of ACT. The APA Presidential Task Force on Evidence-Based Practice provided an indication of the strength of research supporting the use of ACT for particular health conditions and their 2006 publication is included in the list of important findings of ACT applied to a range of (not all) conditions since the early 2000s, shown below in Table 3.

Table 3.

Important Findings for Acceptance and Commitment Therapy Applied to Various Physical and Mental Health Conditions.

Condition	***N***	**Important findings**
Anxiety disorders	404	Potentially effective treatment for anxiety disorders including SAD, GAD, panic, and agoraphobia (Öst, 2014). Positive changes in experiential avoidance and cognitive fusion. Empirically supported by APA with modest research support.
Depression	381	Possible efficacy of ACT for mood disorders were reported through improved self-confidence (Öst, 2014). Empirically supported by APA with modest research support.
Chronic pain	144	Improved long-term functioning focusing on acceptance of pain and predicted pain severity (Öst, 2014). Most researched health condition and is empirically supported by APA with strong research support.
Psychosis	47	Reduced rates of hallucinations and delusions suggest the possible efficacy of ACT for psychosis (Öst, 2014). Empirically supported by APA with modest research support.
OCD	47	Positive changes in experiential avoidance and cognitive fusion (Öst, 2014). Empirically supported by APA with modest research support.
Eating disorders	46	Considered a viable treatment showing decreases in eating pathology, lower rates of rehospitalisation at six-month follow-up (Juarascio et al., 2013). Positive changes in body image (less judgmental) shift in focus to values rather than body and eating (Fogelkvist, Parling, Kjellin, & Gustafsson, 2016).
Cancer/Health incl. MS	46	Levels of distress and worries of relapse were reduced. Experimental phase (Öst, 2014).
PTSD/Trauma	42	ACT more efficacious than waitlist and TAU with equal efficacy to CBT (Bean, Ong, Lee, & Twohig, 2017) significant improvements in trauma symptoms.
Weight/Obesity	39	Several studies showed positive results for weight loss using ACT suggesting the therapy's possible efficacy for this issue (Öst, 2014).
Trichotillomania and Excoriation	20	Positive changes in experiential avoidance and cognitive fusion. Still in experimental phase (Öst, 2014).
Personality disorders	19	Improved levels of functioning (BPD) however still in the experimental phase (Öst, 2014).
Anger/Aggression	17	Significant reduction in trait anger and psychological rigidity and anger-related behaviours (Plambeck, 2016). Significant reduces physical and psychological aggression (Zarling, Lawrence, & Marchamn, 2015).
Diabetes	18	Increased self-management behaviours (Ruiz, 2010).
Stigma (excluding substances)	16	Reduction in body image dissatisfaction and weight self-stigma (Griffiths, Williamson, Zucchelli, Paraskeva, & Moss, 2018) reductions in stigma and improved outcomes compared to active controls (Krafft, Ferrell, Levin, & Twohig, 2017).
Epilepsy	15	Experimental phase still (Öst, 2014) preliminary studies found improvements in depression, anxiety, quality of life, self-esteem, and work and social adjustment (Dewhurst, Novakova, & Reuber, 2015).
Insomnia	12	Significant improvement in sleep related quality of life and subjective sleep quality (Hertenstein et al., 2014). Significant improvements in sleep interference and sleep efficiency and insomnia severity (Daly-Eichenhardt, Scott, Howard-Jones, Nicolaou, & McCracken, 2016) Further research needed.

Brain injury	12	Feasible therapy in conjunction with other established therapies for brain injury (Whiting, Deane, Simpson, Ciarrochi, & Mcleod, 2017) Further studies required.
Tinnitus	6	Probably efficacious (Öst, 2014)
Work stress	5	Another area that was reported to have possible efficacy however further studies are needed (Ruiz, 2010).

Note: N = Number of articles published that mention the specific condition being examined with ACT. TAU = Treatment as Usual. MS = Multiple Sclerosis. This includes reviews, case studies, randomised control trials, and meta-analyses therefore reviews and meta-analyses for several conditions may come from the same article. Articles relating to the application of ACT to SUDs including research on stigma and shame related to SUDs are excluded from this table and will be discussed in detail in the following section.

Research investigating the efficacy of the ACT approach is being conducted with increasing rigour, allowing for further support of ACT to emerge as a viable and empirically supported therapy for a range of problems. This is evident in the numerous reviews and meta analyses that have been completed in the past 15 years. In 2008, Öst published a systematic review and meta-analysis of third wave therapies involving 29 studies that were examined for efficacy. His findings showed no significant differences between ACT and DBT. Öst (2008) also reported that ACT showed no significant differences at post-treatment; however, ACT did show significantly positive differences at follow-up. In Öst's article the methodological issues in ACT research are clearly outlined, and he provided a list of 15 recommendations for the future studies of ACT. For example, Öst suggested further research should focus on comparing ACT to other treatment conditions. The following year, Powers, Vörding, and Emmelkamp (2009) published a meta-analysis in which the authors appeared to heed Öst's (2008) advice by comparing ACT and TAU/Control conditions using outcome measures across a range of problems. Their analyses found that ACT outperformed control conditions on both primary and secondary outcome measures and at both post treatment and follow-up phases (Powers et al., 2009). Ruiz (2010) further sought to examine the empirical evidence for ACT through a review which concluded that ACT is showing efficacy in a wide range of psychiatric problems including depression, anxiety, obsessive compulsive disorders (OCD), social anxiety disorder (SAD), generalised anxiety disorder (GAD), trichotillomania and excoriation, psychosis, and borderline personality disorder (BPD), all of which Ruiz (2010) states have a common underlying pattern of experiential avoidance.

Using updated research on ACT since Öst's (2008) review, Smout, Hayes, Atkins, Klausen, and Duguid (2012) conducted a review that specifically examined randomised controlled trials (RCTs) methodology. The authors stated that the ACT research over the previous four years had improved. The studies reviewed Smout et al.'s article support the

efficacy of ACT in promoting improvements via primary outcome measures collected across a range of conditions. However, interpretations of primary outcome measures are confounded by factors such as concurrent therapies; the effects of these cannot be ruled out (Smout et al., 2012). In the same year, Ruiz (2012) revisited the ACT literature in an attempt to address one of Öst's (2008) core recommendations of comparing ACT to CBT. This review included 16 studies of primary outcomes, in 11 of ACT was found to be superior to CBT. The effect sizes, in favour of ACT, were small to medium. A further investigation in the mediator and moderator effects was conducted by Ruiz (2012) with five additional studies. Ruiz (2012) concluded treatment format, type of problem, number of sessions, age, and gender had no significant mediating or moderating effects.

An important consideration when comparing such third wave therapies like ACT and CBT is to acknowledge they are from the same therapeutic family but differ in their processes. A core difference between the processes of ACT and CBT is what each therapy targets as the cause of behaviour (Hayes, 2008). A CBT perspective involves teaching people to challenge their unhelpful thoughts and examine the evidence or truth of their thoughts and emotions and focuses on understanding how thoughts and emotions influence behaviour. Whereas an ACT perspective involves people learning to acknowledge their thoughts and emotions as they are, without judging them as good or bad, and are encouraged to reconsider what is getting in the way of living in line with their values. People using ACT are encouraged to commit to actions that are meaningful to their values regardless of the truth of their thoughts (Hayes, 2008).

Woidneck, Pratt, Gundy, Nelson, and Twohig (2012) examined the cultural components and considerations of researchers conducting ACT outcome articles, noting the lack of studies clearly outlining demographic information of those involved. This article,

makes clear the importance of collecting data that accurately describes those that participated in the research; this would serve to support the generalisability of ACT across cultures and countries (Woidneck et al., 2012). In 2014, Öst revisited and updated the evidence for ACT by examining 60 studies utilising ACT across a broad range of somatic and mental health conditions. Öst (2014) still concluded that ACT is not a well-established treatment, however, he recognised that six years (since his last review in 2008) of further research to support ACT may not be enough time to demonstrate its evidence base yet. Admittedly, he did state noticeable progress toward empirical support for ACT as summarised in Table 3 above. Öst (2014) provides minimal changes to his 15 recommendations for future ACT research. More recently, A-Tjak et al. (2015) conducted a rigorous investigation into the efficacy of ACT and provided a critique of the shortcomings of previous reviews and meta analyses methodology in reviewing ACT studies. The authors argued that many of the studies included were not conducted to a high methodological quality. Therefore, A-Tjak et al.'s (2015) sample only included 39 studies (RCTs) utilising ACT across a range of psychiatric and somatic disorders. Their findings supported the ability of ACT to outperform control, placebo, and TAU conditions at both post treatment and follow-up points. However, they reported that ACT was not seen as more effective than CBT. This may be due to their strict methodological inclusion criteria (for example, they included only seven articles out of the 16 studies included in Ruiz's (2012) analysis). A-Tjak et al. (2015) article also provided further suggestions for future ACT research that includes; matching contact hours for TAU conditions, measuring therapist competency, monitoring effects of concurrent treatments, and utilising waitlist/placebo conditions to provide more substantial support for ACT.

Applying the development and evidence of ACT to a range of mental and physical health conditions together, it can be said that ACT is a promising alternative therapeutic approach. This overview of the progression of research shows that ACT is following the same

path as CBT towards becoming an empirically supported treatment for a variety of disorders. While many of the earlier ACT studies have methodological issues, often seen in case studies and less rigorous research designs, the trends observed in these are considered indicative of true effects that require further well powered and designed future studies that have been conducted with CBT. The transdiagnostic nature of ACT lends itself to further application to other disorders such as SUDs and has begun to be implemented in more recent research.

SECTION THREE: Acceptance and Commitment Therapy and Addictions

This section reviews the literature currently available for ACT and SUDs. This includes the theory of development and maintenance of SUDs from an ACT perspective as well as outlining the promising research and current empirical status of ACT applied to SUDs.

An Acceptance and Commitment Therapy Formulation of Substance Use Disorders

An important aspect to consider in the development and maintenance of SUDs is social learning theory developed by Rotter (1982) and modelling as described by Bandura and Walters (1963). It is through modelling and contact with the social environment that an individual learns to avoid or suppress aversive experience (internal and external). This in turn contributes to the development of psychopathology and the continued use of maladaptive coping strategies such as substance use (Gifford, 1994 as cited in Hayes et al., 1996). This social context is not exclusive to parent roles but also encapsulates the peer group. Andrews, Tildesley, Hops, and Li (2002) examined the influence of peers on substance use with 294 young adults in which the role of peers in using substances was emphasised through normative use whilst increasing the chances of developing a SUD. Berkman, Glass, Brissette, and Seeman (2000, as cited in Sudhinaraset, Wigglesworth, and Takeuchi, 2016) also noted that health is influenced by social networks. This article specifically examined alcohol use and the role of the social environment (including home, work, and school) as well as the wider social context (society as a whole). Peer pressure in these contexts strongly influences a person's substance use, in that those who associate with other substance using peers increase hazardous alcohol consumption (Studer et al., 2013; Patrick et al., 2013, as cited in Sudhinaraset et al., 2016).

While social relationships play a role in the development and maintenance of SUDs through social learning theory, Rotter (1966) also suggests that a person's locus of control is

another important aspect to consider. People's belief in their ability to control their lives is indicative of how they attempt to solve problems and plays a role in the maintenance of SUDs (Soravia, Schläfli, Stutz, Rösner, and Moggi, 2015). People's belief that they have no control over their addictive behaviour serves to maintain the SUDs and what type of recovery they choose to engage in (Horvath & Yeterian, 2012). Internal locus of control (one's belief in their own control over their life) is preferable to external locus of control (one's belief that others or external influences control their life). An internal belief may give people power to direct their lives in the direction they want (Horvath & Yeterian, 2012; Rotter, 1966; Soravia et al., 2015). Nikmanesh, Baluchi, and Motlagh (2017) found that external locus of control (where people do not take responsibility for their own actions) mediates relapse risk in those who struggle with SUDs. In line with this finding, Soravia et al.'s (2015) study retrospectively analysed 509 patients' general control beliefs related to their alcohol use and residential treatment. They found that those with low internal locus of control pre-treatment had higher risk of alcohol relapse during treatment. Therefore, consideration of a person's sense of control is important within the context of developing a treatment approach for SUDs and coexisting problems. If a therapeutic approach can increase a person's internal locus of control it can in turn increase positive outcomes in their recovery. This concept is important when considering the role of ACT applied to SUDs and recovery, in that committed action and values are core skills that serve to increase a person's internal locus of control and guide a positive road to recovery (Bowen et al., 2006).

Use of substances is often reported as a way of controlling, suppressing, or avoiding unwanted psychological experience (thoughts, emotions, memories, and aversive bodily sensations) and other private events such as expectancies and beliefs about the substances and cravings (Lee et al., 2015). For example, alcohol is often used as a coping mechanism to reduce a person's experience of anxiety, or it can serve as a way of dulling unhelpful

thoughts, or it can even be used to address feelings of boredom by increasing pleasure in the short term (Cooper et al., 1992 as cited in Hayes et al., 1996). Given that substance use alters a person's experience of aversive private events, high comorbidity rates of SUDs are reported in several psychological and physical disorders (e.g., depression, anxiety, trauma, and chronic pain) (Hayes et al., 1996). In the instances where substance use does not begin as a strategy of experiential avoidance (e.g., those seeking recreational use) this is likely to develop in the later stages of use when there is typically a gradual evolution from positive reinforcement to negative reinforcement (see *Figure 3*). This negative reinforcement, often involving dysphoric or withdrawal side effects, serves to maintain the pattern of substance use whereby the unwanted private events can be suppressed, controlled, or avoided (Hayes et al., 1996; Marlatt, 1985). This strategy may work in the short-term and is often reported as a highly effective strategy to begin with, but it has a large cost, especially in the long-term.

When people are struggling with a SUD they are typically not living in line with their values (Wilson & Byrd, 2004). A person's world view often becomes narrowed, in that, his or her focus is limited to activities that involve using substances, associating with those who use substances, spending excessive amounts of time obtaining the substance, or recovering from the effects of the substance (these are some of the DSM-5 criteria for a SUD) (Hayes et al., 1996; Hayes, Pistorello, & Levin, 2012; Wilson & Byrd, 2004; Wilson, Hayes, & Byrd, 2000). Therefore, ACT and mindfulness-based strategies serve to decrease the impact of triggers, particularly internal (private events) by widening attention. They also promote motivational skills and values-based actions towards a life free from the long-term damaging effects of addiction. A life aligned with values puts the individual in contact with positive reinforcers which serve to increase the likelihood of long term recovery.

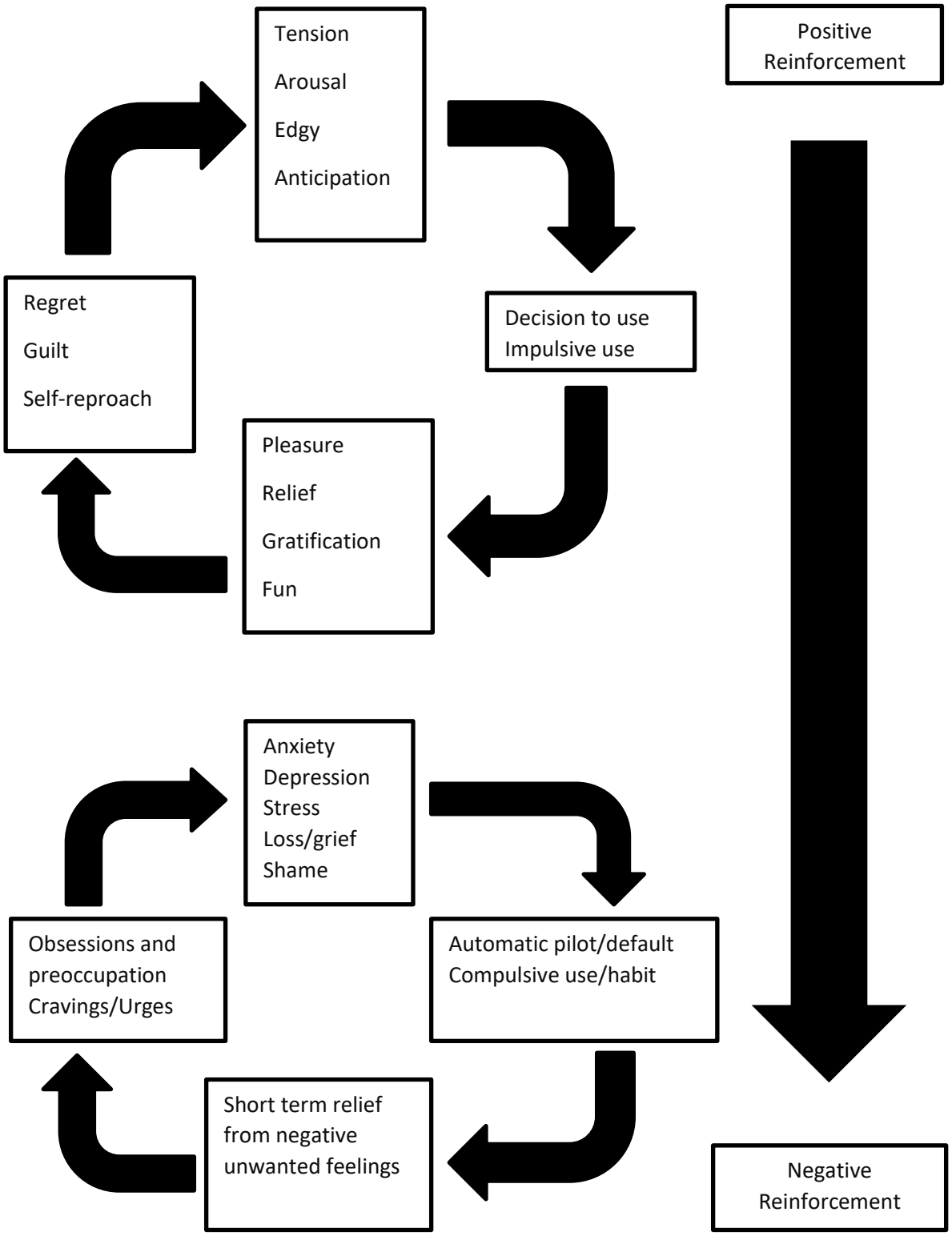

Figure 3. Diagram depicting the temporal development of positive reinforcement to negative reinforcement often described in the addiction cycle (adapted from Koob, 2013; Miller & Carrol 2006).

Current Evidence for Acceptance and Commitment Therapy for Substance Use Disorders

To date, several case studies, numerous RCTs, and now a handful of systematic reviews examining mindfulness-based interventions for SUDs have been published. More recently, a meta-analysis specifically investigating the effectiveness of ACT in treating SUDs was conducted by Lee et al. (2015). The following section dissects the studies, in which ACT has been applied to a range of different substances, including smoking, alcohol, methadone, and cannabis in different populations (viz., inpatient versus incarcerated settings from around the world).

While it is important for case studies and pilot studies to be conducted in the early stages of the development of a new therapy, there are several limitations of such research. These studies all show the potential of ACT to treat SUDs; however, the major limitation of this study design is the generalisability of the results. Such study designs provide a necessary step towards the development of empirical evidence of ACT and all support the further investigation of ACT applied to SUDs. RCTs are typically considered the gold standard for clinical trials to test if a treatment is effective (Hamer & Collinson, 2014). More and more RCTs for ACT applied to SUDs are being conducted and published with promising results dating back to the early 2000's. Earlier exploratory case studies investigated nicotine, alcohol, methamphetamine, methadone, and polysubstance use, reporting results that support the application of ACT with SUDs.

Alcohol. A single case study utilising the values component of ACT was conducted with a man suffering from alcohol dependence (Heffner, Eifert, Parker, Hernandez, & Sperry, 2003). The treatment included 21 sessions, whereby at the nine-month follow-up sobriety was achieved and maintained with only minor relapses reported. One RCT focused on treating people suffering from comorbid alcohol use and depressive disorders through individual

sessions of either ACT or TAU (in the context of a 12-step programme). Their results showed that those in the ACT group were able to meet criteria for discharge from the inpatient unit quicker than the TAU group and reported a reduction in symptoms of depression and experiential avoidance (Petersen & Zettle, 2009). These results were reflected in a recent pilot study by Thekiso et al. (2015) where the effectiveness of ACT for comorbid alcohol and mood disorders was investigated. Participants were assigned to either ACT or TAU groups via a matched pilot design. The results also showed a reduction in mood symptoms and more days abstinent from alcohol use in the ACT group (Thekiso et al., 2015), thus providing support for effective treatment of comorbid problems alongside SUDs. These studies support the applicability of ACT to such common comorbid conditions.

Bowen et al. (2006) investigated the effect of mindfulness meditation on alcohol related locus of control. While this study did not examine ACT specifically, ACT incorporates mindfulness-based skills and the authors found that such meditation behaviour increased participants' internal locus of control post-treatment. This relationship was significant and demonstrated that drinking related locus of control reduced following mindfulness behaviours. These findings support the examination of locus of control via an ACT based intervention that may support the reduction in alcohol use. Vieten, Astin, Buscemi, and Galloway (2010) did not use ACT per se but investigated the role of acceptance and mindfulness techniques for alcohol dependence and found significant improvements across mood, stress, and overall wellbeing, and a trend in the data indicative of reductions in cravings post- treatment. Further support for ACT reducing alcohol use and cravings, stress, and changing participants locus of control and mood is provided in a dissertation by Crispin-Morrall (2013). The author examined an ACT-based intervention within the NZ Army context investigating alcohol use and substance use with common coexisting problems: aggression, anxiety, stress, locus of control, and emotional management. This investigation compared 85 military personnel at pre and post assessment

points. Findings supported the use of an ACT-based intervention for the range of common comorbid problems, showing significant reductions in alcohol use, verbal aggression, perceived stress, and anxiety as well as reducing perceptions of external locus of control. These preliminary results were later included in a larger, more recent study by Harvey, Henricksen, Bimler, and Dickson (2017), in which 275 military personnel were examined in a pre-post investigation with the ACT-based intervention for alcohol consumption, aggression, anxiety, stress, external locus of control and emotional management. The authors found that compared to the waitlist control group the ACT intervention showed greater reductions in alcohol use and coexisting problems including external locus of control, as well as improvements in mood management. These studies provide substantial evidence that ACT is a beneficial approach to use with those who struggle with alcohol use amongst other common comorbid problems.

Nicotine and Smoking Cessation. So far, seven studies have been published and support the efficacy of ACT for smoking cessation. Gifford et al. (2004) conducted a RCT comparing ACT and pharmacological treatment for nicotine dependence. They found better results for the ACT group, with long-term smoking cessation being twice as likely compared to the medication group. A similar study investigating the effectiveness of combining medication with an ACT-based treatment showed similar results: the joint treatment was significantly better than the medication alone for smoking cessation (Gifford et al., 2011). These studies suggest ACT has long-term effectiveness in treating nicotine dependence through reported abstinence rates.

Comparison studies between CBT and ACT applied to nicotine dependence has also been examined with findings further supporting the use of ACT for smoking cessation. The quasi-experimental design demonstrated the feasibility of ACT for effective treatment of this population, with a reportedly five times higher abstinence rate in relation to the CBT group

(Hernández-López, Luciano, Bricker, Roales-Nieto, & Montesinos, 2009). Other strategies used to cope with the cravings associated with nicotine use are suppression of thoughts about smoking. One study examined the effects of acceptance-based and suppression-based strategies in a sample of adult smokers. Both coping strategies (acceptance and suppression) were compared to a control group that were given no instructions for dealing with quitting smoking. Interestingly, acceptance and suppression groups reported benefits for coping with the cravings and mood associated with smoking cessation compared to the control group (Litvin, Kovacs, Hayes, & Brandon, 2012). These studies suggest some forms of coping strategies are better than none and that ACT is equally as effective for treating nicotine dependence as CBT.

The treatment of nicotine dependence with ACT continues to grow from telephone delivered ACT-based therapy (Bricker, Mann, Marek, Liu, & Peterson, 2010) to, more recently, a web-based ACT intervention for smoking cessation that was developed and tested in 2013. Researchers found that participants randomly assigned to this group spent significantly longer on the ACT website compared to those randomly assigned to the standard smoke-free website spent there. The pilot study design of this research showed promising results for ACT. Further follow-up was recommended to determine the long-term efficacy of ACT through an internet-delivered intervention (Bricker, Wyszynski, Comstock, & Heffner, 2013). In the same year a further two studies investigating the application of ACT to smoking cessation were published. Brown et al. (2013) used an ACT-based treatment called Distress Tolerance (DT)[3] compared to Standard Treatment (ST) for nicotine dependence. In a sample of adult smokers with a history of early relapse this study found the DT group to have larger reductions in smoking. Russell (2013) also reported higher rates of abstinence for adult smokers at a six-month follow-up compared to a cognitive behavioural skills training group. Bricker et al.'s (2013)

[3] Distress Tolerance in this article is derived from concepts from two therapies; behavioural exposure therapy and ACT as described in the pilot study by Brown et al (2008) rather than distress tolerance from DBT.

recommendation for further research was followed up in 2014, this time examining an ACT-based treatment via a smartphone for smoking cessation. The results showed higher rates of use for the ACT application and higher rates of quitting smoking compared to the National Cancer Institute's application for smoking cessation (Bricker et al., 2014). A second study using an updated version of the smartphone application was evaluated in 2017 that reported higher reductions in smoking compared to the original smartphone version's study in 2014 (Bricker et al., 2017). Jones, Heffner, Mercer, Wyszynski, and Bricker (2015) used data collected from Bricker et al.'s 2013 study and examined the web-based ACT-based therapy for people who struggle with depression and smoking. The results showed that the ACT-based intervention reduced depressive symptoms and smoking urges, demonstrating how ACT can be used across disorders. While the above-mentioned studies show positive and promising results for ACT applied to nicotine dependence, they all stress the need for further studies with larger sample sizes and longer follow-up periods to ascertain the efficacy of ACT in the long-term treatment of smoking cessation. This literature also supports ACT as a transdiagnostic approach for an addictive behaviour and mental health problems such as mood disorders.

Methadone. The applicability of ACT to the treatment of people on a methadone maintenance programme was examined through a RCT comparing ACT with a 12 step programme (Hayes, Wilson, Gifford, Bissett, Piasecki et al., 2004). Both groups (ACT and 12 step programme) showed an additional positive effect compared to methadone maintenance alone. Although no significant differences were found between the additional treatments, the ACT group did report less substance use at the six-month follow-up (Hayes, Wilson, Gifford, Bissett, Piasecki et al., 2004). Methadone detoxification and the effectiveness of ACT on this process was also investigated through an initial case study by Stotts, Masuda, and Wilson (2009), with initial findings reiterating the need for of larger ACT applied to methadone detoxification studies to support their findings. Therefore, in 2012 a RCT (Stotts et al., 2012)

using ACT was compared to TAU (drug counselling) in a six-month methadone dose reduction programme. As in Hayes, Wilson, Gifford, Bissett, Piasecki et al.'s (2004) study above, similar results were found in the rates of successful detoxification of methadone at the end of the treatment compared to TAU (37% versus 19%, respectively) (Stotts et al., 2012). Both studies investigating ACT in the treatment of methadone-related substance use show promising results for ACT efficacy for this substance use group. Further support for ACT and methadone, in particular for cravings, was reported in a study by Saedy et al. in 2018. The authors reported ACT was successful in reducing methadone cravings and supported methadone dose-reduction which was in line with previous research.

Methamphetamine. Smout et al. (2010) tested whether ACT would increase treatment attendance and reduce methamphetamine use compared to CBT. Both groups received either ACT or CBT for 60-minute weekly individual sessions over 12 weeks. Although results did not show significantly greater reductions in methamphetamine use or negative consequences of use for the ACT group compared to CBT, ACT was found to be on par with CBT. Treatment attendance also did not differ between groups and both reported a high attrition rate. The authors suggest further studies are needed to ascertain the potential ACT has as an alternative to CBT for this substance problem (Smout et al., 2010).

Cannabis. A case study using ACT involved three adults who struggled with their cannabis use (Twohig, Shoenberger, & Hayes, 2007). Through a multiple baseline across participants design, this study reported that ACT aided the reduction of cannabis use for all three participants. One participant reported full abstinence from cannabis at the three-month follow-up and all three reported a reduction in symptoms of depression, anxiety, and withdrawal (Twohig et al., 2007). Again, highlighting the transdiagnostic nature of ACT.

Polysubstance and general substance use diagnosis. The experience of shame and stigma related to substance use is an ongoing issue for people who suffer from alcohol and drug problems. A study that targeted the experience of shame in SUDs utilised ACT in the hopes of addressing difficult feelings associated with substance use compared to a TAU group via a 28-day residential programme (Luoma et al., 2012). Results after treatment showed higher levels of attendance in an outpatient capacity for the ACT group and reduced substance use. Shame was reduced in both ACT and TAU groups, however, the initial post group reduction in substance use increased at follow-up. Although, the TAU group showed higher reports of substance use than the ACT group (Luoma et al., 2012). This study demonstrated the efficacy of ACT in reducing substance use as a secondary effect of the intended treatment for reducing shame associated with SUDs. Livingston, Milne, Fang, and Amari (2012) systematically reviewed the specific role of ACT in reducing stigma and shame for SUDs using over 13 studies. The studies examined provided limited evidence that self-stigma related to SUDs can be reduced via group-based ACT treatment. The importance of such research into self-stigma and shame, specifically in the AOD population, is that the experience of shame can act as an intense internal trigger for continued substance use. Therefore, a therapy that serves to reduce the impact of internal experiences of shame and self-stigma is likely to decrease an individual's drive to engage in substance use and experiences of other mental health problems commonly observed in the AOD population.

ACT was also applied to treat SUDs in the context prison through a RCT design (Lanza & González Menéndez, 2013). This larger study provided a large female prisoner sample that several other articles examined different aspects of the overall data, such as the long-term outcome of ACT applied to drug problems in a female prison (González-Menéndez, Fernández, Rodríguez, & Villagrá, 2014) and ACT compared to CBT for the same sample (Lanza, García, Lamelas, & González-Menéndez, 2014). The authors from the RCTs suggested ACT has

potential for an alternative treatment of SUDs. More specifically, results from González-Menéndez et al. (2014) demonstrated the long-term effectiveness of CBT and ACT for this population through a reduction of substance use and associated mental health problems compared to a waitlist control group. Lanza et al. (2014) further examined the differences in long-term efficacy of ACT compared to CBT. This study found no significant differences between ACT and CBT at the 18-month follow-up. The authors still suggest that ACT is an adequate treatment option for this particular population (Lanza et al., 2014). Just last year, another pilot study was conducted assessing an ACT-based treatment for severe SUDs (Svanberg, Munck, & Levander, 2017). Eighteen participants who were institutionalised under the Care of Alcoholics and Drugabuser Act were administered measures of mental health, psychological flexibility, and executive dysfunction, pre and post intervention. Their results indicated no change in mental health measures post intervention; however, they noted trends of improved psychological flexibility and executive functioning including emotional control, tasking monitoring, and inhibition. No measures of substance use or cravings were conducted in this study. Like many of the ACT studies applied to SUDs this was a pilot study that had no comparison or matched control groups; therefore, the generalisability of this study was limited and underpowered. The authors, like many others, suggest larger, well powered studies are still needed to establish stronger evidence of ACT applied to SUDs.

Table 4.

Summary of Published Articles for Acceptance and Commitment Therapy for Substance Use Disorders.

Substance Author(s)	**N**	**Study type**	**Intervention**	**Outcomes/Important findings**	**Limitations**
Smoking cessation (Nicotine)					
Gifford et al. (2004)	76	Randomised pilot study	ACT versus NRT	No difference post treatment. One year follow ACT had better long-term smoking outcomes due to improvements in acceptance related skills.	Larger and more powerful replication study needed to support this study's preliminary results
Brown et al. (2008)	16	Pilot study	Exposure and ACT-based distress tolerance	Early lapse smokers were able to remain quit for longer than previously reported. Full relapse did not occur until later and participant continued to make efforts to quit.	Small sample size
Hernández-López et al. (2009)	81	Quasi-experimental design	ACT versus CBT	ACT treatment deemed feasible and equivalent to CBT treatment. Follow-up data showing superiority over CBT (30% ACT versus 13% CBT). Shows promising evidence for ACT.	Replication in well powered, randomised, control trial needed
Bricker et al. (2010)	14	Single-arm study (feasibility)	Telephone delivered ACT	Results showed positive direction and suggestive evidence for 12-month abstinence from smoking.	Small sample size. Well powered study needed.
Gifford et al. (2011)	303	RCT	ACT + FAP combined with bupropion versus bupropion alone	Combined treatment significant better than bupropion alone. Data provides preliminary support for acceptance components which mediated the effects of combined treatment on smoking status.	Intent to treat analysis. Generalisability restrictions due to strict inclusion criteria.
Litvin et al. (2012)	162	RCT	Acceptance versus Suppression versus no intervention (control)	Both coping strategies associated with benefits for cravings affect and this was maintained at three-day follow-up.	Brief interventions. More research needed to differentiate acceptance benefits from suppression. Acceptance skill not taught properly. Motivational factors. Short follow-up.
Brown et al (2013)	49	RCT	Exposure and ACT-based-distress tolerance (DT) versus standard treatment (ST)	Distress tolerance (DT) were 6.46 times more likely to be abstinent from smoking with medium to large effect sizes. DT reported larger decrease in experiential avoidance.	Strict exclusion criteria of comorbidities. Small sample size. Total contact time greater for DT. DT combined with nicotine patch.

Bricker et al. (2013)	222	Pilot RCT	Web-based ACT (WebQuit.org) versus National Cancer Institute's site (Smokefree.gov)	Longer time spent on ACT website and were more satisfied with the site. Double the ACT participants had quit smoking at three-month follow-up. Acceptance of physical, cognitive, and emotional cues to smoke mediated results.	Pilot – limited follow-up
Bricker et al (2014)	196	RCT pilot	ACT smartphone app version one (SmartQuit) versus US Clinical Practice guideline (QuitGuide)	ACT app used more than other app. Overall quit rates higher for ACT app. Quitting rates associated with acceptance of cravings.	Small sample size.
Jones et al. (2015) Data used from Bricker et al. (2013)	94	RCT	ACT WebQuit.org versus Smokefree.gov	Investigated smokers with depressive symptoms. 45 participants completed three-month follow-up. Results showed preliminary evidence of lower depressive symptoms at follow-up and higher quit rates and acceptance of internal cues to smoke.	Underpowered
Bricker et al (2017)	99	Single-arm study	ACT smartphone app version two	Results showed high user receptivity, modest quit rates, high rates of smoking reduction. Higher user satisfaction, similar quite rates, and higher reductions in smoking than version one (Bricker et al., 2014)	Small sample size. No comparisons made. Short follow-up period. Self-report measures used as biochemical verification of abstinence is impractical and unnecessary.
Methadone/Opioids					
Hayes et al. (2004)	138	Randomised pilot study	MMT alone versus MMT with ACT versus MMT with ITSF	ACT condition showed lower opioid and total drug use at follow-up with both objective and subjective measures. Both conditions were more effective than MM alone condition. No significant differences on secondary psychological and social measures.	Intent-to-treat analysis Attrition rates – large dropouts in all conditions – ACT dropouts stabilised after two weeks of the programme.
Stotts et al. (2009)	1	Case study	ACT-based methadone detoxification programme	Client remained abstinence as measure by urine samples post treatment and a follow-up point. No significant changes in depression or experiential avoidance scores (BDI II and AAQ)	Client was 57 years old so more likely to achieve abstinence from drug compared to younger age groups.
Stotts et al. (2012)	56	Randomised pilot study	ACT-based opioid detoxification behaviour therapy versus drug counselling	No difference in opioid use during treatment. ACT group had higher rates of successful detox at post treatment. Fear of detoxification was also reduced in the ACT condition.	Small sample size. Therapy training time was greater for the ACT condition potentially creating an allegiance bias.

Saedy et al. (2018)	34	Pseudo-experimental /treatment versus control group	Treatment group MMT and ACT versus control group only MMT	Treatment group significantly decreased methadone dosage across assessment phases. Significant reduction in craving beliefs in treatment group.	Strict exclusion criteria of no comorbid diagnoses and not under any other form of psychotherapy or using other substances. Methadone confounding factor on cravings. Small sample size. Longer follow-up.
Alcohol					
Heffner et al. (2003)	1	Case study	Values component of ACT	Alcohol dependence treated with ACT-based values work resulted in improved quality of life and near 100% sobriety at follow-up	Case study limited generalisability of results.
Petersen & Zettle (2009)	29	Randomised pilot study	ACT versus. TAU within 12 step programme context	Alcohol and depressive symptoms showed significant and equivalent reductions in depressive symptoms were observed for both ACT and TAU. ACT group met discharge criteria within shorter period with less time spent in therapy which supports ACT's time efficient and cost-effective qualities over TAU.	Small sample size. No measure of alcohol use during and post treatment.
Thekiso et al (2015)	52	Pilot matched control trial	ACT and TAU versus Control	Alcohol use disorder and comorbid affective disorders results showed retention rates higher for ACT condition (100%) at follow-up. ACT had higher abstinence duration, significantly lower depressive symptoms and anxiety symptoms and significantly lower cravings and improvements sustained at follow-up.	Small sample size limiting generalisability. Higher educational background and family history of psychiatric disorders in ACT group. Lack of parallel treatment for both groups. Use of historical control group.
Harvey et al (2017)	262	Quasi-experimental pre-post design	ACT-based intervention versus waitlist control	Showed greater reductions in alcohol consumption, aggression, anxiety, stress, and perceptions of others being responsible for their circumstances, improvement in emotion management compared to the waitlist.	Small sample size, no active comparison group
Cannabis					
Twohig et al. (2007)	3	Nonconcurrent multiple baseline across participants design	ACT for marijuana dependence	Abstinence from marijuana achieved at posttreatment confirmed by oral swabs. Three-month follow-up maintained abstinence for one participant with the other two reporting lower levels of use. Depression, anxiety, withdrawal symptoms, and experiential avoidance improved.	Baseline length an ethical issue. Questionable quantity of use for self-monitoring use. Mixed treatment goals i.e. abstinence versus moderation non-consistent assessment with AAQ. Formal diagnosis not used.
Methamphetamine					

Smout et al. (2010)	104	Preliminary RCT	ACT versus CBT	No significant differences between treatment group attendance. Methamphetamine use, negative consequences, and dependence severity improvement in both groups. ACT seen as a viable alternative to CBT for methamphetamine use disorders.	High attrition rates and missing data and underpowered.
Stigma/Shame					
Luoma et al. (2008)	88	Pilot study	ACT-based treatment for self-stigma for SUDs	Medium to large effects across several variables at post treatments such as internalised stigma and shame decreased. Also found significant reductions in experiential avoidance and was highly correlated with internalised shame.	Lack of control group – no mediation analysis. Self-report measures, lack of follow-up and concurrent nonspecific treatment.
Luoma et al. (2012)	133	RCT	ACT group-based intervention versus TAU targeting shame for SUDs	ACT intervention showed smaller immediate gains in shame but larger reductions at four-month follow-up. Fewer days of substance use and higher treatment attendance at follow-up.	Intent to treat analysis – missing data at follow-up. Difficult to characterise TAU Shame versus guilt debate
Substance use disorders					
Batten & Hayes (2005)	1	Case study	ACT for comorbid substance abuse and PTSD	By 12 months into therapy scores fell below the cut-offs for significant distress and these gains were maintained until the end of treatment. Began abstinence from substance at month 7 of therapy and maintained to completion of therapy.	Limited generalisability. Abstinence due to pregnancy additional motivation to abstain.
Lanza & González-Menéndez (2013)	31	Randomised trail	ACT versus Waitlist control for incarcerated women with SUDs	16 ACT sessions found 27.8% abstinence rates with accumulate effects at follow-up 43.8% abstinence rates (incubation effect). ACT also promoted improvement in comorbid psychopathology and anxiety sensitivity and increased psychological flexibility. ACT is an effect and appropriate treatment in prison context for SUDs.	No guidelines for ceasing drug consumption were provided. Small sample size.
González-Menéndez et al. (2014)	37	RCT	ACT versus CBT	Long-term (18-month follow-up) outcomes of ACT was better than CBT in maintaining abstinence rates.	Participants chronicity and polysubstance use, loss of participants due to transfers, small sample size, lack of therapist adherence measure.
Lanza et al. (2014) (Full data set)	50	RCT	ACT versus CBT for incarcerated women with SUDs	Posttreatment results favoured CBT over ACT for reducing anxiety sensitivity however at follow-up ACT was more effective at reducing substance use and improving mental health.	Small sample size. Potential bias due to therapist not being blind.

Lee et al. (2015)	10 RCTs	Meta-analysis	ACT versus other treatments	Aggregate effect size analysis found significant small to medium effect size favouring ACT relative to active treatment comparisons. Other treatments included CBT, pharmacotherapy,12 step, TAU.	Process of change means - determine how ACT improves substance abstinence not measured. Quality of life or psychosocial functioning not measured. Lack of cultural diversity limits generalisability. Underpowered studies. Some did not include post or follow-up assessment. Intent to treat outcomes conservative. Small sample size.
Svanberg et al. (2017)	18	Pilot study	ACT intervention	No change in mental health and a trend implying positive changes for psychological flexibility for 9/10 executive functions.	Underpowered, small sample size. No follow-up data.

Note: ACT = Acceptance and Commitment Therapy, CBT = Cognitive Behavioural Therapy, NRT = Nicotine Replacement Therapy, FAP = Functional Analytic Psychotherapy, ITSF = Intensive 12 Step Facilitation, TAU = Treatment As Usual, DT = Distress Tolerance, ST = Standard Treatment, SUD = Substance Use Disorder, RCT = Randomised Control Trial.

Reviews and meta-analyses of Acceptance and Commitment Therapy and Substance Use Disorders. Chiesa and Serretti (2014) specifically investigated mindfulness-based interventions for SUDs via a systematic review which supported the use of third wave therapies such as ACT to treat SUDs. Several positive outcomes were associated with the implementation of mindfulness-based interventions such as reduced consumption of substances (including alcohol, tobacco, marijuana, opioids, amphetamine, and cocaine) as well as reduced cravings, and an overall improvement in mindfulness. They noted the implications of neuroimaging studies that find brain structure and activity changes with regular mindfulness practice. This in turn is associated with reduced mental ruminations, which may function as a way of reducing the rates of relapse via diminishing reactions to substance craving cues. However, as the other studies outlined, the authors stress the need for more rigorous and larger scale studies to support these findings.

A recent initial meta-analysis examined the aggregated effect sizes of ACT compared to other treatments (including CBT, 12 step facilitation, pharmacotherapy, and TAU) using ten substance use outcome studies outlined above (Lee et al., 2015). Although the research in this area is preliminary, the authors observed potential trends in the data to guide future research. They concluded that ACT is a promising alternative for treatment of SUDs. More specifically, the authors found a significant small effect size (g = .29) for ACT compared to control conditions at post-treatment. Follow-up data from the ten studies examined showed that ACT had a small to medium effect size, supporting the long-term efficacy of ACT in continuing to promote positive change over time. Another noteworthy finding of this meta-analysis was that the average attrition rate was lower for ACT compared to other psychotherapies from pre to post treatment (Lee et al., 2015). However, it is acknowledged that more studies are needed to make it an empirically supported treatment option, particularly studies that address the limitations in the previous research. Since then, ACT is still being

investigated via systematic reviews and meta-analyses to provide further evidence of its potential benefits to SUDS. Barrett and Chang (2016) reviewed behavioural interventions, including ACT, for comorbid problems chronic pain, depression, and SUDs in the context of primary health care. The authors report that ACT, as well as other mindfulness therapies and interpersonal therapy, showed promising results with small to moderate effects observed; however, this was in comparison to TAU and not an active comparison group. The authors also examined for publication bias and found no systematic bias, supporting the integrity of the research published (Barrett & Chang, 2016).

Summary of the evidence. The preliminary nature of the majority of studies on ACT and SUDs means further investigation into the efficacy of ACT is needed to confirm findings (Bricker et al., 2013; Brown et al., 2013; Gifford et al., 2004; Hayes et al., 2004; Hernández-López et al., 2009; Russell, 2013; Smout et al., 2010). The main limitations discussed in the literature include small sample size, high attrition rates, therapist bias and training, short follow-up periods, and TAU complexities acting as moderators (Bricker et al., 2013; Brown et al., 2013; González-Menéndez et al., 2014; Hayes et al., 2004; Hernández-López et al., 2009; Lanza et al., 2014; Litvin et al., 2012; Petersen & Zettle, 2009; Russell, 2013; Smout et al., 2010; Stotts et al., 2012). Some of the literature reported investigations of comorbid conditions such as alcohol and depression did not use any alcohol use outcome measure post-treatment (Petersen & Zettle, 2009) and further, some studies did not have a follow up assessment phase (Luoma et al., 2008; Svanberg et al., 2017). Of note, the reviews and meta analyses found no publication bias for ACT (Lee et al., 2015) and in general ACT was found to be just as effective as CBT for SUDs and superior to control groups such as waitlists, intent to treat and TAUs.

SECTION FOUR: The Current Study Rationale and Objectives

The present study is an attempt to design, develop, deliver, and evaluate the effectiveness of a pilot manual for ACT applied to SUDs in a group treatment programme in a community sample in NZ (Palmerston North). Group interventions for people with complex problems, including SUDs, have shown to be effective in time and cost. While group therapy has been reported as effective as individual therapy, group formats provide an opportunity for services to provide high intensity (several hours per week) treatment to several people at once (rather than one at a time) (Barrett & Chang, 2016; Corey, Corey, & Corey, 2013). Research supports the use of and demonstrates improved outcomes of group-based interventions compared to wait list controls or no treatment, specifically for ACT (Öst, 2008; 2014; Ruiz, 2010; 2012). The specific benefits of delivering an ACT treatment programme through a group format include its interactive process through exercises, and group discussions. Support, validation, increased self-awareness, and better understanding through different perspectives can all be harnessed through the group format (Walser & Pistorello, 2004). Self-stigma may also be reduced through group interventions specifically for SUDs, as it allows those who similarly struggle to share and learn from each other (Livingston et al., 2012), which support the use of group formats with ACT.

In the initial stages of the study design a randomised control trial was originally planned. However, discussions with the Palmerston North AOD service indicated that this was untenable. Given this was a real-world trial in a functioning AOD service, the notion of a RCT was considered disruptive to service delivery. Other issues with implementing a RCT was the amount of time and resources required to conduct such a study, as they typically involve highly selected participants with a single diagnosis that is not typical of the AOD Service clientele (it is a service that supports dual diagnosis). RCT's are notoriously difficult to conduct in regular

government funded services due to the funding priority towards the provision of services and not for the purposes of conducting empirically sound research; therefore the current study was conducted in what is best described as a real-world setting with realistic and achievable research designs in the community. There was also a barrier for collecting data for a TAU comparison group as this would require AOD staff or the lead researcher to administer the protocol of measures. Research requiring such a large number , approximately 120, of participants was unlikely, particularly given the number of participants and groups needed to be recruited, completed treatment, and assessed at follow-up within the two-year research project time frame.

Other comparison groups were also considered to allow a mixed factorial design approach. Two comparison groups were approached, a Mindfulness-Based Relapse Prevention group also conducted by the AOD service, and a Cognitive Behavioural Therapy Group for Anxiety Disorders conducted by another DHB. The latter service ran two groups in 2016 and attempted to collect data using the protocol of measures for the current research. However, due to significant attrition rates and missing data for mid-group assessments, this comparison group could not be included in the current study. The Mindfulness-Based Relapse Prevention group was scheduled to start in 2016. However, the failure of this group to begin meant the ACT group programme for SUDs ran without any comparison groups. Therefore, the current study chose a repeated measures methodology as the preferable study design to assess the ACT group participants at pre, mid, post, and follow-up phases. Repeated measures design allows researchers to examine the effects for the same participants at different times, providing a snapshot of change, commonly at pre and post treatments. This research design also allows for greater statistical power relative to sample size which is essential in real-world research circumstances (Minke, 1997; Stevens, 2012). These reasons provided the rationale for conducting repeated measures for the ACT groups conducted in the current study.

Evaluation of the group treatment programme and monitoring clients' progress using repeated measures methodology (pre-treatment, mid-treatment, post-treatment, and follow-up) is considered appropriate in real-world settings and enables service provision to be evaluated while the service continue to operate as usual. The current study includes post and follow-up measures as recommended by several reviews and meta-analysis to increase methodological stringency (Lee et al., 2015; Ost 2008; 2014). This research also makes use of treatment fidelity checklists and follows a manual to account for treatment integrity. Specifically, the research had a two-pronged purpose to assess both the use of alcohol and other drugs, including substance cravings as well as use, and to assess coexisting problems via perceived stress, anxiety, locus of control, and mood management. An additional aspect investigated was mindfulness tendencies. These measures were included to help the author answer the following research questions:

Research question one: Does an ACT-based group treatment programme reduce participants' self-reported alcohol use and substance use and cravings at the end of the treatment (post-group) as well as the three-month follow-up? This reduction is expected to gradually occur over the course of the group programme, evidenced by reductions at mid-group, post-group, and follow-up assessment points.

Similar findings of such reductions have already been reported. Although preliminary the research outlined above demonstrates an ACT based treatment can reduce smoking, methadone, cannabis, and methamphetamine use. Alcohol has not been the focus of many studies utilising ACT. Nevertheless, it is still expected that there will be a decrease in use as a function of completing the current study's group programme.

Research question two: Does an ACT-based group treatment programme reduce common SUDs coexisting problems such as perceived stress, anxiety, and external locus

of control and does an ACT-based group treatment programme enhance internal locus of control, resistance to peer pressure, and mood management? It is expected these changes will be gradually occurring over the course of the group, evidenced by changes observed at mid-group, post-group, and follow-up assessment points.

Lee et al. (2015) recommended that secondary outcome measures targeting common coexisting problems like anxiety need to be assessed alongside SUDs. Therefore, the current study uses such measures to obtain outcomes on the level of perceived stress, anxiety, locus of control, resistance to peer influence, and mood management.

Research question three: Given mindfulness is a core ACT strategy, would the self-reported use of mindfulness techniques be significantly related to improvements in coexisting difficulties and reductions in alcohol and other drug use and cravings? It is expected that participants will report an increase in mindfulness over the course of group (observed at mid-group, post-group, and follow-up assessment phases) and that significant relationships would be evident between mindfulness scores and all other dependent variables (alcohol use, substance use and cravings, perceived stress, anxiety, locus of control, resistance to peer pressure, and mood management).

The current study's contribution to the existing literature. As the literature demonstrates, previous studies have been tightly controlled, often excluding participants with multiple problems from testing the effectiveness of new therapies. The current study is an exception, navigating the complexities of outpatient group treatment to provide a more realistic understanding of ACT-based therapy. Applied within a DHB AOD Service in NZ, this study builds on previous AOD-based research in NZ that has applied ACT interventions to coexisting mental health problems (Crispin-Morrall, 2013; Harvey et al., 2017), adding both depth and breadth. This previous research has offered a reference point into ACT-based

group therapy effectiveness, by examining military personnel over the course of a one-week ACT-based intervention. The current study takes a step further, assessing the effectiveness of a community-based group treatment over a 10-week period. An innovative approach to group treatment, the programme was conducted within a DHB service that sees frequent comorbid presentations of SUDs and mental health disorders. As such, this research also contributes to a growing evidence base for the use of ACT therapy for SUDs and associated issues. The uniquely real-world design of this study, over an extensive test period, thus adds new dimension to the current ACT research landscape. The findings will contribute significantly to understanding the feasibility of ACT group therapy approaches for both SUDs and comorbid mental health problems.

CHAPTER TWO

METHODS

The methods chapter describes how the research was implemented by outlining the pathway for the participants involved, the protocol of measures, and the treatment manual and materials, as well as describing the research procedures, ethical considerations, and the research design and data analysis.

Participants

Recruitment. The participant sample was drawn from the Alcohol and Other Drug (AOD) Service in Palmerston North, NZ, with recruitment occurring from May 2016 to August 2017. A service wide presentation of the proposed group treatment programme was conducted by the author and all AOD staff were provided information brochures to distribute to potential participants (see Appendix A). Information brochures were also provided in the AOD waiting room. Participants were referred by their AOD case managers to the group facilitators (the author and a Senior Clinical Psychologist from the Palmerston North AOD service) on a voluntary basis for an initial assessment and completion of pre-group questionnaires.

Inclusion and exclusion criteria. Given that the research study was embedded within the AOD service, participants had met the referral requirements for the service, that is, they were struggling with significant substance use issues and related coexisting problems and/or were on the Opioid Substitution Programme (Methadone/Suboxone). Additional inclusion criteria for the group involved 1) being aged between 18 and 66 years old, 2) capacity to engage with the group (e.g., the participants can be sober and not under the influence of

substances for the duration of the group session[4], 3) be willing and motivated to attend the proposed group treatment programme including assessment points.

The general exclusion criteria involved those who were 1) experiencing active and severe depression, significant suicidal ideation or behaviours, PTSD symptoms, and/or psychosis that were considered to have a possible derailing effect on the group, 2) active withdrawal from substances not supported by a withdrawal management plan, 3) personality disorders that could significantly interfere with group dynamics and processes, and 4) current legal charges preventing ability to complete the group treatment programme. Exclusion criteria were considered on a case by case basis given the nature of research conducted in a real-world setting. This flexible approach allowed participants to be included in the study on the provision that adequate support and management plans were in place for those with significant depressive, suicidal ideation, PTSD, psychosis, or personality disorders and legal problems and to reduce the likelihood of significant derailment of the group.

Sample size and attrition rates across groups. Four group treatment programmes were conducted over the period of May 2016 to February 2018 (including follow-up). Across all four groups, an initial sample size of 39 participants, aged between 18-66 years old, completed the pre-group assessment. This number reduced at the mid-group assessment point to 26, with further reductions at post-group assessment (n=25) and follow-up (see *Figure 4* below), leaving a final sample size of 20.

[4] This was based on the case managers and group facilitator's clinical judgement in conversation with the participant.

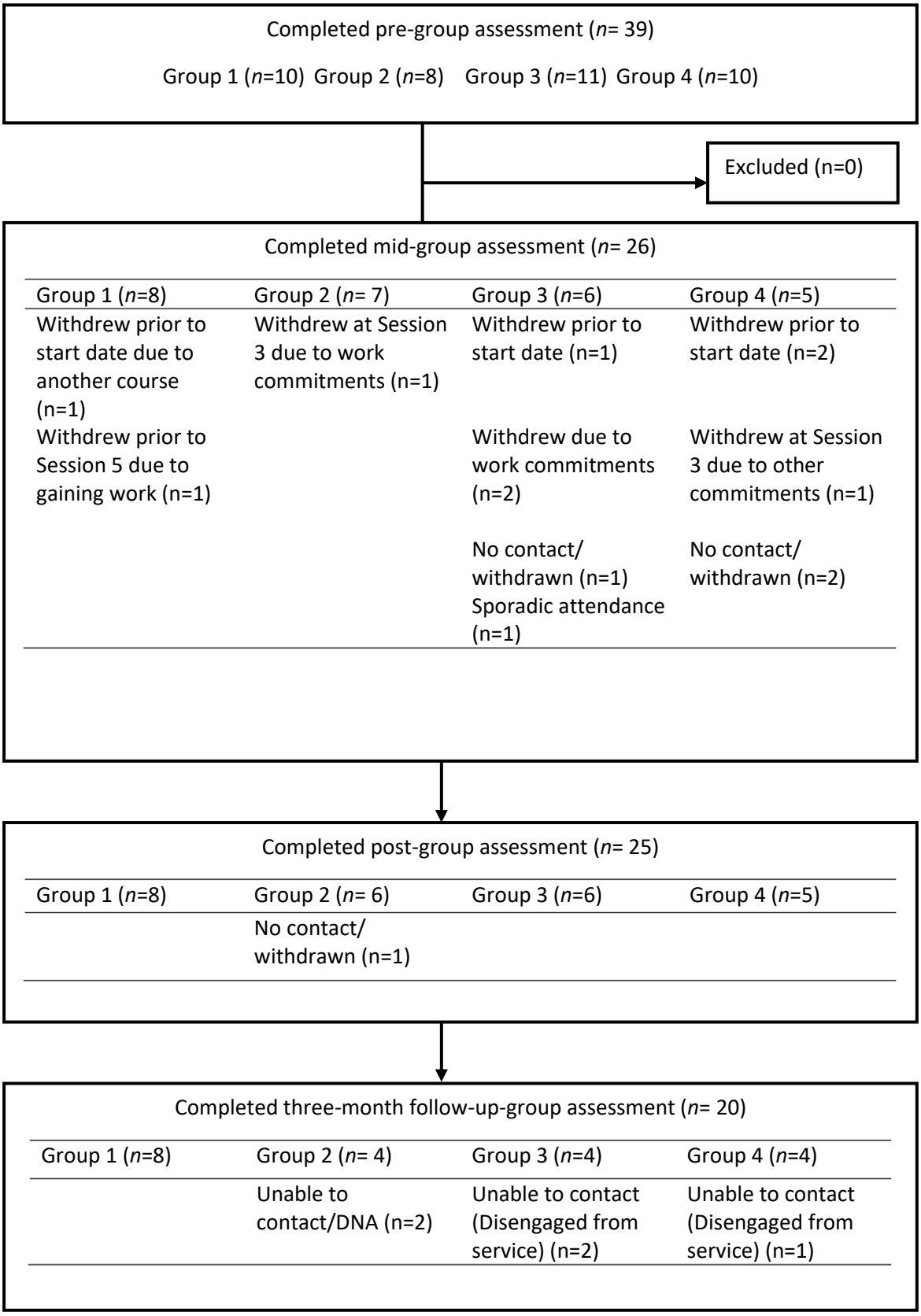

Figure 4. Study flow diagram and attrition rates.

Participant demographics. All participants lived within the MidCentral District Health Board (DHB) area (situated in the middle of the lower North Island of NZ). The area encapsulates the wider Manawatu region including the central city Palmerston North and several surrounding small rural towns such as Otaki, Dannevirke, Feilding, and Foxton. Of the 20 participants who completed follow-up, ten were male and ten were female. Ages ranged between 21 and 66 years, with an average age of 44.7 years at pre-group assessment point. Most participants identified as NZ European (n = 15), with two identifying as Māori and two as NZ European and Māori, and one Australian. Participants varied in their level of severity of substance use problems as well as severity of their comorbidities. Participants also varied in their experience of residential treatment programmes and previous group work as well as involvement in individual therapy while attending the group treatment programme.

Group facilitators. The assessors and group facilitators for all four groups were a Senior Clinical Psychologist with 22 years' experience working with substance use and mental health problems and the researcher, a Doctorate of Clinical Psychology student at Massey University, with previous work experience in the AOD setting.

Protocol of Measures

The research protocol comprised eight brief psychometric measures, chosen to evaluate the group treatment programme efficacy in a range of areas including substance use and cravings, stress, anxiety, mood management, locus of control, peer pressure, and mindfulness behaviours (see Appendix B). This also included an initial semi-structured clinical interview (for assessment purposes) with the protocol of self-report measures used to assess therapeutic outcomes across pre, mid, post, and follow-up assessment points. The specific measures utilised were chosen based on the research hypotheses outlined on page 56 and 57 of the thesis and were deemed suitable to provide relevant outcome data as they were

already in use in a larger group-based programme utilising ACT for the NZ army via Massey University (designed by Dr Andy Towers) and utilised in previous research by Crispin-Morrall, 2013 and Harvey et al., 2017. They were observed by this previous research to cover the range of issues that were expected to change when examining the effectiveness of such a transdiagnostic treatment approach. The measures were also recommended due to their availability and open access status. The addition of a mindfulness measure allowed for the examination of mindfulness tendencies in relation to changes in alcohol use, substance use and cravings, perceived stress, anxiety, locus of control, resistance to peer pressure, and mood management. If participants had any difficulties in completing the protocol of measures the author provided the necessary assistance.

Semi-structured clinical interviews. Semi structured clinical interviews with potential participants were conducted by the group facilitators. The author or the client's case manager contacted potential participants via phone to schedule assessment sessions. The assessment interview included 1) current circumstances as well as a brief history of the participant's substance use and coexisting problems 2) screening for risk issues 3) assessment for motivational levels based on clinical judgement 3) explanation of the study and group treatment programme 4) completion of consent forms and 5) completion of the pre-group measures.

Self-Report Measures

Alcohol Use Disorder Identification Test-Consumption (AUDIT-C). The AUDIT-C, developed by the World Health Organisation, is a 3-item self-report measure that indicates the quantity and frequency of alcohol consumption on a typical day and highlights binge drinking patterns. Items are scored from 0 to 4, with the possible sum of scores ranging from 0 to 12. Scores above 3 are considered the standard cut-off that indicates hazardous drinking in the

general adult population. The AUDIT-C has been widely used in primary health settings to screen for heavy drinking and indicates the severity of an individual's alcohol use problem (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998; Bradley et al., 2007; Dawson, Grant, Stinson, & Zhou, 2005). The psychometric properties of the AUDIT-C are reliable with those of the full 10-item AUDIT which has shown moderate internal consistency with high correlations between scores on the AUDIT-C and AUDIT (Neumann et al., 2012). It has also been shown to be an effective screening tool across cultures (Frank et al., 2008). Within the NZ context, the AUDIT-C was found to be a promising standalone screening tool among university students for alcohol use problems (Blank, Connor, Gray, & Tustin, 2015). In accordance with previous research (Crispin-Morrall, 2013), Section B of the AUDIT-C was adapted to measure drinking behaviour changes in the past four weeks instead of the original timeframe of the past 12 months.

World Health Organisation-Alcohol, Smoking, and Substance Involvement Screening Test Version 3.0 (WHO-ASSIST V3.0). The World Health Organisation also developed the WHO-ASSIST V3.0 (2016). This measure screens for a wide range of substance use and frequency of use, excluding alcohol, and elicits the frequency of cravings for substances. Responses are recorded on a 5-item Likert scale ranging from 1 *Never* to 5 *Daily or Almost daily*. Humeniuk, Dennington, and Ali (2008) conducted validity testing in which concurrent and construct and discriminative validity were established. Further good test-retest reliability was achieved by McNeely et al. (2014). This measure was also validated within an Australian population as an effective way to screen for substance use problems (Newcombe, Humeniuk, & Ali, 2005). Again, in accordance with prior research (Crispin-Morrall, 2013), phrasing for specific questions was adapted to facilitate sensitivity to changes in substance use and cravings in the last month to better encapsulate the potential changes made over the course of the group treatment programme and follow-up period.

Perceived Stress Scale – 10 (PSS-10). The PSS-10 is a 10-item self-report measure that assesses the degree an individual perceives general life situations as stressful. Items are scored on a 5-point Likert scale ranging from 1 *Never* to 5 *Very often.* The total perceived stress score is calculated by the sum of items, with negatively worded items being reverse scored. Total scores between 0-13 indicate low stress, 14-26 suggest moderate stress, and 27-40 indicate high perceived stress levels (Cohen, Kamarck, & Mermelstein, 1983, 1994). No adaptations were made to this measure. The PSS-10 is reported to have convergent validity between items, construct validity, and is considered a reliable and valid instrument for the assessment of perceived stress (Roberti, Harrington, & Storch, 2006). More recently, Taylor (2015) reported that inferences made from the PSS-10 are valid.

Generalised Anxiety Disorder Screen (GAD-7). The GAD-7 is a 7-item self-report measure that assesses the severity of anxiety levels on a 3-point Likert scale ranging from 0 (*Not at all)* to 3 (*Nearly every day)* with a total possible score ranging from 0-21 (Spitzer, Kroenke, Williams, & Lowe, 2006). Minimal anxiety is indicated by scores of 0 to 4, mild by scores of 5-9, moderate 10-14, severe 15-21. This measure was not modified for the study. Psychometric properties of the measure include good construct validity, internal consistency, convergent, and criterion-related validity (Lowe et al., 2008; Spitzer et al., 2006)

Brief Locus of Control Scale (BLOCS). The BLOCS is the short-form version of Levenson's 24-item Locus of Control Scale (LOCS) (as cited in Sapp & Harrod, 1993). It is composed of 9 items that measure the extent an individual agrees that they (internal), chance, and others have control over their lives. This is measured on a 5-point Likert scale ranging from 1 *Strongly disagree* to 5 *Strongly agree*. This measure was not modified during the study. Research for this specific measure is limited, with validity studies conducted in the 1980's by Lumpkin (1985; 1988) reporting the brief measure to be valid. Sapp and Harrod's

(1993) psychometric evaluation provided support for the BLOCS construct and predictive validity.

Trait Meta-Mood Scale (TMMS). The TMMS is a 30-item self-report measure designed to measure an individual's self-perceived emotion management. This measure also uses a 5-point Likert scale ranging from 1 *Strongly disagree* to 5 *Strongly agree*. Total emotion management scores are made up of the measure's three subscales 1) attention, 2) clarity, and 3) repair, with selected items reverse scored appropriately (Palmer, Gignac, Bates, & Stough, 2003). Total scores between 30 and 89 indicate "needs to work on emotions", 90 to 149 indicates "has a handle on emotions, but could use more work", with scores above 150 indicating "excellent" emotion management skills. The attention subscale indicates an individual's self-perceived ability to attend to their mood and emotional states, with scores between 13 and 38 suggesting "unaware of feelings, needs work", 39 to 64 suggesting "growing awareness", and scores above 64 suggesting "excellent" attention skills. The "clarity" subscale represents an individual's self-perceived ability to clearly discriminate between mood and emotional states with scores between 11and 32 indicating "confused", 33 to 54 indicating a "growing clarity", and scores above 55 indicating "excellent" clarity of moods and emotions. The "repair" subscale indicates the self-perceived ability to regulate mood and emotional states, with scores between 6 and 17 suggesting "needs to act", 18 to 29 suggesting "attempts to repair", and scores above 30 suggesting "excellent" regulation management skills. No adaptations were made. Good convergent and discriminant validity were reported by Palmer et al. (2003), with adequate internal consistency also found by Palmer et al. (2003) as well as Salovey, Mayer, Goldman, Turvey, and Palfai (1995) and in a later study by Salovey, Stroud, Wollery, and Epel (2002).

Resistance to Peer Influence Scale (RPI). The RPI is a 10-item scale that measures an individual's self-perceived resistance to peer influence. A 4-point Likert scale uses a pair

of descriptive statements within each item, and with each statement there are two response options, “really true for me” or “sort of true for me”. Participants choose one of the descriptive statements and then indicate one of the two associated response options. Specific items are reverse scored, and the total score is the sum of responses divided by the number of valid responses (a minimum of seven valid responses is recommended) (Steinberg & Monahan, 2007). The scale has good internal consistency as well as sufficient construct validity (Steinberg & Monahan, 2007; Sumter, Bokhorst, Steinberg, & Westernberg, 2009).

Mindfulness, Attention, and Awareness Scale (MAAS). The MAAS is a 15-item self-report measure that uses a 7-point Likert scale that assesses attention to, and awareness across cognitive, emotional, physical, and general aspects of everyday life, providing a sense of an individual’s mindful tendencies and practices (MacKillop & Anderson, 2007). There have been some challenges to the construct validity of the MAAS, which suggests an inability of response options to discriminate between trait levels (Van Dam, Earleywine, & Borders, 2010). However, the authors state that the measure is one of the most popular self-report mindfulness measures and through MacKillop and Anderson’s (2007) studies the MAAS was found to be valid. A confirmatory factor analysis also supported the measure’s unidimensional factor structure (MacKillop & Anderson, 2007).

Supplementary measures. Several supplementary measures were utilised to provide an opportunity for the participants to give feedback about the group therapy programme that was not restricted by pre-determined response formats. The responses to these questionnaires were not analysed using qualitative techniques (i.e. discourse analysis) but summarised according to key themes and reported verbatim in the thesis. These were used as an adjunct to numerical measures and to provide anecdotal information about the effectiveness of the treatment. Information obtained from these measures can also be used to guide the

development of future treatment programmes for substance use problems and coexisting problems.

Session rating scales (SRS). The SRS were administered at the end of every session to obtain additional information about the session's level of helpfulness and enjoyability using closed and open-ended questions. Participants were asked to indicate how much they agreed with the statements "*I ENJOYED this ACT session*" and "*This ACT session was HELPFUL*" using a 4-point Likert scale ranging from 0 *Strongly disagree* to 4 *Strongly agree*. They were then asked to comment on aspects they deemed helpful, unhelpful, and if they had other suggestions or comments regarding the session (see Appendix C). The forms were collected by the group facilitators and were completed anonymously by the participants to reduce the likelihood of grateful testimonials.

Group rating scales (GRS). The overall GRS were administered at the end of Session 10 to obtain further feedback about the group programme (see Appendix D). Participants were asked another set of closed and open-ended questions using the same 4-point Likert scale outlined above for the SRS. Participants were asked how strongly they agreed or disagreed whether the group was: enjoyable, helpfulness, good style (i.e., weekly sessions/group discussions/exercises), facilitators fit (i.e., approachable, engaging, acknowledgeable), and relevant and helpful hand out material. Open-ended questions included how the overall group treatment programme was helpful, not helpful, and requested any other comments or suggestions about the programme.

Follow-up feedback questionnaire. Further feedback to determine how well the group treatment programme benefited the participants was sought at the three-month follow-up interview by adapting Raeburn's "PEOPLE" system (Raeburn, 1987). They rated improvements to their wellbeing, ability to carry out every day activities, ability to cope,

satisfaction with life, and sense of happiness and wellbeing. These improvements were assessed using a 4-point Likert scale with 1 *Excellent* to 4 *Poor.* Further questions rated the satisfaction levels of the group facilitators' responses to the participants' as well as the facilitators' level of competency and the participants overall contact with the group from 1 *Very satisfied* to 4 *Not satisfied*. Additional questions rated on a scale ranging from 1 *Yes – a lot* to 4 *No – worse now*, sought to gather participants' beliefs about the ACT group for SUDs helping them sit with unwanted psychological experiences, helped cope with problems related to addiction, improved their ability to live more in line with their values, and increased their commitment to carrying out value driven goals. Participants were also asked open-ended questions about the most helpful and least unhelpful aspects of the group, how they think the group could be improved and were able to make any comments (see Appendix E).

Treatment fidelity checklists. Borrelli (2011) stressed the importance of attention to treatment fidelity and how the benefits of such outweigh the costs; he recommends audiotaping sessions for review. However, this was beyond the scope of the current study and the consent obtained from the participants did not cover audiotaping sessions. Several reviews on ACT have also recommended the use of treatment fidelity measures to enhance methodological rigor (Öst, 2008; 2014). Therefore, following each session, the group facilitators completed a treatment fidelity checklist to ensure the consistent integrity of the treatment programme delivered across groups (see Appendix F).

Group Treatment Manuals and Materials

The development of the manuals. Group facilitator manuals and group participant workbooks were developed by the author in consultation with feedback and suggestions from the supervision team and those involved in the project to ensure the face validity for the target population. This included service provider feedback from clinicians at the Palmerston North

Alcohol and Other Drug Service and from the academic supervisors in the Psychology Department at both Massey University Palmerston North and Wellington campuses. Once the draft manuals were complete, further feedback and suggestions were made, including editing dialogue to make therapeutic exercises easier to understand.

The initial literature review informed the development of the facilitators' manual and participants' workbook. Thus, research targeting ACT and SUDs were considered paramount, as well as research on group therapy. Accordingly, the manuals utilised practice guidelines within the ACT framework and were presented in a sequence designed to provide optimal impact for clients with SUDs (Hayes & Strosahl, 2004). The therapeutic elements used in the manuals originate from an ACT theoretical approach which is rooted in Relational Frame Theory (RFT) outlined in Chapter 2 of this thesis. Resources from the website Association for Contextual Behavioral Science (ACBS) were utilised to assist in construction of manuals. This included open access to all audio podcasts (ACT in Context: The Acceptance and Commitment Therapy Podcast) and published treatment protocols for ACT as well as other ACT-related resources. Other key resources for the activities and exercises in this manual were adapted from resources originally presented in DuFrene and Wilson's (2012) book "The Wisdom to Know the Difference: An Acceptance and Commitment Therapy Workbook for Overcoming Substance Abuse", Steven Hayes and Kirk Strosahl's "A Practical Guide to Acceptance and Commitment Therapy" (2004), Russ Harris's "ACT Made Simple" (2009), "Get Out of Your Mind and into Your Life" by Steven Hayes (2005), "Acceptance and Commitment Therapy: The Process and Practice of Mindful Change" by Hayes, Strosahl, and Wilson (2011), and the NZ Army Well-Being Course (Harvey & Dickson, 2010).

The final selection of content also emerged from the diverse and complex needs of the client population in the AOD service in Palmerston North. Further, implicit development of the manuals included underlying principles of a primary focus on increasing mindful and

value driven behaviour in the context of any SUD, as well as flexibility in the implementation of the therapeutic components throughout the programme guided by unique characteristics, circumstances, and needs of the particular group. The treatment fidelity checklists were utilised to maintain the group treatment programme integrity. Therefore, the core content of the manual did not differ between groups; however, some modifications were made after receiving participants' feedback and by reflecting on how well an idea or skill was explained. There was also a natural variation between groups due to participant-specific responses and understanding of the material presented. For example, if a participant(s) needed a concept further explained then more time and examples were given to achieve a comfortable level of understanding for the group. Additional material, such as a video, was used to augment themes presented in sessions.

Manual session layout. The group was guided by a closed structured group model, with individual and group activities and exercises utilised in session (Bernard et al., 2008; Ziller, 1965). The duration of each session was up to three hours and followed the same general layout for each session, excluding session one. The first session was explanatory and included a short introductory statement giving an overview of ACT, group expectations, therapy agreement and commitment and programme material (see Appendix G for a generic copy of the group agreement). Group participants were also introduced to the concept of mindfulness and a practise exercise was administered in session one. Starting from session two the general structure followed a sequence of an opening mindfulness exercise, any apologies from participants who could not attend the session, a review of the feedback received from the previous session rating scale, a review of the previous session's material and weekly challenges (homework practise), introduction to the key concept of the session, exercise(s) related to the key concept, a group discussion on the exercise, a relevant metaphor, quotes of the week, further group discussion of the key concept, an outline of the next weekly

challenge, and closing with a short mindfulness exercise, followed by administration of the SRS. A refreshment break occurred at a convenient time between therapy components; after the break therapeutic activities would continue. Mid-group assessment occurred at session five and the post-group assessment occurred at session ten. Additional time was allocated for the participants to complete the self-report measures.

Pilot treatment manuals (facilitator manual and participant workbook). The facilitator manual describes the purpose and goals for each session, materials required, format and activities, and outlines weekly challenges (homework). The participants received a corresponding workbook on a weekly basis so as to not overwhelm them with the content of the group and to ensure participants did not complete the session exercises in advance without the guidance of the group facilitators. The group treatment programme comprised ten sessions as follows:

Table 5.

Session by Session Overview of Core Components in the Acceptance and Commitment Therapy-Based Group Treatment Programme.

Session number and title	Core components of each session
Session one: Reasons for use	• Introductions: Ice breaker exercise – Introduce the person next to you • Housekeeping: Confidentiality, toilets, duration of group • Group agreement and expectations: Orientation to how the group will be run and session structure • Introduction to ACT: Explanation and examples • Experiential exercises: Don't think of a kiwi (adapted from white bear) and Chinese finger trap • Quotes of the week • Introduction to mindfulness and exercise: Take some breaths • Group discussion: Reasons for use (Good sides and bad sides) • Weekly challenges: Pros and cons matrix and mindfulness practise • Session rating scale (SRS)
Session two: The habit – is it workable?	• Opening mindfulness exercise: Mindfulness of sounds • Feedback from last session (SRS) • Recap previous session (take home messages) and review weekly challenges • Addiction evolution: Explanation, video "Nuggets", positive versus negative reinforcement of addiction, lead group discussion • TED talk: A simple way to break a habit (Brewer, 2016)

	• The habit cycle and how to break the habit cycle: RAIN technique (Brewer, 2016), labelling emotions and their relationship with behaviour, lead group discussion • Metaphor: Person in the hole • Quotes of the week • Group discussion: Costs of using • Weekly challenges: Noticing urges/emotions (label emotions), continue pros and cons matrix, consider addiction goals, and continue mindfulness practise • Closing mindfulness exercise: Mindful eating (raisin) • Session rating scale
Session three: Values	• Opening mindfulness exercise: Mindfulness of emotion in the body • Feedback from last session • Recap previous session: Take home messages • Review weekly challenges • Defining values: Values versus goals; values and pain • Quotes of the week • Exercise: Values card sort (Identify top ten values and pain associated with them) • Exercise: Values bullseye (group discussion and taking aim i.e. why at there and not here?) • Weekly challenges: 80th birthday party speech, values bullseye exercise and continue mindfulness practise • Closing mindfulness exercise: Waiting on yourself • Session rating scale
Session four: Acceptance	• Opening mindfulness exercise: Urge surfing • Feedback from last session • Recap previous session: Take home messages and review weekly challenges • Introduce concept: Clean versus dirty discomfort (whiteboard exercise/group discussion) • Defining Acceptance: Metaphor (temper tantrum) and whiteboard exercise (myths of acceptance) • Quotes of the week • Urge surfing and RAIN technique • Metaphor: Joe the party crasher • Weekly challenges: Identify clean and dirty discomfort and continue mindfulness practise • Closing mindfulness exercise: Counting breaths • Session rating scale
Session five: Present Moment	• Opening mindfulness exercise: Body scan • Feedback from last session • Recap previous session: Take home messages and review weekly challenges • Introduction to present moment • Exercise: Gaze exercise and group discussion (i.e. notice discomfort) • Quotes of the week • The thinking mind: Explanation, exercise (the Virtues of Saliva), and group discussion • Weekly challenges: Identify stories your mind tells you and continue mindfulness practise • Closing mindfulness exercise: Centring exercise • Session rating scale and mid – group assessment phase: Complete self-report measures
Session six: Defusion	• Opening mindfulness exercise: Leaves on a stream • Feedback from last session • Recap previous session: Take home messages and review weekly challenges • Introduction to defusion: explanation and defusion techniques • Passengers on the bus: Metaphor, video, exercise, and group discussion

	• Quotes of the week: Rumi Poem (House Guest) • Weekly challenges: Identify value and passengers on your bus, practise defusion techniques and continue mindfulness practise • Closing mindfulness exercise: The mountain • Session rating scale
Session seven: Self as context	• Opening mindfulness exercise: The observing self • Feedback from last session • Recap previous session: Take home messages and review weekly challenges • Exercises: Who are you? Labels and roles we give ourselves; polarization exercise: how our mind constantly evaluates; post it note exercise "addiction battle (straight versus addict mind)" and group discussion. • Video: Russ Harris self as context • Exercise: Time line and group discussion, relate to metaphors (the mountain, ocean, sky, movie theatre) • Defining self as context versus self-concept • Quotes of the week • Weekly challenges: Addict versus straight mind and the observer space and continue mindfulness practise • Closing mindfulness exercise: Where are your thoughts • Session rating scale
Session eight: Committed action	• Opening mindfulness exercise: Accepting, Choosing, Committing, Taking Action • Feedback from last session • Recap previous session: Take home messages and review weekly challenges • Defining committed action: Explanation, video (Ten Metre Jump), and metaphor (swamp) • Quotes of the week • Exercise: My valued action plan and SMART guidelines • Exercise: Roadblocks: FEAR (not starting versus getting off track) • Metaphor: Gardening • Weekly challenges: FEAR that showed up when committing to a valued action and continue mindfulness practise • Closing mindfulness exercise: Self compassion • Session rating scale
Session nine: Relapse prevention	• Opening mindfulness exercise: SOBER breathing space • Feedback from last session • Recap previous session: Take home messages and review weekly challenges • Introduction to relapse prevention model: Euphoric memories, Seemingly irrelevant decisions, High risk situations, Problem of immediate gratification, Lapse, Rule violation effect, Relapse, and the Need to orient recovery around values • Exercise: What are your beartraps? (i.e. memories, decisions, high risk situations) • Applying ACT skills to relapse prevention • Quotes of the week • Weekly challenges: Revisit pros and cons and continue mindfulness practise • Closing mindfulness exercise: Forgiving ourselves • Session rating scale

Session ten: Recap	• Opening mindfulness exercise: The journey so far • Feedback from last session • Recap previous session: Take home messages and review weekly challenges • Recap all sessions: Group discussion and clarifying questions and understanding of the programme content • Quotes of the week • What now? Keep practising daily • All resources listed • Closing mindfulness exercise: Continue to be mindful, continue to be curious, cultivate self-compassion • Session rating scale and group rating scale • Post – group assessment phase: complete self-report measures • Certificate of participation and vouchers given

Session one: Reasons for use. The aim of the first session was to orientate participants to the programme and foster motivation to continue attending further sessions. An important aspect of session one was to outline the group processes and expectations to provide a safe place where participants could experience an understanding of their struggles. Introductions of group members and facilitators began, the session with housekeeping information then outlined. Participants were both oriented to group expectations and asked to generate their own ground rules for the group. This included the issues of confidentiality, appropriate behaviour, how the group would be run, and commitment to the programme. Psychoeducation about the group therapy approach, ACT, was presented and supported by ACT-based metaphors such as “The Polygraph” and “The Emotional Avoidance Detour” followed by experiential exercises such as the Chinese Finger Traps and the “White Bear Exercise” that was adapted to a NZ example (Kiwi). These experiential exercises foreshadowed the idea that control is the problem and not the solution. Quotes of the week were introduced that were relevant to the session content. A brief introduction to mindfulness was presented and a mindfulness exercise was also executed before moving onto discussing the importance of between session therapy in the form of “weekly challenges” (homework). A key topic for group discussion was the positive and negative consequences of substance use. The purpose of this discussion was to help participants identify their reasons for using

substance(s). Participants were asked, as their first weekly challenge, to think about what substance use gave them and what they were trying to avoid via substance use by completing a pros and cons matrix. This exercise was set as an introduction to completing therapeutic activities between sessions. Participants were also encouraged to complete mindfulness activities that included mindful colouring in, orientating them to guided mindfulness exercises online, and encouraging them to practise mindfulness informally (i.e., giving them brief instructions for mindfully doing everyday activities such as brushing their teeth).

Session two: The habit – is it workable? Session two aimed to continue building motivation and rapport so participants were more likely to attend further sessions. The aim of "workability of use" was to build upon the idea that substance use, for most group participants, had become unworkable in their lives. Participants were shown a video depicting the process of addiction (Hykade, 2015) and were educated about the way that addiction tends to evolve in a person's life, from positive reinforcement to negative reinforcement (informed by Miller and Carroll, 2006 and Koob, 2013). Another video highlighting how habits form supported a group discussion about addiction specific habit cycles (i.e., cue > behaviour > reward) (Judson, 2016). The idea of automatic pilot and the way a person has become programmed via repeated behaviours were also highlighted, alongside foreshadowing mindfulness as a helpful skill in addressing these problems. A brief overview about the function of emotions was also presented as emotions are considered one of the most powerful triggers and cues for a person's habit cycle. Participants learnt to identify the underlying reasons for their substance use in relation to this cycle. The group was presented with Judson Brewer's R.A.I.N. technique that aims to help break the habit cycle. This is a mindfulness-based technique that can help manage cravings and urges to use substances that are triggered by various cues specific to the individual. R.A.I.N. is an acronym for Recognise, Accept, Investigate, and Note. Participants were asked to recognise when the cravings arise and to

relax into the craving sensations (Judson, 2016). Next, they were instructed to accept the moment rather than attempting to ignore or distract from the cravings and were asked to investigate with curiosity what was happening in their bodies in the present moment when the craving sensation builds. Lastly, they were encouraged to note the sensations that were present in the moment without acting on them. This technique was coupled with the idea of urge surfing (Marlatt & Gordon, 1985; Marlatt & Donovan, 2005). Participants were educated about the cycle of urges in that they are time limited and will eventually reach a peak and then remit if the person remains committed to not using on that occasion. A key aspect of session two was to build a sense of creative hopelessness (Hayes & Strosahl, 2004) by discussing the various ways participants had attempted to address their substance use (i.e., what worked or did not work in the short-term and long-term?). The idea was to build upon the concept of control being the problem and not the solution. An adaptation of the "Man in the Hole" metaphor was presented and discussed for interpretation, highlighting the workability of substance use, and relevant quotes of the week were covered. This was followed by a group discussion outlining specific costs of substance use in major life areas, adapted from the book "The Wisdom to Know the Difference" (Dufrene & Wilson, 2012). This elaborated on session one's group discussion about the reasons for use and increased participants' awareness of the specific costs of their substance use in each area of their life. By uncovering the role substance use has played in participants' lives it opens them to new ways to reduce the costs of their substance use on the aspects of their life they hold as deeply important (which also foreshadowed values as a core principle of ACT). The weekly challenges for this session included labelling emotions, applying the R.A.I.N. and urge surfing techniques to non-threatening urges (i.e., to check their phones) and then to apply the same techniques to substance use cravings. Each participant was given a wallet sized R.A.I.N. technique cue card. The group was also asked to consider what their substance use change goals would be,

whether it was full abstinence or reduced or controlled use. Participants were encouraged not to make "Dead Man's Goals" which is the idea that it is often easier for people to say what they will stop doing, in the same way a dead man can stop doing a behaviour because he is dead. In other words, participants were asked to consider what goals and values they would be giving up (or changing) their substance use for. If they were aiming for controlled or reduced use, they were asked to consider what it would take to recognise that this goal was not workable.

Session three: Values. This session was aimed at identifying and clarifying participants' values, that is, what they found deeply important to them. At first, the difference between values and goals were outlined and supported by several examples. The experiential content in this session was based on a values card sort exercise that aimed to increase participants' awareness of their own values. Hayes proposes that the flip side of values is pain. Once their values were identified, participants were asked to consider what pain they could experience if they followed their chosen values. This generated a discussion aimed at orienting them to "the dark side of values" or rather that a value driven life is not guaranteed to be a life without pain. Next, participants were asked how closely they think they were living in line with their clarified values at this stage of their life via a "Bullseye Exercise". A group discussion centred on the realistic steps needed to move their lives closer in line with their values, which would serve to move the participants closer to the centre of the bullseye. The aim of the session was for participants to learn how to live with the pain in service of their values that may lead to a more meaningful and vital life, which Hayes et al. (2004) proposes is one of the main goals of ACT. Weekly challenges for this session were drawn from the ACT exercise "Tombstone" and adapted to "80th Birthday Party Speech". This exercise serves the same purpose of the Tombstone exercise in that participants are asked to consider what they would want to hear friends and family say about their life and the type of

person they were, thereby aiding clarification of values and identifying value driven behaviour.

Session four: Acceptance. Session four presented the core ACT concept of acceptance, which can also be referred to as willingness or expansion. The aim of this session was to teach participants to accept their discomfort (uncomfortable thoughts, feelings, urges, images, memories, and sensations) by making room for them (expansion). A key aspect of this session was discussing what participants thought the definition of acceptance was and how the myths of acceptance can hinder true acceptance and willingness to their experience just as it is without judgement. The "Temper Tantrum" metaphor was used to support this concept. The idea of "Clean versus Dirty Discomfort" by Hayes (2005) was used to help participants recognise the added suffering that arises from the inability to accept pain that typically leads to experiential avoidance. An adaptation of the ACT metaphor "Joe the bum" renamed "Joe the party crasher" was presented and discussed, highlighting the idea of acceptance and the unworkable strategies people have used to avoid discomfort. Urge surfing and the R.A.I.N. technique were revisited as an aid for the acceptance skill. Participants were asked to start small and build to acceptance of larger areas and issues in their lives. The weekly challenge was to practise identifying clean and dirty discomfort and practise making room for discomfort.

Session five: Present moment – be here now. This session focused on the core concept of present moment awareness, a mindfulness skill that promotes purposely paying attention to the present moment without judgement (Jon Kabat-Zinn). Research has shown that mindfulness can increase wellbeing by teaching people to live in the present moment rather than focusing on the past (ruminating) or being future orientated (worry and anxiety) (Witkiewitz & Marlatt, 2004). One way present awareness was taught was through the experiential exercise "The Gaze Exercise" in which participants were asked, in pairs, to stare

into the eyes of the person opposite them. Following this, they were asked to label emotions and bodily sensations, promoting an increase in awareness of how discomfort presents itself for them. A short video by Matt Killingworth, “Want to be Happier, Stay in the Moment” was presented to highlight mindfulness-based research outcomes (Killingsworth, 2012). This was followed by a brief group discussion and relevant quotes of the week. Another important aspect of this session was to present the idea of “the thinking mind” as a way of describing how people’s mind wander, and how the mind tells stories of who they are and why. The experiential exercise “Virtues of Saliva” was used to support the idea of “the thinking mind” and to demonstrate how powerful the mere thought of something is, in that the thinking mind can elicit intense physical sensations and emotions. The weekly challenges for this session were to identify what specific stories participants’ “thinking mind” presented to them during the week; participants were asked to practise the acceptance by holding these stories lightly without judgement and refocus to the present moment.

Session six: Defusion - watch your thinking. In this session the concept of defusion was outlined, a core skill of ACT that serves to separate and distance oneself from unhelpful thought processes. In this session, participants learnt different defusion techniques that aim to lessen the emotional impact of thoughts (e.g., treat thoughts as spam email, treat your mind as a separate person, and thank your mind). An experiential exercise that demonstrates this concept is the “Hands Over Your Face Exercise” that shows how defusion gives space from thoughts to allow participants to refocus on what is important to them and be in the present moment. Another experiential exercise involved participants holding a cactus with the idea of learning to hold the cactus lightly; they are to do the same with their thoughts. A key exercise of this session was the “Passengers on the Bus” metaphor, which was read aloud, then a short video depicting the metaphor was shown, before asking participants to act out the exercise. The exercise involved a participant volunteering to be the driver of the bus with the remaining

participants and facilitators being the passengers (unhelpful thoughts, emotions, memories, sensations) on the bus. The quotes of week in this session were replaced with a poem, “Guest House”, by Rumi, that reinforced the idea of defusion as well as the acceptance skill from session four. Weekly challenges involved choosing one value participants would like to work towards and identifying passengers on their bus that show up when attempting to live in line with that value. Participants were encouraged to utilise defusion techniques when those “passengers showed up” and practise their acceptance and mindfulness skills, while committing to value driven behaviour.

Session seven: Self as context – pure awareness. This session focused on the core concept of self as context. Participants were taught to focus and increase their awareness of their “observing self” by stepping back from their experiences and to simply notice themselves noticing. Key therapeutic components of this session involved defining the roles and labels we identify with (e.g., sister, son, friend, alcoholic, addict, psychologist, etc.). The purpose was to describe the difference between the conceptualised self (our self-concept born out of society’s roles and expectations, family’s expectations, our own expectations) and our contextualised self (the observing self, experiencing moment by moment, without judgement). An experiential exercise “Polarisation Exercise” was completed. which involved reading aloud statements that were likely to elicit negative or positive self-talk responses. This highlighted that the thinking mind is always judging and evaluating the conceptualised notions of the self. Another exercise involved participants writing down on post-it notes examples of what their “addict mind” and “clean mind” tell themselves in which the “Chessboard” metaphor was adapted to incorporate the idea of this “addiction battle”. Participants were asked to imagine themselves as the chessboard and learn to observe the battle playing out without getting caught up in it. A short video on self as context by Russ Harris was also shown to provide another explanation of this abstract concept in ACT. An

experiential exercise called the “Time Line” provided an opportunity for participants to become in touch with their observing self by asking them to recall memories or experiences (specifically, mildly uncomfortable ones) from this morning, last week, and childhood. In this exercise they were also asked to view different perspectives from the different roles they identify with but to think about the part of them that is the same person who has experienced these different events and labels. Several metaphors were utilised to convey the concept of self as context including “The Mountain”, “The Ocean and the Sky”, and “The Movie Theatre”. The weekly challenge for this session was to be mindful of their own personal “addiction battle”, noting down what their “addict mind” and “straight mind” say; to practise getting in touch with their observer self and notice what happens to their thoughts, emotions, and sensations when they are in the observing space.

Session eight: Committed action. The therapy content of session eight focused on practical goal setting for actions that could be taken by participants to live accordingly to their values. This involved introducing the concept of committed action and bringing together ACT skills covered in previous sessions. The “Swamp” metaphor was used to support the idea of committed action. A jumping demonstration was shown to the group in which one of the facilitators made a commitment to the behaviour of jumping, firstly, by jumping off a bit of paper then moving to jumping off a chair. This highlights the idea that it does not matter how big or small the behaviour is, it is the commitment to the action that matters. This was followed by a short video titled “Ten Metre Tower” where people were asked to jump off a high dive board (Danielson, & Van Aertryck, 2016). This video demonstrated the range of reactions from people, reinforced the idea of committed action and revisited the idea of willingness and acceptance of discomfort that may show up when committing to a value-based behaviour. A key exercise was the “My Valued Action Plan”, in which participants were asked to revisit their top ten values from session three. Participants were then oriented to

guidelines for goal setting using the acronym S.M.A.R.T. (goals should be specific, measurable, achievable, realistic, and time limited). Another important aspect covered in this session was the acronym F.E.A.R. that stands for fusion with thoughts, evaluation of discomfort, avoidance of discomfort, and reason giving. This was used to outline the types of things that often prevent or derail people from following through with committed action to their values. Participants were given a wallet sized F.E.A.R. cue card as a reminder. The "Gardening" metaphor was presented and discussed to portray the idea of committed action. The weekly challenges for this session were to practise identifying their specific experiences of F.E.A.R associated with their valued action. They were also given extra worksheets for the "My Valued Action Plan" to complete S.M.A.R.T. goals for their other values (this was optional).

Session nine: Relapse prevention. The therapeutic content of this session focused on Marlatt's Relapse Prevention model. This session was not specifically ACT-based, but ACT skills were incorporated as strategies to prevent a lapse or relapse into the habit cycle of addiction. The session involved an explanation of the role euphoric memories play in the return to substance use. This explanation was demonstrated by revisiting the "Nuggets" video. The relapse prevention model was presented in diagram format and each aspect of the model was explained. Participants were asked to identify their own seemingly irrelevant choices and high-risk situations that lead to a lapse or relapse, with appropriate examples provided for each process. Core concepts such as the problem of instant gratification and the rule violation effect were also explained, and participants were encouraged to be aware of these thought process that make them particularly vulnerable to lapse or relapse. A thorough plan to cope with any triggers or high-risk situations was completed, informed by ACT skills presented in group, and the long and short-term problems and benefits were considered for their relapse plan (Marlatt & Donovan, 2005). This session's weekly challenge for participants was to

revisit their pros and cons matrix and elaborate on the benefits and costs for using substances versus stopping or reducing substance use. Extra copies of the pros and cons matrix were given for other behaviours participants may be considering changing.

Session ten: Summing it up. The last session focused on reviewing all previous sessions to ensure participants understood the ideas presented, and offered a safe place to practise and gain a solid foundation to continue implementation of techniques learnt throughout the programme in everyday life. Participants were encouraged to ask any questions about the concepts and skills presented throughout the group. They were reminded of the importance of continuing to practise and use the skills learnt in the group into the future. They were encouraged to ask themselves: "How could your life be different if you just began growing, nurturing, cultivating the ACT principles in your life to make it more fulfilling and meaningful?" Lastly, participants were orientated to a list of resources including books, podcasts, websites, TED talks, and smartphone apps. Additional time was allocated to allow for completion of session rating scales, group rating scales, and the post-group self-report measures.

Procedures

Recruitment, referral processes, and environmental setting. As outlined above, participants were recruited from the Palmerston North AOD Service with referrals accepted from AOD staff, typically case managers, but also nurses, psychologists, and psychiatrists. Email reminders to all AOD staff were conducted weekly during the recruitment period for all groups. Potential participants were deemed appropriate for the initial interview if they met the inclusion criteria. The author contacted each potential participant via telephone to schedule a face-to-face interview. This offered an opportunity to gauge motivation levels to attend a group and build rapport, as well as providing an opportunity for potential participants to ask

any questions about the group and what the initial assessment entailed. Once an interview time was scheduled, an appointment letter was sent in the post. The minimum number of confirmed participants for each group was eight with a maximum of 12 participants possible. Therefore, each group did not begin until the minimum number of participants was obtained. The restriction on numbers of participants was implemented due to the size of the group room available as well as taking into consideration the ratio of facilitators to participants for effective group therapy to take place. The environmental setting for the group treatment programme was an off campus MidCentral DHB facility available to such group services. The room was available for the ACT group programme on a Wednesday morning from 9am-12pm.

Materials and assessment phases. At the initial face-to-face meeting, participants underwent a semi-structured clinical interview followed by an overview of the group treatment programme offered. Once participants agreed to partake in the study they were provided with an information sheet and a copy of the consent form (see Appendix H) and Russ Harris's article providing an overview of the ACT therapy approach (Harris, 2006), and informed they would receive a voucher upon completion of session 10. They also completed the protocol of measures for the pre-group assessment, including an initial page for recording demographic information. The same protocol of measures was administered and collected immediately following the mid-group session (Session 5) and again immediately post-group session (Session 10). If participants were unable to attend any session that involved completing the measures they were followed up within the week and asked to complete them prior to the next session. At the end of Session 10 participants were gifted a $20 supermarket voucher for their attendance and completion of the self-report measures. They were also given a certificate of participation to acknowledge their attendance and engagement in the group. Vouchers were used as an incentive to increase the likelihood of programme completion.

Several meta-analyses support the use of contingency management as an effective strategy for people who struggle with substance use problems to engage in treatment (Benishek et al., 2014; Prendergast et al., 2006), and report incentives to be effective for both sexes in outpatient settings (Rash & Petry, 2015). Therefore, the use of vouchers was considered an important aspect of this research in attempting to reduce attrition rates.

General materials included in each session were the facilitator manuals and participant workbooks, as well as pens, colouring pencils, whiteboard pens, A3 paper, Session Rating Scales, small adhesive note pads, USBs with relevant videos loaded, and refreshments such as tea, coffee, and biscuits. A materials checklist specific for each session was utilised to ensure all materials were provided during the group treatment programme. A cell phone, rented by Massey University, was used to contact participants via text message with a reminder of the start date of the group as well as weekly reminders of the group on a Tuesday afternoon. This was done to increase the likelihood of attendance rates. The cell phone was also available for participants to call if they had any questions or if they were running late or could not make it to the group. If participants missed a session and did not contact the facilitators in advance they were sent a text message stating that they were missed in group and the session material would be posted to them, as well as encouraging them to attend the next session. If participants missed subsequent sessions, they were telephoned to discuss any barriers that may be hindering their ability to attend the group. If a participant missed three sessions consecutively without establishing contact, then they were removed from the group. Every effort was made by the author to contact any participants who missed consecutive sessions and to inform them of this decision. If contact was made and the participant expressed their motivation and willingness to re-engage in the group, they could return under the condition they had read and completed the participant workbook that was sent in the post.

Of note, the fourth ACT group treatment programme conducted from August 2017 to November 2017 had a break between Session two and three while the lead researcher and co-facilitator had an exam. This means there was one week between resuming the programme. Therefore, the attrition rates and impact of the group may have been affected and needs to be mentioned. All other groups ran through the ten sessions uninterrupted.

Follow-up measures were collected at three months post-group during face-to-face meetings with the author and co-facilitator held at the AOD service. Following the completion of the group treatment programme, participants were advised in the last session to expect a telephone call in the next three months from the author to organise a suitable face-to-face interview and that they would receive an incentive (a $20 supermarket voucher) gifted upon completion of the final set of self-report measures. Participants were contacted two weeks prior to their official three-month follow-up date. Once an interview time was scheduled, an appointment letter was sent in the post. However, time periods for follow-up differed across participants and were sometimes extended depending on the availability of the participant. Therefore, follow-up time ranged from three months to four months and one week, with a mean of three months and three weeks. Once participants completed the final protocol of measures they were gifted the voucher and given a summary of their individual scores from their pre, mid, and post self-report measures (see Appendix I for a generic copy of a feedback summary). They were also gifted a small keychain of a spade, representing the idea from "Person in the Hole" metaphor reminding them to "drop the spade, stop digging, stop struggling". Participants were advised they would receive a summary of their complete results and, if indicated on the consent form, that they would receive the anonymised results from the study.

Ethics statement and considerations. This research was conducted in accordance with the New Zealand Central Health and Disabilities Ethics Committee whereby full ethical

approval was granted (15/CEN/134) (see Appendix J). A Memorandum of Understanding (MoU) between Massey University and the MidCentral District Health Board was also obtained prior to recruitment procedures being conducted (see Appendix K). Information sheets and informed consent forms were obtained from all participants and participants had the right to withdraw from the study at any point. The researcher expressed orally and in written form that participation in the research was voluntary and that participants had the right to decline to take part in the study at any time without treatment being withdrawn. Safety throughout the execution and compilation of the research project, including participant confidentiality and security of the data, was prioritised (i.e., participant identification codes were used to protect the anonymity and research material and data were stored in a locked filing cabinet). Participants were informed of the exceptions to confidentiality from the outset of the research (i.e., related to risk and safety) and were advised that full confidentiality in the group format could not be guaranteed but was strongly encouraged. If any risk of harm or safety issues arose the AOD service protocol was followed and participants were referred to the appropriate services. The research was considered low risk to the participants. The distress that could be induced by experiential activities and the discomfort of attending a group were considered the only potential harm. Participants' distress was monitored throughout the group.

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protocol of measures could not be scored blindly, and this may be considered a conflict of interest. However, the researcher and author as well as the co-facilitator conducted the study in accordance to the Code of Ethics for Psychologists Working in Aotearoa/New Zealand (2012). The integrity of research and ethical considerations are paramount, and the results presented in this thesis are genuine.

Research Design

Assessment and evaluation of the ACT-based group treatment programme was conducted to gain evidence for the efficacy of a transdiagnostic therapy applied to SUDs and coexisting problems. A repeated-measures design (within-subjects) was used via data collected at pre-treatment, mid-treatment, post-treatment, and three-month follow-up assessment phases. While a RCT or the use of comparison groups were desirable, it was beyond the scope of this research. Several attempts were made to collect data for a comparison group however this did not eventuate as outlined in the prologue. Given the current research was an exploration study, the data elicited from participants enrolled within the existing resources was used. This is principle described by Haynes (2012) as using “the patients I can get” (p. 139).

Data Analysis

Quantitative data were analysed using the Statistical Package for the Social Sciences software (SPSS; version 20.0 for Windows, IBM Corp., Armonk, NY). Data were coded and entered into the SPSS database. Descriptive statistics for demographic variables of age, sex, ethnicity, levels of education, marital status, previous group experience, and if they were attending individual therapy throughout the group were also included. Preliminary analyses were completed and included checking the assumptions and internal consistency of the protocol of measures. Bivariate correlations were conducted as part of the preliminary

analyses for the paired sample t-tests to evaluate any changes that occurred across all measures at the pre, mid, post, and follow-up treatment phases. Post treatment bivariate associations among dependent variables were analysed using Pearson product-moment correlation coefficient to evaluate any changes in relationships after the programme. Effect sizes were also reported to indicate the magnitude of change across the assessment phases.

CHAPTER THREE

RESULTS

The research results chapter is presented in five sections. The first section presents the descriptive statistics across all participants. The second section provides the preliminary analyses of the data, in which specific measures were excluded due to poor internal consistency and the remaining measures were assessed for violations of normality. Following this, tests of statistical significance and magnitude of change are presented in line with the research hypotheses. It was hypothesised that participants would self-report improvements in mood management and mindfulness skills from the pre-group assessment phase when compared to mid and post-group scores. It was also expected that measures of alcohol use, substance use and cravings, stress, anxiety, and external locus of control would reduce from pre-group to mid and post-group assessment points. These changes were expected to be maintained or further strengthened at the three-month follow-up assessment phase. Bivariate correlations were also used to examine the following hypotheses: significant negative relationships between mindfulness levels are expected for substance use and cravings including the alcohol measures, as well as stress, anxiety, and the powerful others scale of external locus of control. A significant positive relationship between mindfulness tendencies and mood management was also predicted. Therefore, the results are summarised in a way that allows the predictions to be tested. The last section presents the feedback from supplementary measures obtained as additional anecdotal data, and this is examined to obtain the participants' impression of the impact of the ACT-based group treatment programme.

SECTION ONE: Descriptive Statistics

No data were excluded from the analysis. The results for the pre-group assessment phase include data from all 39 participants, whereas 20 participants completed the follow-up group assessment phase, leaving this analysis to only include this cohort. The demographic characteristics across all assessment phases (pre, mid, post, and follow-up) are presented in Table 6. Of the 39 participants who completed the pre-group assessment phase, 18 were male (46.2%) and 21 were female (53.8%), with an average age of 39.80 years (*SD* = 12.08). Most of the pre-group assessment phase sample identified as NZ European (*n* = 31, 79%), single (*n* = 24, 62%), high school educated (*n* = 25, 64%), unemployed (*n* = 23, 60%), had participated in group work before (*n* = 24, 62%), and were receiving individual therapy or support (i.e. from a psychologist, clinical *n* = 8; intern *n* = 6, or an AOD counsellor or community mental health nurse *n* = 7) from AOD and other services (total *n* = 21, 54%). The range in concurrent therapies included individual ACT (*n* = 7), eye movement desensitisation and reprocessing (EMDR; *n* = 3), DBT (*n* = 1), CBT (*n* = 1), and AOD or ACC trauma or general counselling (*n* = 7). Some participants had more than one substance use problem and more than one coexisting mental health disorder. The severity of the substance use disorders and coexisting problems varied across participants.

At the follow-up assessment phase, the sample size reduced to 20 (49% reduction) resulting in an equal sex ratio (10:10). The sample's demographic characteristics reduced proportionately across assessment phases except for age and the proportion of the sample on the Opioid Substitution Treatment (OST) programme. At follow-up the sample mean age was 45 years (*SD* = 12.06 years). The pre-group sample included 12 participants (30% of the total pre-group sample size) on the OST programme, which decreased to five in the final sample

(58% reduction in the OST client population in the pre-group sample size). The majority were still NZE, single, high school educated, and unemployed.

Table 6.

Participant Demographic Characteristics Across all Assessment Phases.

Demographic characteristic	**Pre-group treatment**	**Mid-group treatment**	**Post-group treatment**	**Follow-up group treatment**
N	39	26	25	20
Sex				
Male	18	10	10	10
Female	21	16	15	10
Age (Years)				
20-29	12	5	5	4
30-39	11	7	6	4
40-49	6	4	4	4
50-59	8	8	8	6
60-69	2	2	2	2
Ethnicity/Nationality				
NZE	31	20	19	15
Māori	3	3	3	2
NZE/Māori	4	2	2	2
AUS	1	1	1	1
Education				
High school	25	13	14	11
Polytech/trade	9	8	6	5
University	5	5	5	4
Employment				
Unemployed	23	15	15	11
Part time	9	6	6	6
Full time	7	5	4	3
Relationship[5]				
Single	24	15	16	12
In a relationship	15	11	9	8
Previous group work				
Yes	24	18	17	14
No	12	7	7	6
Unsure	3	1	1	0
Additional therapy while in group				
Yes	21	16	15	12
No	16	10	10	8
Unsure	2	0	0	0

[5] "In a relationship" encapsulates those that are in a non-cohabitating relationship as well as those who are in a defacto relationship or married. Single includes those who reported they were single, separated, divorced, or widowed.

Substance(s)[6]				
Alcohol	20 (17)	12 (11)	11 (10)	9 (8)
Cannabis	5 (2)	2 (2)	2 (2)	2 (2)
OST	12 (7)	8 (5)	8 (4)	5 (3)
Methamphetamine	6 (3)	3 (1)	4 (1)	3 (1)
Sedatives	1(1)	1 (1)	1 (1)	1 (1)
Polysubstance	6 (3)	4 (3)	4 (3)	3 (3)
Coexisting problems				
Anxiety[7]	12	9	6	4
Mood[8]	9	6	6	4
Psychosis	2	2	2	2
PTSD	6	5	5	4
EDNOS	1	1	1	1
OCD	1	1	1	1
Skin picking	2	0	0	0
Personality	1	1	1	1
Grief	5	4	4	4
Chronic fatigue	1	0	1	0
Learning	2	1	1	1
Medical[9]	4	4	4	4

Table 7 below presents all the dependent variable sample means, standard deviations, and standard errors of the means across all assessment phases. The standard deviations provide information about how much the participants differ from the mean value of each assessment point for each measure whereas the standard error of means measures the accuracy with which the sample represents a population.

[6] This reflects the number of participants who endorsed using a substance in which the brackets represent those who identified the specific substance as their priority substance use problem. For example, 20 participants reported using alcohol with 17 reporting alcohol as their main substance use problem. No participant report tobacco as a substance use problem.
[7] Anxiety includes GAD, SAD, and other anxiety disorders.
[8] Mood includes depression and bipolar diagnoses.
[9] Medical conditions include chronic pain, multiple sclerosis, foot condition, and diverticulitis.

Table 7.

Dependent Variable Sample Means, Standard Deviations, and Standard Errors of the Means Across all Assessment Phases.

Dependent variable	**Pre-group treatment** ***n = 39***			**Mid-group treatment** ***n = 26***			**Post-group treatment** ***n = 25***			**Follow-up-group treatment** ***n = 20***		
	$\bar{x}$	*SD*	*SEM*	$\bar{x}$	*SD*	*SEM*	$\bar{x}$	*SD*	*SEM*	$\bar{x}$	*SD*	*SEM*
Audit-C	4.10	4.08	0.65	4.42	3.91	0.76	3.84	3.47	0.69	3.30	3.80	0.85
ALC Section B												
1 drink	5.30	8.45	1.35	5.54	8.58	1.68	4.84	7.80	1.56	4.70	7.22	1.61
+4 drinks	3.77	7.19	1.15	4.04	7.00	1.37	2.92	5.85	1.17	2.50	5.52	1.23
+8 drinks	3.10	6.82	1.09	3.15	6.14	1.20	1.84	4.72	0.94	1.35	4.08	0.91
Total	12.18	21.60	3.46	12.73	20.62	4.04	9.60	17.11	3.42	8.55	15.67	3.50
Tobacco												
Use	2.97	1.37	0.22	3.80	1.83	0.36	3.00	1.41	0.28	2.95	1.93	0.43
Urges	3.23	1.20	0.19	3.12	1.34	0.26	3.12	1.36	0.27	2.95	1.23	0.28
Total	6.21	2.47	0.40	6.92	3.11	0.61	6.12	2.70	0.54	5.90	2.99	0.67
Cannabis												
Use	2.00	1.30	0.21	1.88	1.42	0.28	1.88	1.13	0.23	1.45	1.10	0.25
Urges	2.08	1.26	0.20	1.96	1.28	0.25	1.96	1.14	0.23	1.70	1.17	0.26
Total	4.08	2.42	0.39	3.85	2.56	0.50	3.84	2.15	0.43	3.15	2.03	0.45
Amphetamine												
Use	1.25	0.64	0.10	1.31	0.74	0.14	1.20	0.58	0.12	1.00	0.00	0.00
Urges	1.59	0.94	0.15	1.65	0.98	0.19	1.76	1.09	0.22	1.30	0.80	0.18
Total	2.85	1.29	0.21	2.96	1.46	0.29	2.96	1.46	0.29	2.30	0.80	0.18
Sedatives												
Use	2.72	1.38	0.22	3.19	1.83	0.36	2.48	1.39	0.28	2.40	1.79	0.40
Urges	1.95	1.32	0.21	2.73	1.25	0.25	2.52	1.42	0.28	2.25	1.33	0.30
Total	4.67	2.34	0.38	5.92	2.78	0.38	5.00	2.78	0.56	4.65	2.78	0.62
Opioid												
Use	2.08	1.42	0.23	2.35	1.90	0.37	2.12	1.42	0.28	1.80	1.64	0.37
Urges	1.51	1.02	0.16	2.00	1.33	0.26	2.04	1.37	0.27	1.45	1.0	0.25
Total	3.59	2.19	0.35	4.35	2.94	0.58	4.16	2.51	0.58	3.25	2.63	0.59
PSS-10 Total	21.90	6.70	1.07	20.35	6.40	1.25	18.17	6.11	1.25	20.05	8.50	1.90
GAD-7 Total	10.84	5.63	0.90	10.27	4.83	0.95	7.92	4.38	0.88	8.75	6.40	1.43

BLOCS												
Powerful Others§	7.28	3.25	0.52	7.42	3.50	0.68	6.60	2.93	0.59	7.40	3.38	0.75
TMMS Total	101.36	14.42	2.31	103.00	14.75	2.89	109.92	12.59	2.52	107.80	14.61	3.27
Attention§	48.41	8.30	1.33	47.19	6.60	1.30	49.20	6.05	1.21	47.45	6.53	1.46
Clarity§	33.05	6.68	1.07	35.54	6.07	1.19	38.84	6.97	1.39	37.70	7.13	1.59
Repair§	19.90	5.10	0.82	20.27	5.46	1.07	21.88	3.97	0.79	22.65	5.44	1.22
MAAS Total	3.25	0.84	0.13	3.29	0.74	0.15	3.59	0.81	0.16	4.16	0.79	0.18

Note: $\bar{x}$ = mean, *SD* = standard deviation, *SEM* = standard error of the mean, § = an abbreviation of 'subscale', AUDIT-C = Alcohol Use Disorder Identification Test – Consumption, ALC Section B = Alcohol Use Section B, PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, Powerful Others§ = Powerful Others Subscale, TMMS = Trait Meta Mood Scale, Attention§ = Attention TMMS Subscale, Clarity§ = Clarity TMMS Subscale, Repair§ = Repair TMMS Subscale, MAAS = Mindfulness Attention Awareness Scale. Scores for cocaine, inhalants, hallucinogens, and "other" on the WHO-ASSIST V3.0 (World Health Organisation – Alcohol, Smoking, and Substance Involvement Screening Test Version 3.0) were excluded from the analysis due to minimal or no endorsement. BLOCS scales for internal locus of control and external chance locus of control were also excluded.

SECTION TWO: Preliminary Analyses

Preliminary analyses involved checking the data and reverse scoring items to present the total scores across the measures, as well as rescaling certain measures to ensure accurate calculations of the totals (e.g., AUDIT-C scores were entered 1 to 5 and rescaled to 0 to 4). Cocaine, inhalants, hallucinogens, and "other" substances on the WHO-ASSIST V3.0 were excluded from the analysis due to minimal endorsement of use and cravings from participants across all groups at all assessment points.

Internal consistency. Internal consistency is the degree to which items of a scale measure the same underlying construct. This is assessed by calculating the Cronbach's alpha coefficient for each measure and subscale of the measures used in the current study. The protocol of measures was tested for internal consistency from participants' responses across all assessment phases. The AUDIT-C (Alcohol use), Alcohol Use Section B (frequency and quantity of alcohol use in the past month), PSS-10 (Stress), GAD-7 (Anxiety), and MAAS (Mindfulness) measures were all found to have 'good' ($\alpha > 0.8$) to 'excellent' ($\alpha > 0.9$) internal consistency. Three subscales are used for the TMMS (Mood management) with the sum of scores across the subscales provides a total for this measure. While the total TMMS measure showed good internal consistency, the subscale *attention* at mid-group assessment point had 'poor' internal consistency ($\alpha < 0.7$). However, for the final analyses, comparisons of scores collected at pre, post, and follow-up were considered most relevant and all were found to have 'fair' ($\alpha > 0.7$) to good internal consistency. Clarity and Repair subscales across all assessment points fell within the good to excellent range. The BLOCS measure is also made up of three scales; internal, external chance, and external powerful others. The internal and external chance Cronbach's alpha scores fell within the poor range across all assessment phases and therefore scores from these scales could not be included in the final analyses. However, the

BLOCS external subscale “Powerful Others” yielded fair to good internal consistency therefore this measure was included. Finally, the RPI measure returned a poor internal consistency score at both pre-group and mid-group assessment points therefore this measure is excluded due to no appropriate comparison point.

Assumptions of normality. Initial observations of the data were completed by producing histograms for each measure across all assessment phases to obtain the pattern, frequency, and distribution of different scores. Histograms displayed whether the data were either negatively (data bunches to the left) or positively skewed (data bunches to the right) or if there was kurtosis present (scores are clustered in the middle or are flat). From these observations several trends were noted; for example, in the pre-group assessment phase for the AUDIT-C (Alcohol), scores showed a bimodal distribution (see *Figure 5* below) in which there were two peaks in the data demonstrating two common types of responses by participants (either no alcohol use or significant alcohol use).

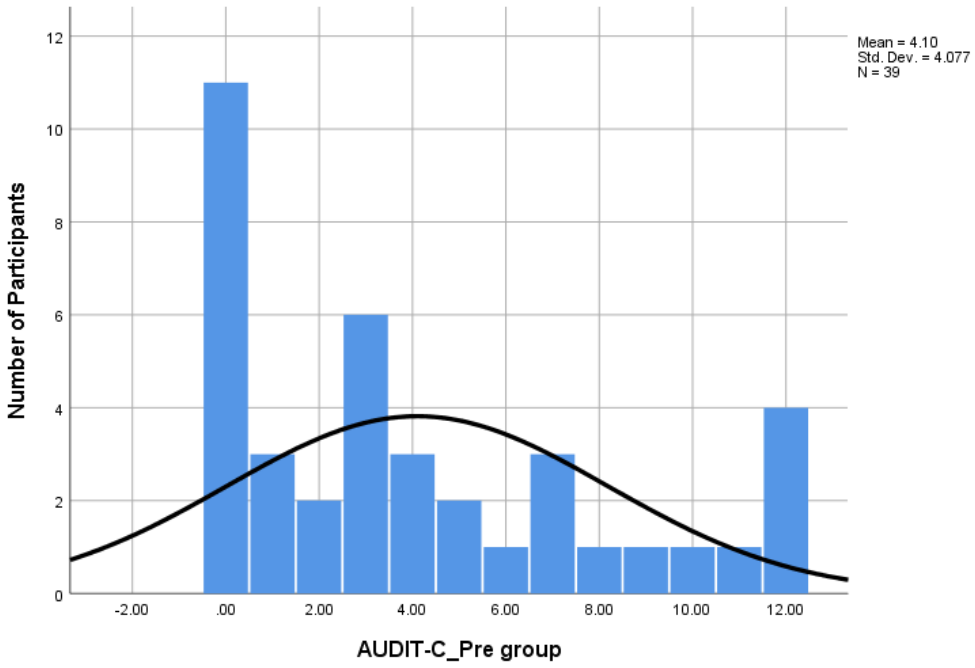

Figure 5. Histogram demonstrating the bimodal pattern of responses that indicates a variation from normally distributed data for participants alcohol use via the AUDIT-C.

While the histograms provided a first-hand indication of the distribution, specific tests of normality were used to identify whether the data significantly varied from normality such as the Kolmogorov-Smirnov and Shapiro-Wilk tests. The key measure for these tests was the difference between scores from the assessment phases compared. To do this a new variable was computed by calculating the difference between the total means for the assessment points compared (i.e., pre-group versus post-group) across all measures (see *Figure 6* below for an example).

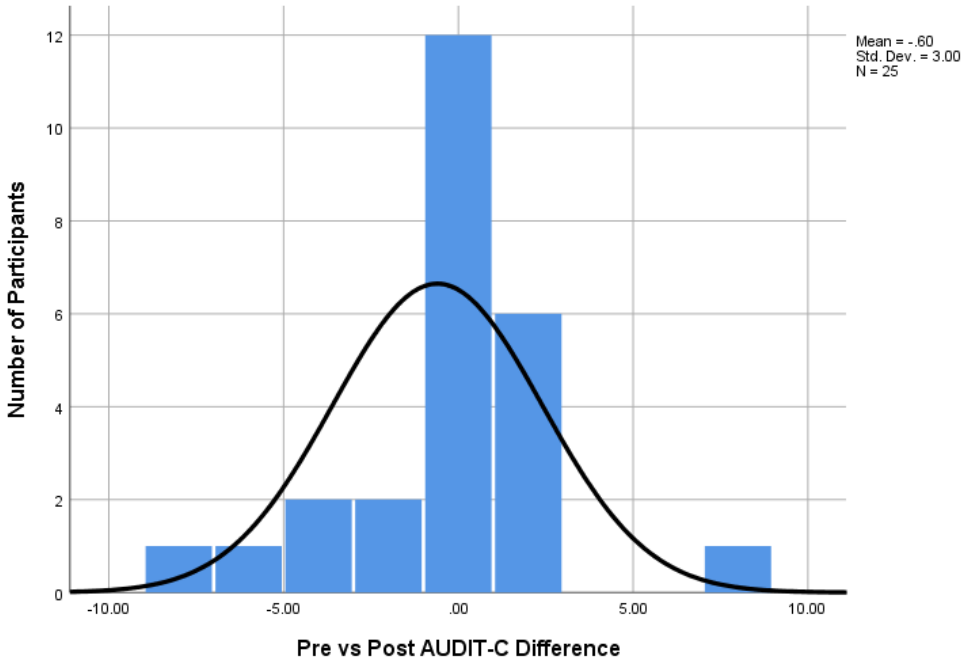

Figure 6. Histogram demonstrating kurtosis (peaked clustered scores in the middle) in the differences between pre-group scores and post-group scores on the AUDIT-C.

A non-significant result from the tests of normality indicates that the assumption has not been violated and therefore parametric tests are suitable for analysis. For the current study a repeated measures design deems paired samples t-tests as appropriate to detect statistical significance between the same samples at two different time points. Significant scores indicate that a non-parametric test such as the Wilcoxon signed rank test should be used to

compare such data as an alternative to the repeated measures paired samples t-test. The AUDIT-C and Alcohol Use Section B scores as well as the WHO-ASSIST V3.0 (Substance use and cravings) violated the assumption of normality therefore non-parametric tests were utilised with these data. Ad-hoc data transformations were not conducted as a way of normalising the distribution of changes. Instead, the non-parametric approach addressed the issue of skewed responses on the substance specific measure, which as a population struggling with alcohol and other drugs problems was expected. The PSS-10, GAD-7, TMMS, and MAAS all produced non-significant results for tests of normality therefore paired samples t-tests were applied to these measures.

Further graphic display of the data via scatterplots provided a visual aid for demonstrating the relationship between two variables as well as identifying outliers as part of the preliminary analyses for conducting correlation calculations. An upward trend indicates a positive relation where high scores on the X axis occur with high scores on the Y axis. A negative relation is where increasingly high scores on the X axis are associated with increasingly low scores on the Y axis. Through these preliminary analyses, several trends were observed in the data before conducting statistical significance testing and bivariate correlations. For example, *Figure 7* below depicts the relationship between participants' responses on the AUDIT-C at pre-group compared to post-group. This positive trend indicates that high and low drinkers remained high and low drinkers at post-group relative to other participants' drinking patterns. However, the scatterplot also identifies those who increased their use. Those responses that fall below the reference line (a diagonal line on the scatterplot which demonstrates where pre-group scores are the same as post-group scores, in this case, if a participant reported no change in alcohol use between pre and post group assessments then that participant's data point would fall directly on the reference line to indicate no change) indicate an overall reduction in alcohol use at post-group assessment phase. Markers are

colour coded to indicate the scores of in male and females. Overall, there were no statistically significant differences between male and females' responses for all measures across all assessment points.

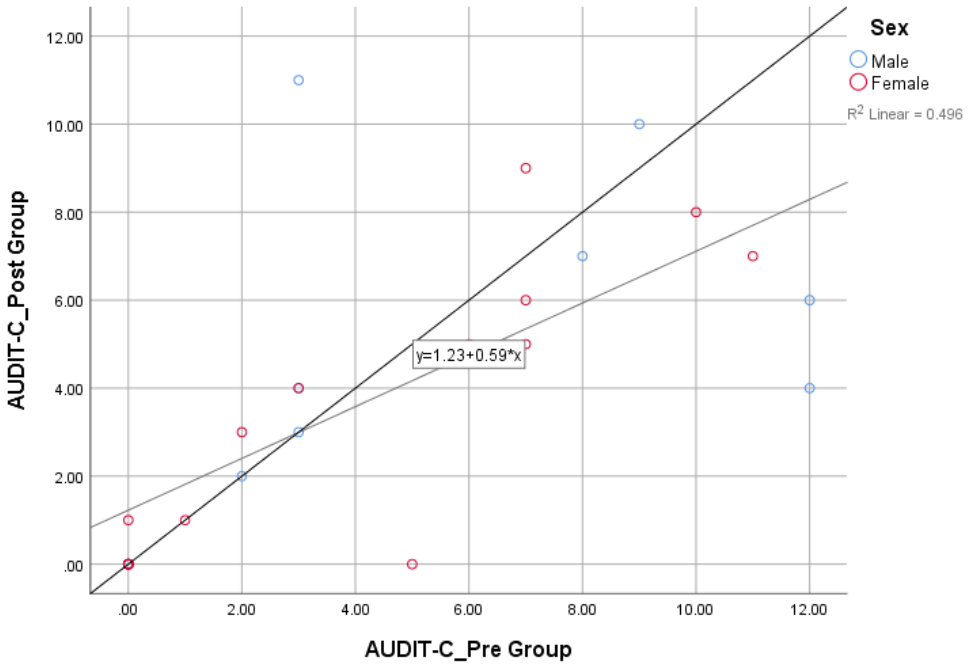

Figure 7. Scatterplot demonstrating the relationship between participants' responses at pre-group compared to post-group for the AUDIT-C.

Completers and non-completers analysis. An additional analysis compared participants scores who completed the ACT group (n = 20) against those who did not (n = 19) obtained at the pre-group assessment phase. This analysis aimed to explore any meaningful differences between the participants who completed and those who did not. An independent samples t-test was conducted for PSS-10 (stress), GAD-7 (anxiety), TMMS (mood), and MAAS (mindfulness) and showed no statistically significant differences. A Mann-Whitney, non-parametric tests also found no statistically significant differences between completers and non-completers of the ACT group for alcohol and substance use and cravings. This indicates that the self-reported rates of substance use and coexisting problems, as well as mindfulness did not differ significantly between those who left the ACT group and does not indicate that those who left were significantly worse in their self-reported symptoms.

SECTION THREE: Statistical Significance Testing and Magnitude of Change

Parametric tests, paired samples t-tests, and non-parametric tests, Wilcoxon signed rank tests, were used to calculate the statistical significance of the differences between participants' scores for six pairs of comparisons of assessment phases[10] as per the research hypotheses (i.e. pre-group versus post-group, pre-group versus follow-up, post-group versus follow-up, pre-group versus mid-group, mid-group versus post-group, and mid-group versus follow-up). The differences in how these tests are calculated are below in *Figures 8* and *9*.

$$t = \frac{\frac{\sum(x_1 - x_2)}{n} - \mu_{(x_1 - x_2)}}{\frac{\sqrt{\frac{n\sum(x_1 - x_2)^2 - (\sum(x_1 - x_2))^2}{n(n-1)}}}{\sqrt{n}}}$$

Figure 8. Paired samples t-test formula.

The paired samples t-test formula given above in *Figure 8*, where the difference between the means from the same sample of participants is calculated using two different assessment phase scores and the statistical significance of the difference between the means for the comparison being made is obtained. x_1 and x_2 are the mean scores from time one (e.g., pre-group) and time two (e.g., post-group). μ is the mean of the population of differences with *n* representing the number of paired samples.

[10] Note: SPSS excludes cases that do not have data from each comparison point. This means that those who left the ACT group at the pre-assessment phase were not included in the comparisons for mid, post, and follow up comparisons. The number of cases being compared are presented in number of observations on Table 8 and the degrees of freedom on Table 9.

$$z_{Wilcoxon_{signed-rank}} = \frac{w_s - \frac{n(n+1)}{4}}{\sqrt{\frac{n(n+1)(2n+1)}{24}}}$$

Figure 9. The formula for Wilcoxon signed rank test.

The Wilcoxon signed rank statistic is calculated by the using the median of two distributions when comparing assessment phases using a small sample and with data that are not normally distributed.

While significance testing is important, the results do not convey the degree of change that has occurred between the two comparison points. Therefore, effect sizes were calculated to establish the magnitude of change for both parametric and non-parametric tests. Paired sample t-test effect sizes are presented using the effect size correlation *r*. Guidelines for interpreting effect sizes using Cohen's (1988 as cited in Pallant, 2005) criteria are that 0.1 represents a small effect, 0.3 medium, and 0.5 as large effect. This involves the square root of the portion of variance shared by the two variables using the degrees of freedom as depicted below in *Figure 10*.

$$r = \sqrt{(t^2 / (t^2 + df))}$$

Figure 10. Effect size correlation r formula for parametric tests

The Wilcoxon signed rank test effect sizes, as described by Pallant (2007), are calculated by dividing the *Z* value by the square root of *N* (for this purpose *N* is the number of

observations over the two time points instead of the number of cases). The same guidelines for Cohen's criteria can be applied in which the *r* value is presented and scores of 0.1 represent small, 0.3 medium, and 0.5 large effect. When using a Wilcoxon signed rank test to calculate the effect size the Z score is divided by the square root of number of observations in order to give the *r* value (see *Figure 11*.).

$$r = \frac{Z}{\sqrt{N}}$$

Figure 11. Effect size estimator formula for non-parametric tests.

Alcohol use and substance use and cravings results. Table 8 presents the Wilcoxon signed rank tests results and effect sizes for the alcohol and substance use measures across all pairs of comparisons as the data violated the assumptions required for parametric testing. It was hypothesised that reductions would be observed for alcohol and other drug use and cravings at mid-group and post-group when compared to participants scores at the pre-group assessment phase. Reductions in alcohol use and substance use and cravings were expected to be maintained or even further reduced at three-month follow-up. Wilcoxon signed rank tests are presented with *Z* values that reflect the difference between the two scores being measured accompanied with the *p* value that provides the significance level (two tailed) showing whether or not the two scores are statistically significant. Negative *Z* values represent a reduction in use and cravings whereas positive *Z* values indicate an increase in use and cravings with *p* values reported as reaching either 0.01 or 0.05 significance level or not being significant. Effect size calculations for the Wilcoxon signed rank tests are presented as *r* values, keeping in mind the different formulas used to calculate these effect sizes as outlined above.

Table 8.

Wilcoxon signed rank tests for Alcohol and Other Drug Measures Across all Comparison Points.

Dependent variable *(N of observations) sqrt(N)*	**Pre versus Post** *(25) 5*			**Pre versus Follow-up** *(20) 4.47*			**Post versus Follow-up** *(20) 4.47*		
Values	***z***	***p***	***r***	***z***	***p***	***R***	***z***	***p***	***r***
AUDIT-C	-1.05	0.29	0.21	-1.54	0.12	0.35	-1.42	0.16	0.32
ALC Section B	-0.96	0.34	0.19	-1.64	0.10	0.35	-0.53	0.59	0.12
TOBACCO									
Use	-1.30	0.19	0.26	-1.54	0.12	0.35	-0.49	0.63	0.11
Cravings	-0.65	0.52	0.13	-0.65	0.52	0.14	-0.07	0.94	0.02
Total	-0.95	0.34	0.19	-1.51	0.13	0.34	-0.61	0.54	0.14
CANNABIS									
Use	-0.73	0.47	0.15	-0.88	0.31	0.20	-1.51	0.13	0.34
Cravings	-0.12	0.90	0.02	-0.65	0.52	0.15	-0.41	0.68	0.09
Total	-0.42	0.68	0.08	-0.86	0.39	0.19	-1.14	0.26	0.25
AMPHETAMINE									
Use	-0.38	0.71	0.08	-1.63	0.10	0.37	-1.00	0.32	0.22
Cravings	-0.74	0.46	0.15	-1.56	0.12	0.35	-1.13	0.26	0.25
Total	-0.72	0.47	0.15	-2.02	**0.04***	0.45	-1.52	0.13	0.34
SEDATIVE									
Use	-2.07	**0.04***	0.41	-1.19	0.24	0.26	-0.21	0.83	0.05
Cravings	-1.50	0.13	0.30	-0.72	0.47	0.16	-0.34	0.73	0.08
Total	-0.32	0.75	0.06	-0.22	0.83	0.05	0.00	1.00	0
OPIOIDS									
Use	-0.65	0.52	0.13	-0.35	0.73	0.08	-0.69	0.49	0.15
Cravings	-1.48	0.14	0.30	-1.00	0.32	0.22	-2.04	**0.04***	0.46
Total	-0.67	0.50	0.13	-0.35	0.73	0.08	-2.06	**0.04***	0.46
Dependent variable *(N of observations) sqrt(N)*	**Pre versus Mid** *(26) 5.10*			**Mid versus Post** *(24) 4.90*			**Mid versus Follow-up** *(20) 4.47*		
Values	***z***	***p***	***r***	***z***	***p***	***R***	***z***	***p***	***r***
AUDIT-C	-0.05	0.96	0.01	-1.61	0.11	0.33	-1.74	0.08	0.35
ALC Section B	-0.54	0.59	0.11	-0.06	0.96	0.01	-1.26	0.21	0.08

TOBACCO									
Use	-3.72	**0.00****	0.73	-4.03	**0.00****	0.90	-1.82	0.07	0.41
Cravings	-0.83	0.41	0.16	0.00	1.00	0	-0.11	0.91	0.02
Total	-3.36	**0.00****	0.65	-3.82	**0.00****	0.85	-1.28	0.20	0.29
CANNABIS									
Use	-1.63	0.10	0.32	0.00	1.00	0	-1.90	0.06	0.42
Cravings	-0.27	0.79	0.05	0.00	1.00	0	-1.13	0.26	0.25
Total	-1.51	0.13	0.30	-0.09	0.93	0.02	-1.90	0.06	0.42
AMPHETAMINE									
Use	-0.38	0.71	0.07	-1.13	0.26	0.30	-1.60	0.11	0.36
Cravings	-0.65	0.52	0.13	0.00	1.00	0	-1.13	0.26	0.25
Total	-0.17	0.86	0.03	-0.75	0.45	0.17	-1.77	0.08	0.40
SEDATIVE									
Use	-0.31	0.76	0.06	-2.84	**0.01****	0.63	-1.55	0.12	0.35
Cravings	-2.09	**0.04***	0.41	-1.87	0.06	0.42	-1.71	0.09	0.40
Total	-1.74	0.08	0.34	-3.11	**0.00****	0.70	-1.77	0.08	0.40
OPIOIDS									
Use	-1.16	0.25	0.23	-0.92	0.36	0.21	-1.34	0.18	0.30
Cravings	-1.42	0.16	0.29	-0.07	0.94	0.02	-0.85	0.40	0.19
Total	-1.71	0.09	0.33	-0.63	0.53	0.14	-1.36	0.17	0.31

Note: z value = z score statistic, *p* value = significance level, * = significant at the 0.05 level (2-tailed), ** = significance at the 0.01 level, *r* value = effect size, *sqrt(N)* = square root of the number of observations, AUDIT-C = Alcohol Use Disorder Identification Test – Consumption, ALC Section B = Alcohol Use Section B. Substance scores obtained from WHO-ASSIST V3.0 = World Health Organisation –Alcohol, Smoking, and Substance Involvement Screening Test Version 3.0 (excluding alcohol).

Alcohol use comparisons. Participants' alcohol use was measured through the AUDIT-C as well as three additional questions (Alcohol Use Section B – ALC Section B) regarding frequency and quantity of use in the past month. The AUDIT-C results are scored on a scale of 0-12 in which higher scores indicate higher levels of hazardous alcohol consumption.

Reductions in alcohol use can be seen in *Figure 12*, however, these changes did not reach statistical significance for any pair of comparisons. This indicates that participants' alcohol use prior to the ACT-based group treatment programme was not significantly different at post-group (p = 0.29) with only a small to medium effect size (r = 0.21). The same trend was observed at the three-month follow-up assessment phase (p = 0.12) with a moderate effect size (r = 0.35).

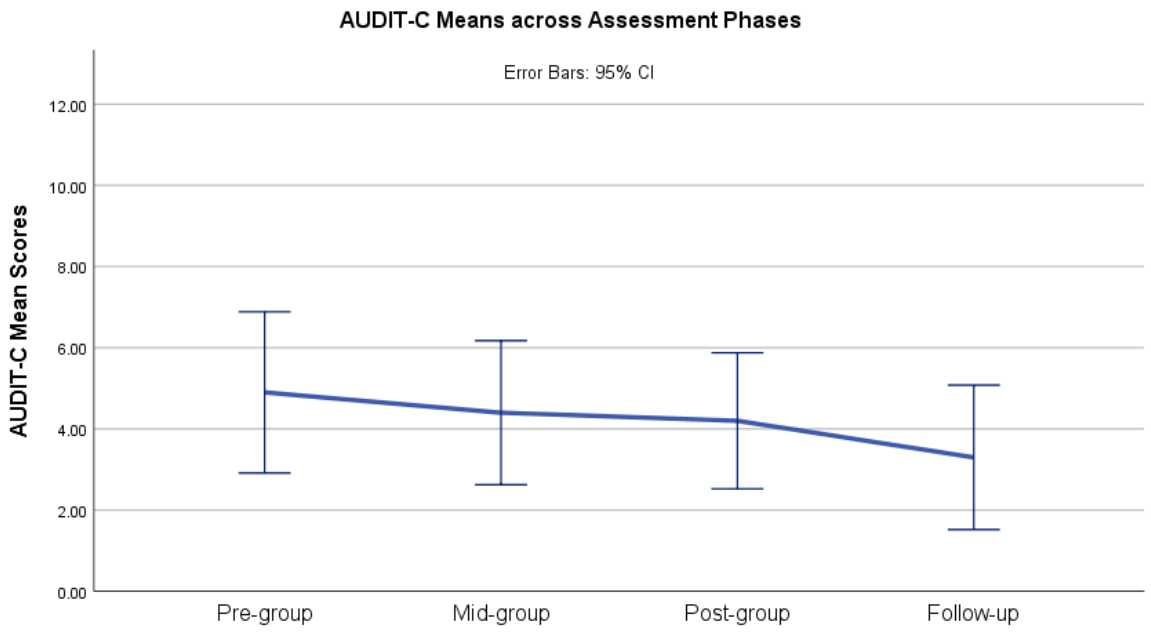

Figure 12. Line graph depicting AUDICT-C mean scores across all assessment phases.

Alcohol Use Section B asks participants on how many days in the past month they consumed at least one drink, then at least four drinks, and lastly on how many days they

consumed more than eight drinks. The number of days out of the month endorsed for each question were summed to provide the total score for Alcohol Use Section B depicted as ALC Section B in Table 9. Higher scores indicate more frequent and higher quantity of recent alcohol use.

Again, a general trend demonstrating reductions in alcohol use can be observed in *Figure 13*[11] on the following page. Similar results for Alcohol Use Section B to the AUDIT-C results were found in that these changes did not reach statistical significance. Pre and post comparisons showed non-significant results ($p = 0.34$) with a small effect size ($r = 0.19$), with pre and follow-up comparisons also showing non-significant results ($p = 0.10$) with moderate effect size ($r = 0.35$). Although there was no statistical difference between pre-post-follow-up for alcohol use on both measures, there was a moderate effect size demonstrating a trend in the predicted direction, suggesting the ACT group can help people reduce their alcohol use.

[11] The error bars for *Figure 13c* and *13d* extend into negative estimates as an artefact of the non-symmetrical distribution of the data.

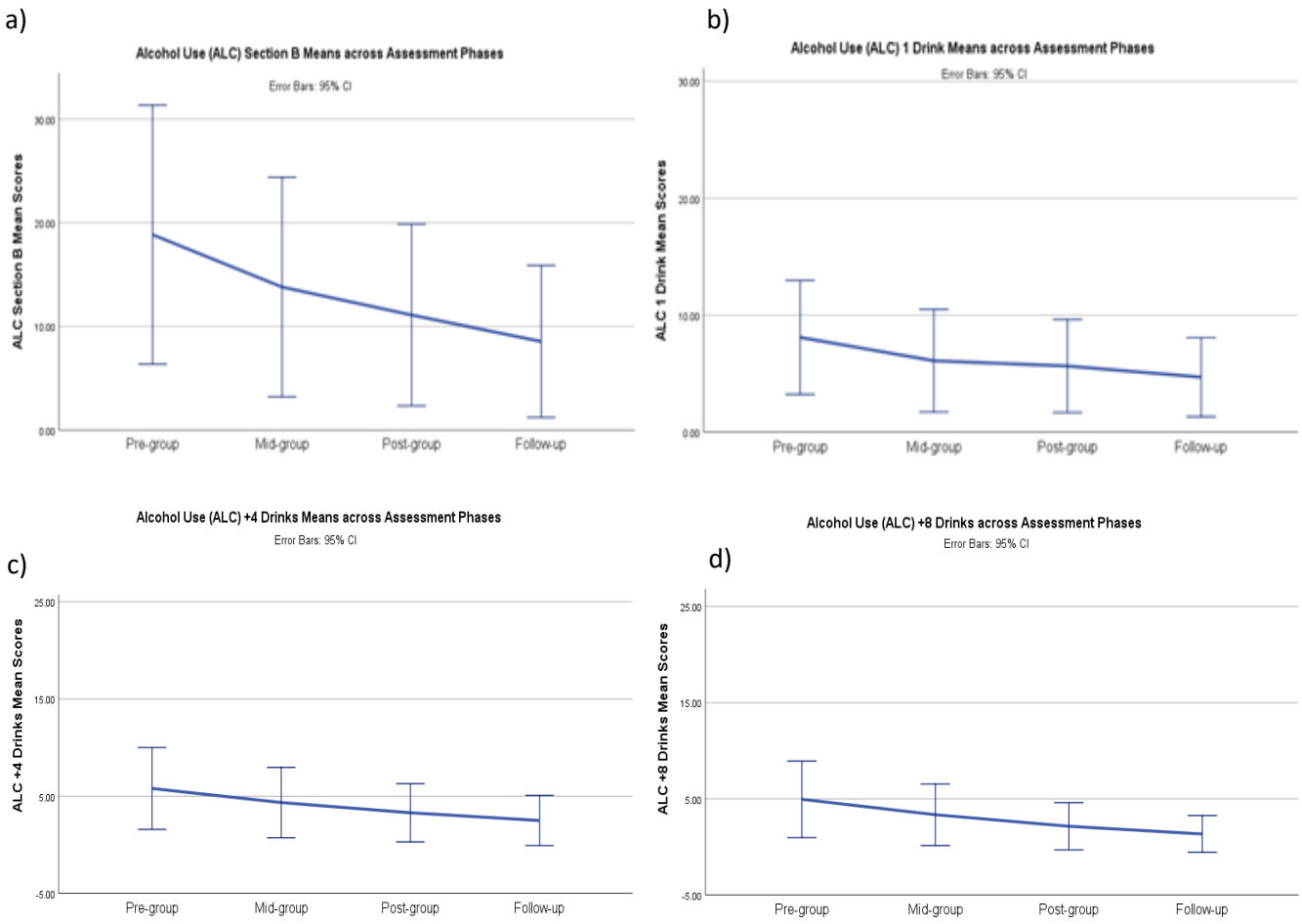

Figure 13. Line graph depicting Alcohol Use Section B a) questions combined mean scores, b) question one (1 drink), c) question two (+4 drinks), d) question three (+8 drinks) across all assessment phases.

Substance use and cravings comparisons. The WHO-ASSIST V3.0 was used to obtain participants' self-reported level of substance use and cravings on a five-point Likert scale of 'never' to 'daily or almost daily'. Specific substances were analysed separately for use and for cravings and then as combined totals (sum of use and cravings) across all pairs of comparisons.

Tobacco use comparisons. Unexpected significant statistical increases in tobacco use were noted between pre-group and mid-group tobacco use scores (Z = - 3.72, p<0.01) with a large effect size (r = 0.73). Significant reductions were then observed between mid-group and post-group scores for tobacco use (Z = 4.03, p<0.01) with a large effect size detected (r = 0.90). No further significant changes were found between post-group and follow-up scores (p = 0.63) with a small effect size (r = 0.11) indicating minor change. *Figure 14a* clearly demonstrates that tobacco use was still increased at post-group compared to pre-group tobacco use yet the difference in scores were non-significant (p = 0.19) and yielded a small effect size (r = 0.26). Pre-group and three-month follow-up scores were also non-significant (p = 0.12) with a moderate effect size (r = 0.35). However, this still showed an increase in tobacco use compared to pre-group which does not support the hypothesis that the ACT group would reduce tobacco use at post and follow-up assessment phases.

Tobacco cravings comparisons. Across all assessment phases for tobacco cravings scores did not significantly differ (see *Figure 14b)* and their effect sizes were small (r <0.2) thereby not supporting the original hypothesis that reductions in self-reported cravings would be observed from pre to mid, mid to post, post to follow-up, as well as significant reductions observed when comparing pre-group scores to the post and follow-up scores.

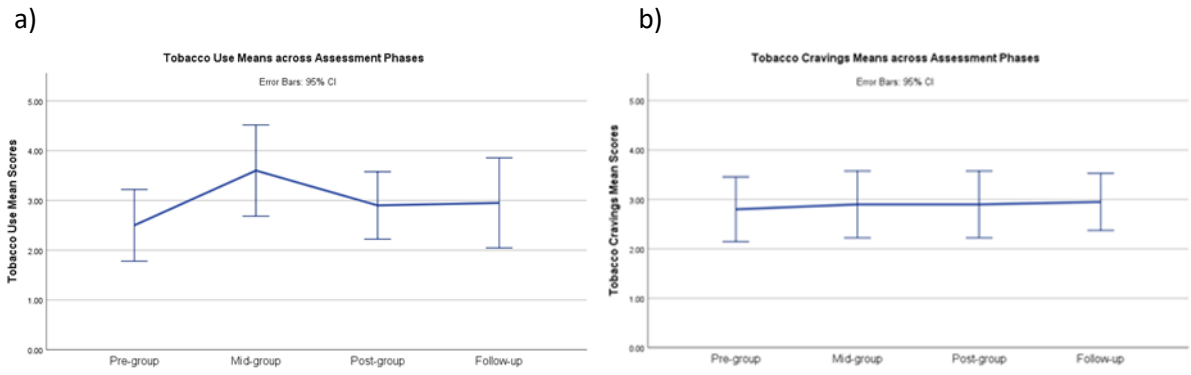

Figure 14. Line graph depicting mean scores across all assessment phases for a) tobacco use and b) tobacco cravings.

Total tobacco comparisons. When combining scores for tobacco use and cravings, these totals produced statistically significant increases between pre-group and mid-group scores (Z = -3.36, p<0.01) with a large effect size (r = 0.65). Whereas total tobacco scores for mid-group and post-group showed statistically significant reductions (Z = -3.82, p<0.01) with another large effect size detected (r = 0.85). No significant change was noted between post-group and follow-up scores (p = 0.54) with a small effect size (r = 0.14) indicating a minor increase in total tobacco scores. Total tobacco scores between pre and post-group were non-significant (p = 0.34) and had a small effect size (r = 0.19). Pre-group and follow-up data were also not statistically significant (p = 0.13) but this comparison showed a moderate effect size (r = 0.34) which is indicative of a moderate level of change to participants' overall tobacco scores for both use and cravings. However, these changes were indicative of an increase in tobacco use and cravings rather than a decrease (see *Figure 15*).

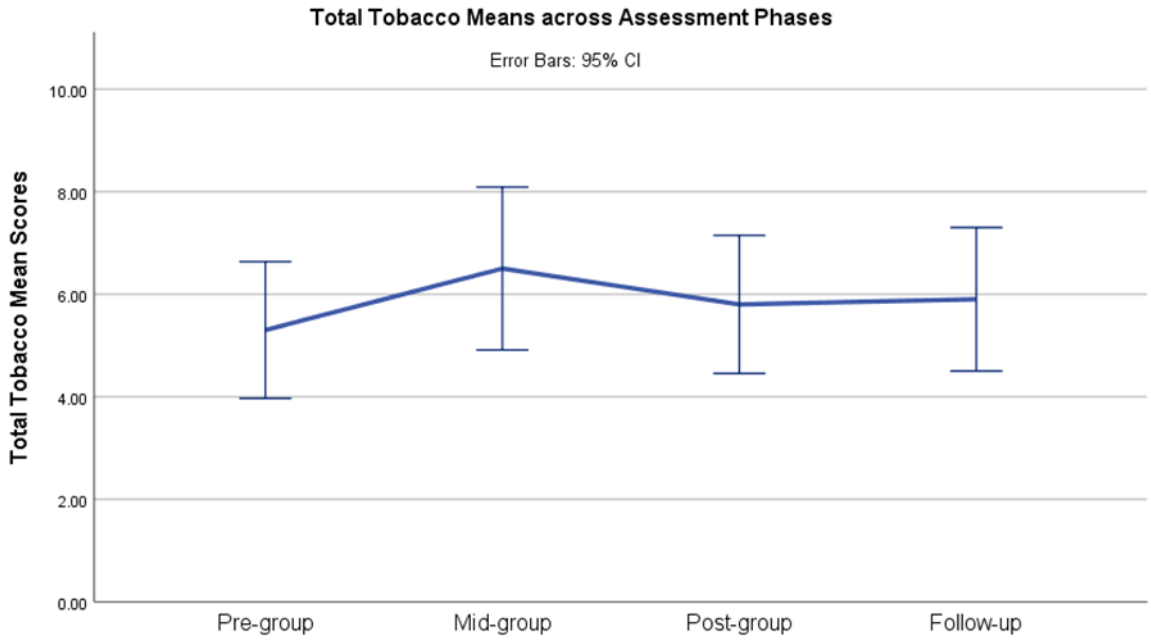

Figure 15. Line graph depicting the total tobacco mean scores across all assessment phases.

Cannabis use comparisons. No significant changes were found between any comparison pairs for cannabis use. Scores between mid-group and post-group showed no change whatsoever (p = 1.00, r = 0). A moderate effect size was detected between post-group and follow-up scores (r = 0.32) indicating moderate reductions in cannabis use, however differences were not significant (p = 0.13). *Figure 16a* demonstrates a reduction trend that supports the hypothesis that an ACT group can reduce participants' self-reported cannabis use.

Cannabis cravings comparisons. Again, no significant changes were found between any comparisons across assessment phases as shown in *Figure 16b.* Pre-group and post-group scores for cannabis cravings yielded non-significant results and minimal change (p = 0.90, r = 0.02) with pre-group and follow-up scores also showing non-significant changes and minimal change (p = 0.13, r = 0.09).

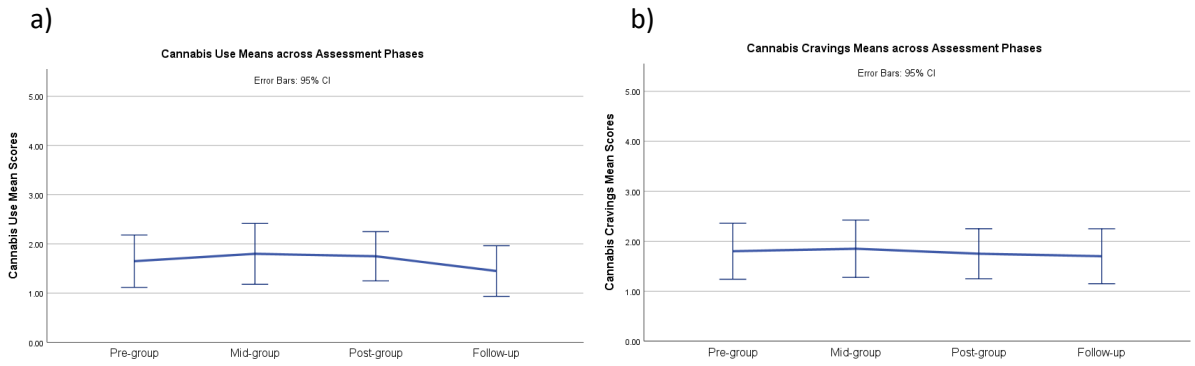

Figure 16. Line graphs depicting a) cannabis use mean scores and b) cannabis cravings mean scores across all assessment phases.

Total cannabis comparisons. Cannabis use and cravings scores combined represent the total cannabis scores depicted in *Figure 17*. The results show that even when combining use and cravings scores for cannabis there is minimal change throughout the group, by the end of group, and at the three-month follow-up. Interestingly, total cannabis scores showed an unexpected increase from pre-group and mid-group (p = 0.13) with a moderate effect size detected (r = 0.30). Reductions were observed from mid-group to post-group and follow-up in line with predictions, however, these changes were not significant (p = 1.0). Pre and post comparisons were also not significant (p = 0.68) with small effect size detected (r = 0.08). Non-significant results were also found between pre and follow-up comparisons (p = 0.26) with small changes noted (r = 0.25). Due to the increase at mid-group scores the difference between scores at the three-month follow-up approached significance (p = 0.06) with a moderate to large effect size detected (r = 0.42) which is indicative of reductions in line with the research hypotheses.

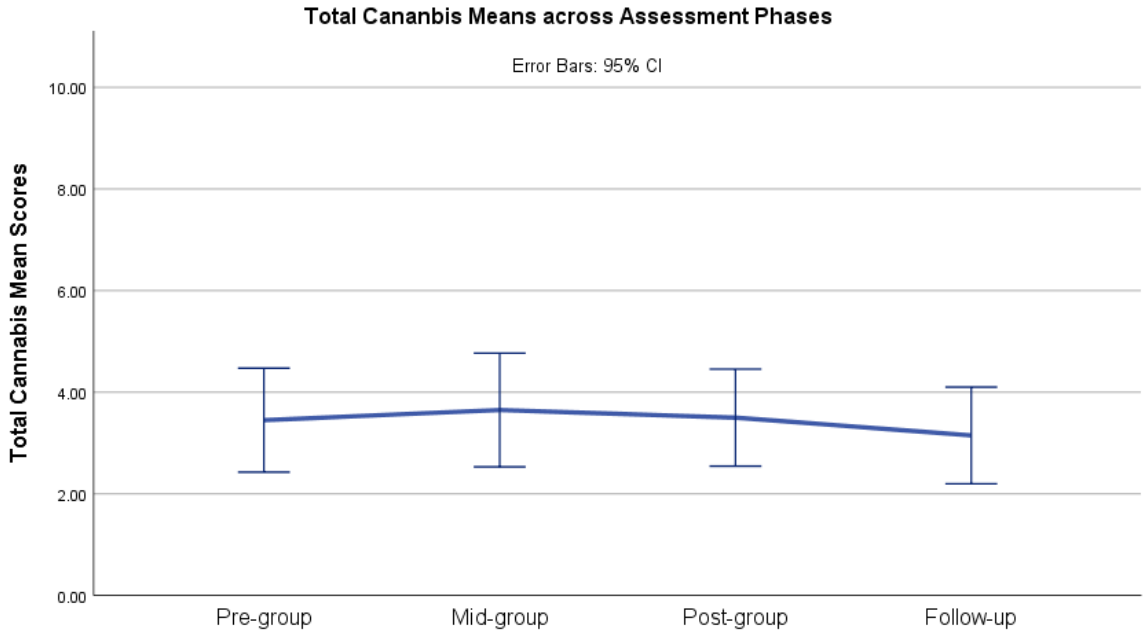

Figure 17. Line graph depicting the total cannabis mean scores across all assessment phases.

Amphetamine use comparisons. No statistically significant results were found for pre-group and mid-group comparisons for amphetamine use (p = 0.71); however, as seen in *Figure 18a*, there is an increase, rather than decrease, in amphetamine use scores. From mid-group, reductions were noted at post-group (p = 0.32) and follow-up (p = 0.26) assessment phases. Yet these changes were not statistically significant and yielded a small effect size for post-group scores (r = 0.22) and a moderate effect size for follow-up scores (r = 0.36). Pre-group and post-group comparisons also showed reductions but were not significant results (p = 0.71). Further non-significant results for pre-group and follow-up comparisons (p = 0.32) were also found. However, effect sizes indicate that these reductions were small to moderate (r<0.29).

Amphetamine cravings comparisons. Reductions in self-reported amphetamine cravings can be observed in *Figure 18b*; however, these reductions were not statistically

significant. Mid-group and post-group amphetamine cravings scores did not change at all (p = 1.00) with the effect size showing no change as well (r = 0). Pre-group and post-group comparisons did not reach significance (p = 0.46) and had a small effect size (r = 0.15). Pre-group and follow-up comparisons were also not significant (p = 0.12). Yet a moderate effect size (r = 0.35) indicates there was moderate reductions in participants' reports of amphetamine cravings three months post-group.

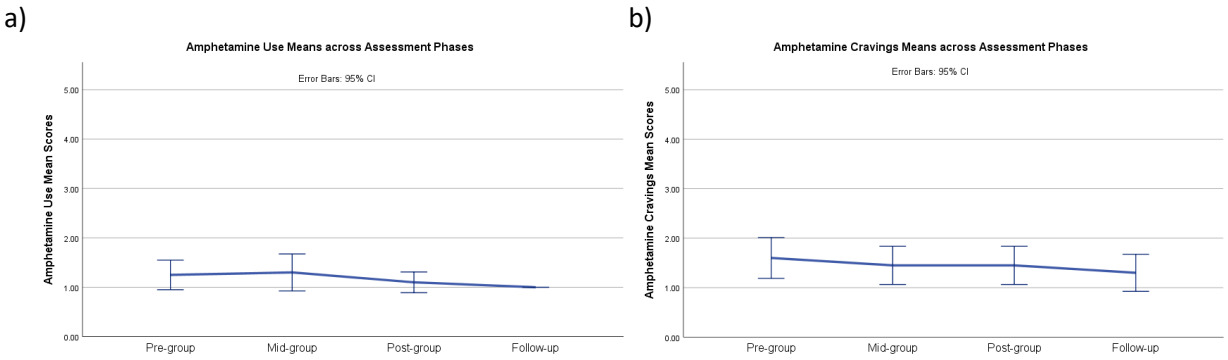

Figure 18. Line graph depicting a) amphetamine use mean scores and b) amphetamine cravings mean scores across all assessment phases.

Total amphetamine comparisons. Amphetamine use and cravings scores combined represent the total amphetamine scores depicted in *Figure 19.* Pre-group and post-group analysis of amphetamine total means (p = 0.47) found no significant reduction accompanied by a small effect size (r = 0.15), suggesting minimal change. Total amphetamine scores between mid-group and follow-up comparison approached significance (Z = - 1.77, p = 0.08) with a moderate effect size indicating moderate reductions in amphetamine use and cravings combined (r = 0.40). A statistically significant reduction was detected between pre-group and follow-up comparisons for total amphetamine scores (Z = -2.20, p = 0.04) with a moderate effect size (r = 0.45) detected in line with the current study's hypotheses.

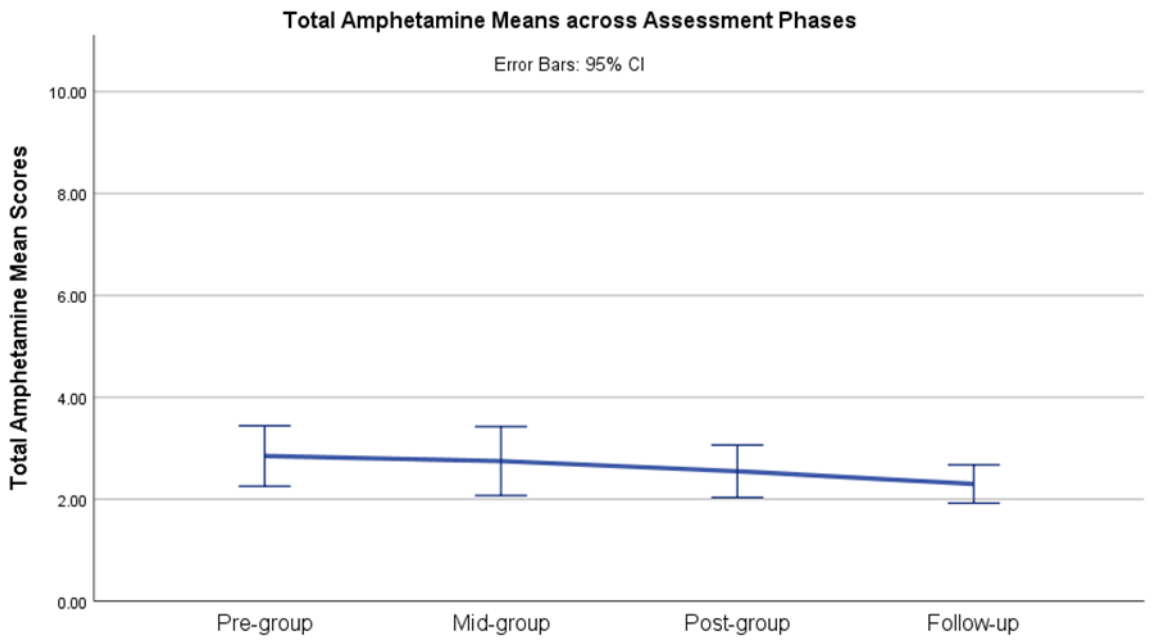

Figure 19. Line graph depicting the total amphetamine mean scores across all assessment phases.

Sedative use comparisons. Pre to mid-group comparisons for sedative use yielded non-significant results (p = 0.76) and small effect size (r = 0.06). However mid to post comparisons for sedative use found statistically significant change (Z = -2.84, p = 0.01) with a large effect size detected (r = 0.63). Post-group and the three-month follow-up data found no significant results (p = 0.83) and a small effect size indicative of minimal change (r = 0.05). Significant change was detected for sedative use between pre and post-group comparisons (Z = -2.07, p = 0.04) with a moderate effect size (r = 0.41) as depicted in *Figure 20a*. Pre and follow-up sedative use comparison yielded a non-significant result (p = 0.24) with a small effect size (r = 0.26).

Sedative cravings comparisons. An unexpected statistically significant increase for sedative cravings between pre-group and mid-group comparisons (Z = -2.09, p = 0.04) with a

moderate effect size was detected (r = 0.41). However, mid to post-group comparisons showed a non-significant decrease (p = 0.06) with another moderate effect size detected (r = 0.42). Post-group and follow-up scores did not significantly differ (p = 0.73) and showed a small effect size (r = 0.08). Pre to post comparisons for cravings found no significant results (p = 0.13) however there was a moderate effect size detected (r = 0.30) indicating a moderate increase between participants cravings prior to group and the end of group (see *Figure 20b*). Comparisons for pre-group and follow-up scores (p = 0.47) as well as post-group and follow-up (p = 0.73) yielded non-significant results and small effect sizes (r<0.16).

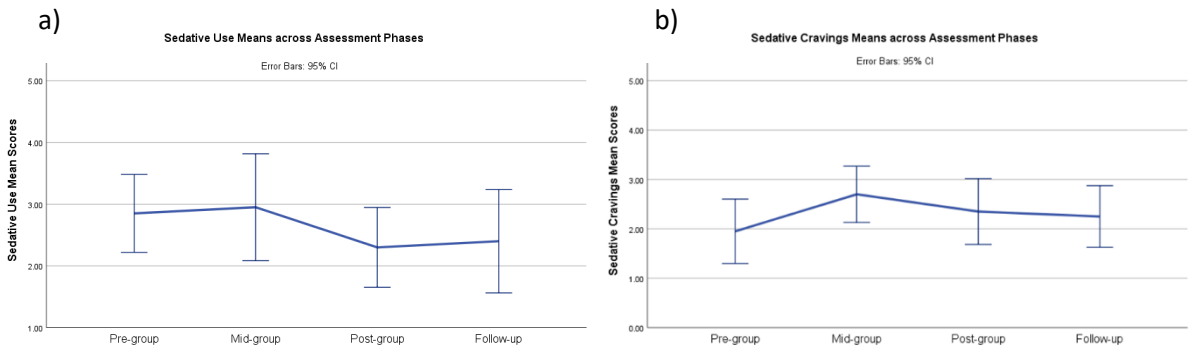

Figure 20. Line graphs depicting a) sedative use mean scores and b) sedative cravings mean scores across all assessment phases.

Total sedative comparisons. When combining scores for sedative use and cravings several comparisons yielded non-significant results including post to follow-up (p = 1.00), pre to post (p = 0.75), pre to follow-up (p = 0.83), with small effect sizes detected (r <0.06). As *Figure 21* shows total scores between pre and mid-group increased, rather than decreased. However statistically significant reductions between mid-group and post-group scores (Z = -3.11, p<0.01) with a large effect size (r = 0.70) were found. Mid-group and follow-up comparisons approached significance (p = 0.08) and found moderate effect sizes (r<0.40) indicating moderate reductions.

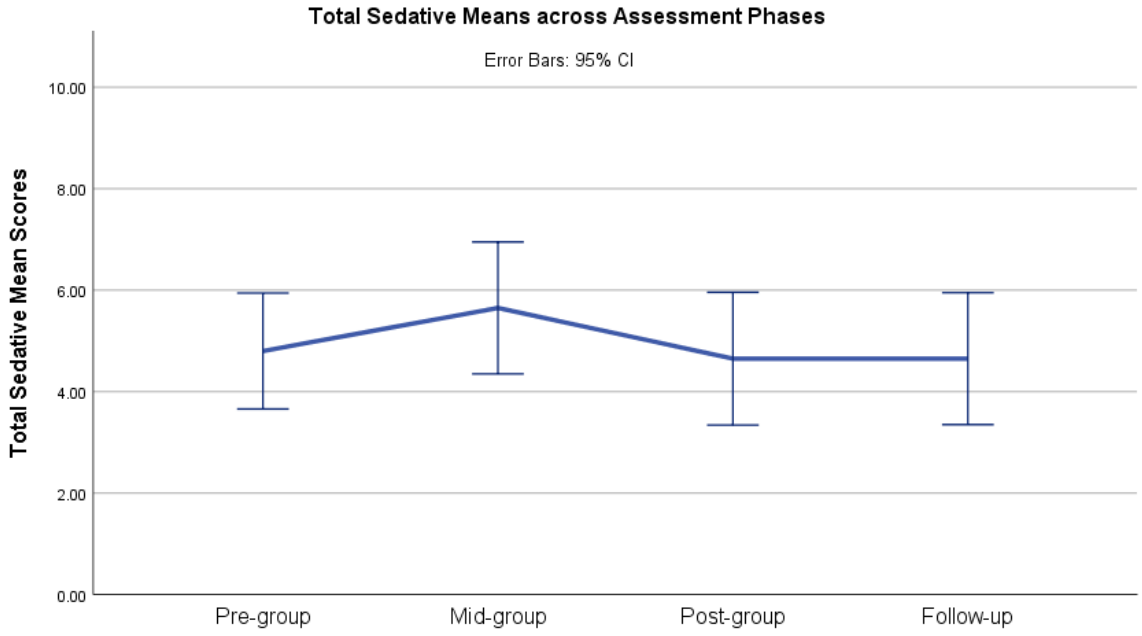

Figure 21. Line graph depicting the total sedative scores across all assessment phases.

Opioid use comparisons. Pre to mid-group comparisons found no significant results for opioid use (p = 0.25) with small effect size (r = 0.23) indicating minimal increase as seen in *Figure 22a*. Mid to post-group comparisons also found no significant differences for opioid use (p = 0.36) with another small effect size detected (r = 0.21) but indicating small reductions rather than increases. Post to follow-up comparisons also found no significant change (p= 0.49) for opioid use with a small effect size (r = 0.15). No significant results were detected for comparisons between pre-group and post-group scores (p = 0.52) and between pre-group and follow-up scores (p= 0.73) with small effect sizes (r <0.15) indicating minimal changes.

Opioid cravings comparisons. Figure 22b demonstrates the trend in participants self-reported opioid cravings during group and at three months post intervention. Again, unexpected increases were found between pre and mid-group scores (p = 0.16) as well as mid and post-group scores (p = 0.94) although these were not statistically significant and yielded small effect sizes (r<0.29). Whereas statistically significant reductions were observed

between post and follow-up cravings (Z = -2.04, p = 0.04) with large effect size detected (r = 0.46) indicating large reductions for opioid cravings occurred three months post intervention. Pre and post-group comparisons showed non-significant results (p = 0.14) yet a moderate effect size was detected (r = 0.30) indicating moderate increases in cravings. Pre and follow-up comparisons also found non-significant differences (p = 0.32) with a small effect size (r = 0.22) indicating minimal reductions in participants' opioid cravings prior to the group and three months following group.

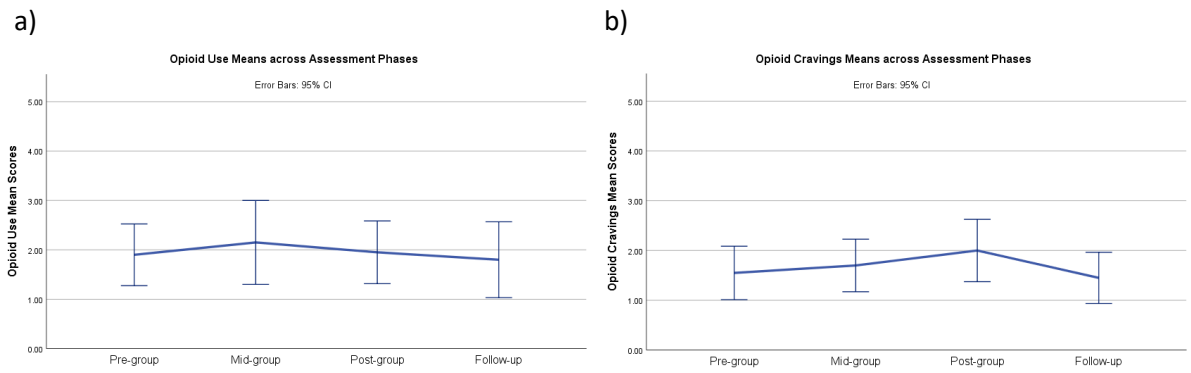

Figure 22. Line graphs depicting a) opioid use mean scores, b) opioid cravings mean scores across all assessment phases.

Total opioid comparisons. Opioid use and cravings scores combined also showed increases rather than decreases across pre-mid-post comparisons as seen in *Figure 23.* Increases from pre to mid-group scores were not statistically significant (p = 0.09) with a moderate effect size detected (r = 0.33). Mid to post-group scores also increased however this was not statistically significant (p = 0.53) with a small effect size (r = 0.14) indicating this increase was minimal. However, post to follow-up comparisons yielded statistically significant reductions (Z = -2.06, p = 0.04) with a moderate to large effect size found (r = 0.46). Pre and post-group comparisons were not statistically significant (p = 0.50) with a small effect size (r = 0.13) indicating reductions in scores at post-group were small. Non-

significant reductions were also found between pre-group and follow-up scores ($p = 0.73$) with a small effect size ($r = 0.08$) indicating participants' total self-reported opioid use and cravings were not significantly different to when they first started group.

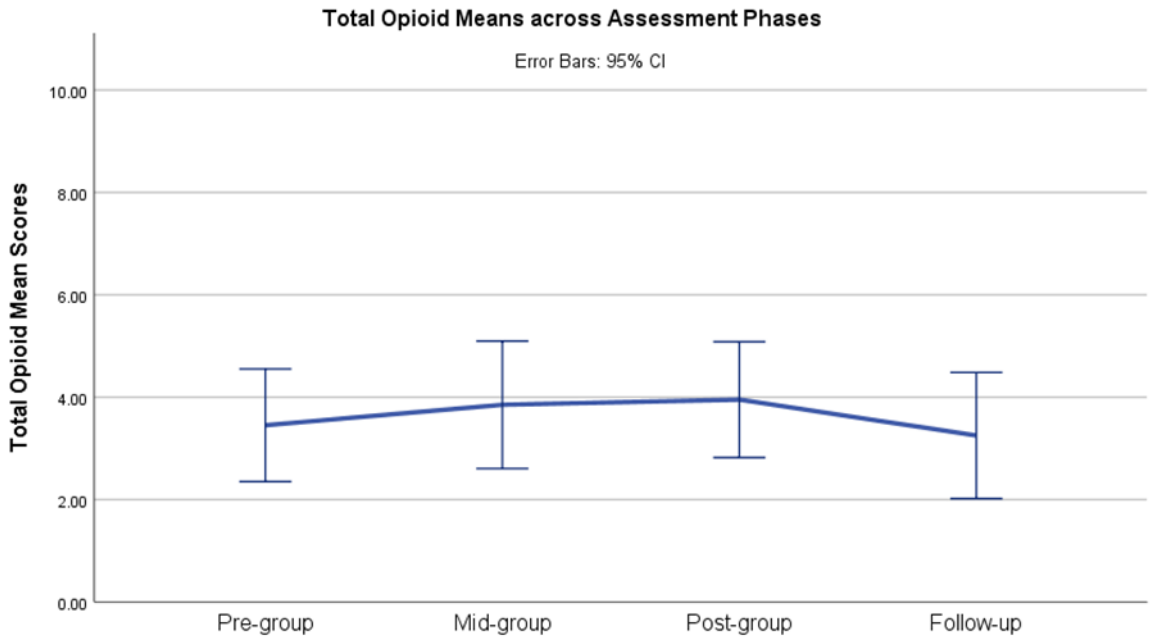

Figure 23. Line graph depicting the total opioid mean scores across all assessment phases.

Exclusion of non-alcohol users and non-substance users' analysis. Upon reviewing the data, a possible floor effect may have occurred due to including participants results who reported no alcohol or substance use across all assessment phases in the analysis. To account for any floor effect, each substance was analysed by excluding participants who reported no use or cravings for specific substances from each substance analysis. For example, participants who reported no amphetamine use or cravings across all assessment phases were excluded from the amphetamine analysis. The results of this adjustment led to no change in outcomes and by implication, lowered the likelihood a floor effect occurred.

Coexisting problems results. Table 9 presents the paired sample t-tests results for the coexisting problems measured via the protocol of measures across all assessment phase comparisons. For the means, standard error of means, and standard deviation of these assessment phases see Appendix L. It was hypothesised that the transdiagnostic nature of ACT would result in significant reductions observed in participants' self-reported measures of stress, anxiety, and external locus of control for powerful others throughout the group at pre-mid-post comparisons. It was also hypothesised that significant improvements would be observed in mindfulness and mood management skills throughout group at pre-mid-post-group comparisons. These changes were expected to be maintained or further improved at the three-month follow-up. T-test results are presented based on the *t* value which is the difference between the two means being compared and the degrees of freedom (*df*) representing the number of values in the final calculation that are free to vary. The *p* value represents the significance level (two tailed) that shows if the two scores are statistically significantly different. Positive values are expected to be found for the mood management measures (TMMS) and mindfulness measure (MAAS) and represent an improvement in skills. Negative values are expected for the stress, anxiety, and external locus of control measures and represent a reduction in stress, anxiety, and the belief that powerful others have control over participants' lives. Effect sizes are represented using the effect size correlation *r*.

Table 9.

Paired sample t-test for Coexisting Problems Measures and Mindfulness Measure Across all Comparison Points.

Dependent variable *(df)*	**Pre versus Post** *(24)*			**Pre versus Follow-up** *(19)*			**Post versus Follow-up** *(19)*		
Values	***t***	***p***	***r***	***t***	***p***	***r***	***t***	***p***	***r***
PSS-10	3.69	**0.00****	0.60	0.63	0.54	0.14	-2.17	**0.04***	0.45
GAD-7	2.60	**0.02***	0.47	0.88	0.39	0.20	-0.66	0.50	0.16
BLOCS§	2.85	**0.01****	0.50	0.35	0.73	0.08	-1.31	0.21	0.29
TMMS	-4.07	**0.00****	0.64	-1.88	0.08	0.40	0.67	0.51	0.15
ATTN§	0.00	1	0	0.77	0.45	0.17	0.60	0.55	0.14
CLAR§	-6.34	**0.00****	0.69	-3.59	**0.00****	0.64	1.30	0.21	0.64
REP§	-2.71	**0.03***	0.44	-1.91	0.07	0.40	-0.84	0.41	0.19
MAAS	-1.74	0.01	0.44	-2.87	**0.01****	0.40	-2.82	**0.01****	0.55
Dependent variable *(df)*	**Pre versus Mid** *(25)*			**Mid versus Post** *(23)*			**Mid versus Follow-up** *(19)*		
Values	***t***	***p***	***r***	***t***	***p***	***r***	***t***	***p***	***r***
PSS-10	2.00	0.06	0.37	2.43	**0.02***	0.45	-0.46	0.65	0.10
GAD-7	1.44	0.16	0.28	1.97	0.06	0.38	0.09	0.93	0.02
BLOCS§	0.77	0.45	0.15	0.75	0.46	0.15	-1.24	0.23	0.27
TMMS	-1.93	0.07	0.36	-2.53	**0.02***	0.47	0.67	0.51	0.15
ATTN§	1.59	0.13	0.30	-1.41	0.17	0.28	0.60	0.55	0.14
CLAR§	-3.97	**0.00****	0.62	-2.47	**0.02***	0.46	-0.96	0.35	0.22
REP§	-1.02	0.32	0.20	-1.65	0.08	0.32	-1.60	0.13	0.34
MAAS	-0.02	0.99	0.00	-1.86	0.08	0.36	-3.37	**0.00****	0.61

Note: t value = T-test statistic, *p* value = significance level, * = significant at the 0.05 level (2-tailed), ** = significance at the 0.01 level, *r* value = effect size, *df* = degrees of freedom, § = an abbreviation of 'subscale', PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, Powerful Others§ = Powerful Others Subscale, TMMS = Trait Meta Mood Scale, Attention§ = Attention TMMS Subscale, Clarity§ = Clarity TMMS Subscale, Repair§ = Repair TMMS Subscale, MAAS = Mindfulness Attention Awareness Scale. BLOCS scales for internal locus of control and external chance locus of control were also excluded.

Perceived stress comparisons. The PSS-10 collected data on participants self-reported levels of perceived stress in the last month. Scores were calculated on a four-point Likert scale with higher scores indicating higher levels of perceived stress.

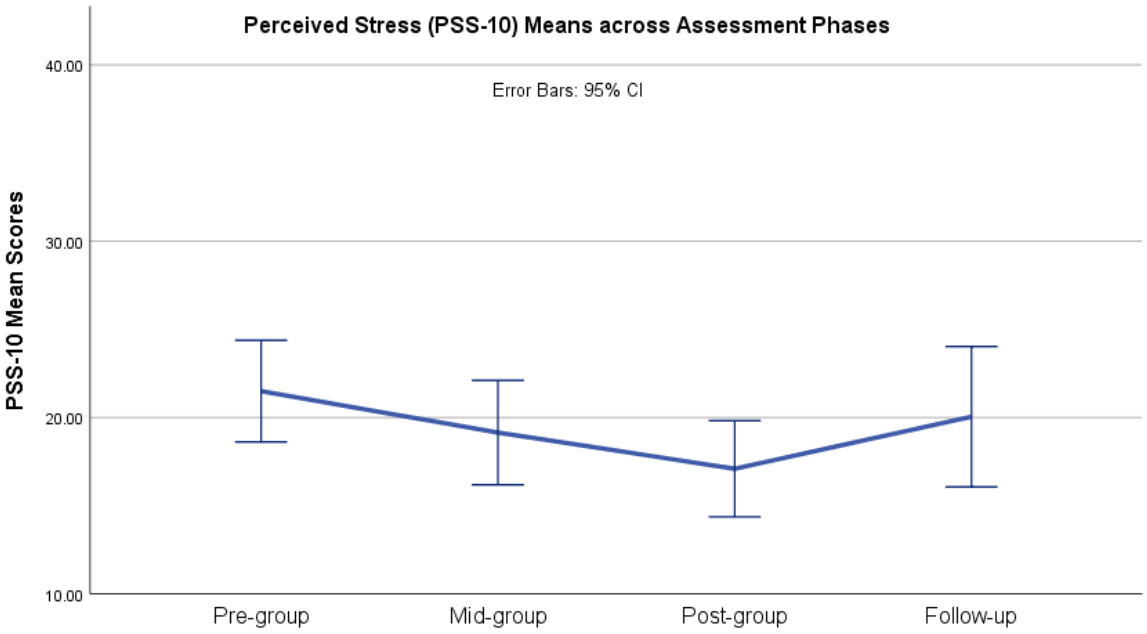

Figure 24. Line graph depicting perceived stress (PSS-10) mean scores across all assessment phases.

Pre-mid-group comparisons: As shown in *Figure 24* reductions in stress scores between pre-group and mid-group were observed; however, the differences in scores only approached statistical significance (p = 0.06) yet the effect size effect size (r = 0.37) indicated moderate reductions.

Mid-post-group comparisons: Statistically significant reductions were achieved between mid-group and post-group scores as predicted (t (23) = 2.43, p= 0.02) with a moderate to large effect size (r = 0.45) detected.

Post-follow-up-group comparisons: Although statistically significant change occurred between post-group and follow-up scores, this change indicated an increase in stress levels

rather than a decrease (t (19) = - 2.17, p = 0.04) with a moderate to large effect size detected (r = 0.45).

Pre-post-group comparisons: As hypothesised there was a statistically significant reduction in perceived stress scores between pre and post-group scores (t (24) = 3.69, p<0.01) with a large effect size detected (r = 0.60), indicating participants self-reported levels of perceived stress were significantly reduced by the end of the ACT group.

Pre-follow-up comparisons: Although the increase in follow-up scores were not as high as pre-group scores, this reduction in perceived stress was not statistically significant (p = 0.54) with a small effect size detected (r = 0.14). These results indicate that although the ACT group appears to reduce stress levels post-group, these changes are not maintained at the three-month follow-up and a rebound effect has occurred.

Anxiety comparisons. Scores obtained from the GAD-7 indicate participants levels of anxiety in the past two weeks on a four-point Likert scale. Higher scores suggest higher levels of anxiety. *Figure 25* below presents the trend in anxiety scores across all assessment phases.

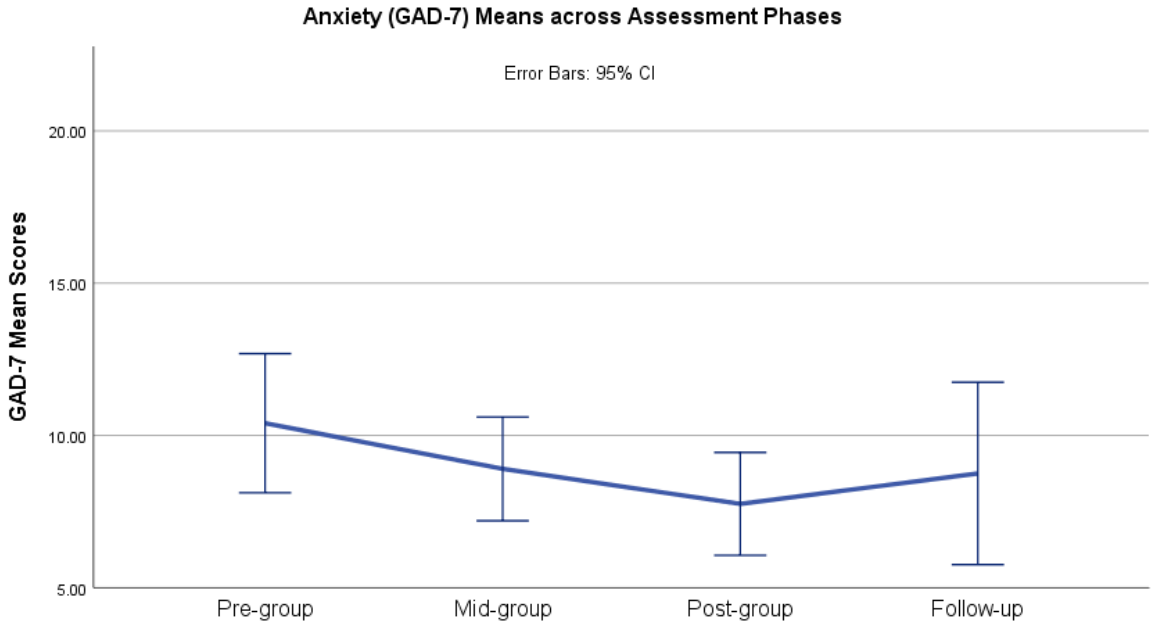

Figure 25. Line graph depicting anxiety (GAD-7) mean scores across all assessment phases.

Pre-mid-group comparisons: Anxiety scores between pre-group and mid-group approached statistical significance (p = 0.16) with a small to moderate effect size found (r = 0.28), indicating that moderate reductions in anxiety levels were observed mid-group.

Mid-post-group comparisons: This trend continued between the mid-group and post-group scores in which results approached statistical significance (p = 0.06) with another moderate effect size detected (r = 0.38). These results indicate that although there were steady reductions in anxiety levels throughout group, these changes did not reach statistical significance.

Post-follow-up-group comparisons: However, a non-significant increase in self-reported anxiety symptoms at the three-month follow-up assessment phase compared to post-group was found (p = 0.50) with a small effect size (r = 0.16). This pattern of scores was also observed for the stress measures between post-group and follow-up, that is, self-reported symptoms increased rather than decreased for both stress and anxiety which again suggests a rebound effect has occurred.

Pre-post-group comparisons: As hypothesised a paired sample t-test revealed a statistically significant decrease in self-reported symptoms of anxiety from pre-group to post-group (t (24) = 2.60, p = 0.02) with a moderate to large effect size detected (r = 0.47).

Pre-follow-up-group comparisons: Although there was a reduction in scores between pre-group and follow-up, a paired sample t-test yielded non-significant results (p = 0.39) with only a small effect size detected (r = 0.20). Again, these results show that there were reductions in anxiety symptoms throughout group, these reductions were not maintained at the three-month follow-up with a rebound effect observed again.

External locus of control – 'powerful others' comparisons. As the other subscales of the BLOCS measure were not included in the data analysis due to poor internal consistency, the powerful others subscale is the only BLOCS measure included as it had fair to good Cronbach's alpha scores. This measure rates the perceived locus of control on a five-point Likert scale. Those who score highly on this subscale perceive powerful others to have more control over their life compared to their own internal locus of control.

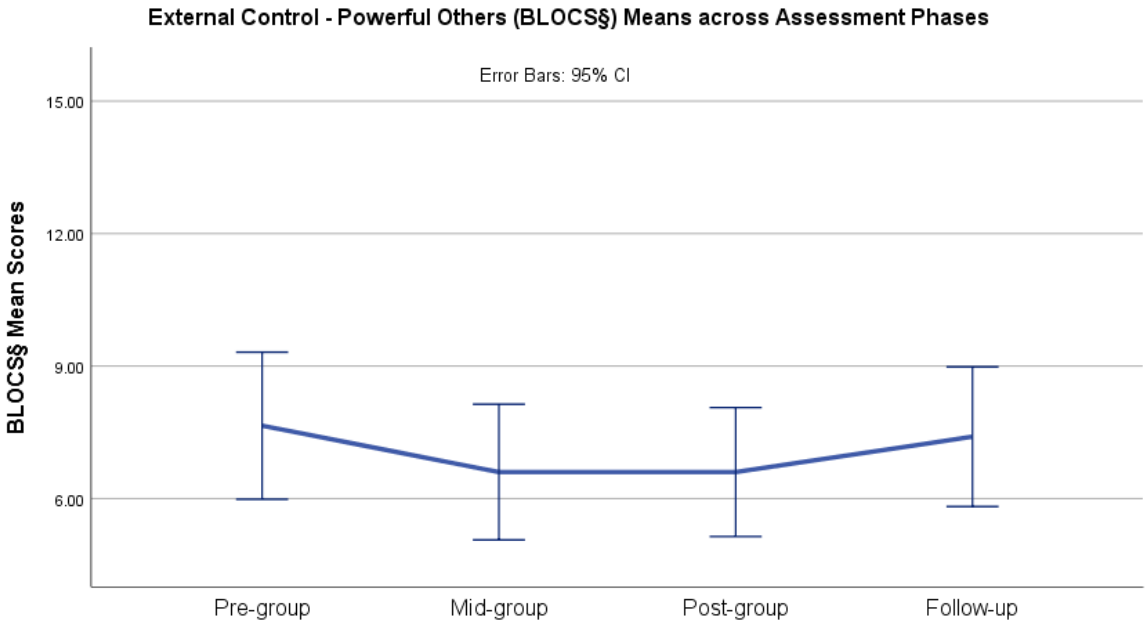

Figure 26. Line graph depicting locus of control (BLOCS§) external subscale 'powerful others' mean scores across all assessment phases.

Pre-mid-group comparisons: Reductions between pre and mid-group scores were observed (see *Figure 26*) yet these differences did not reach statistical significance (p = 0.45) with a small effect size detected (r = 0.15).

Mid-post-group comparisons: Similar results were observed for this comparison in that reductions were non-significant (p = 0.46) with the same small effect size detected (r = 0.15).

Post-follow-up-group comparisons: Scores for this comparison show an increase rather than a decrease (p = 0.21) with a small to moderate effect size detected (r = 0.29) which was unexpected yet similar to the stress and anxiety results showing a rebound effect.

Pre-post-group comparisons: As hypothesised, a statistically significant decrease in participants scores was found between pre and post-group assessment phases (t (24) = 2.85, p = 0.01) with a moderate to large effect size detected (r = 0.50).

Pre-follow-up-group comparisons: Reductions in external locus of control for powerful others was not maintained at the three-month follow-up in which non-significant results were found (p = 0.73) with a small effect size (r = 0.08) indicating minimal change between pre-group and follow-up scores, thus not supporting the research hypothesis.

Mood management comparisons. Self-reported mood management skills were examined via the TMMS which comprises of three subscales; attention, clarity, and repair. These are measured on a five-point Likert scale with the sum of all three subscales indicating a person's total mood management ability.

Attention subscale results. The attention subscale comprises of 13 items that indicate a person's awareness of moods and emotions. *Figure 27* on the following page demonstrates the changes in attention scores across all assessment phases. Although no statistically significant results were found for this subscale when comparing pre-group and mid-group scores ($p = 0.13$), there was an improvement in participants' scores with a moderate effect size detected ($r = 0.30$). However, mid to post-group comparisons found scores decreased rather than increased but not to a statistically significant level ($p = 0.17$) and with a small effect size ($r = 0.28$) which is not in line with the research hypothesis. Post to follow-up comparison showed an improvement in attention to mood scores; however, these results were not statistically significant ($p = 0.55$) and showed a small effect size ($r = 0.14$).

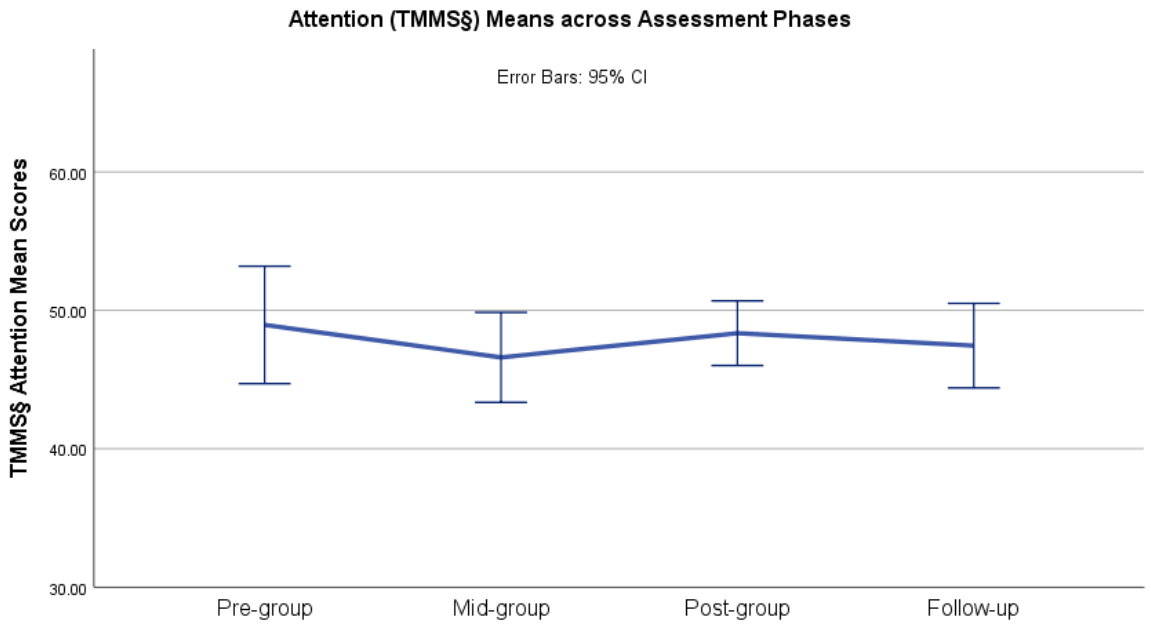

Figure 27. Line graph depicting mood management (TMMS§) subscale 'Attention' mean scores across all assessment phases.

Pre and post-group comparisons showed no difference at all between scores for the attention subscale (p = 1.00) indicating no change in scores evidenced by an effect size of 0. Pre-group and follow-up comparisons showed a decrease rather than increase in attention to mood scores. However, this change did not reach statistically significant levels (p = 0.45) and had a small effect size (r = 0.17). These results do not support the research hypothesis for this measure and indicate that participants ability to increase awareness of emotions and mood states was not improved following the ACT-based treatment group programme.

Clarity subscale results. The clarity subscale comprises of 11 items that indicate a person's ability to clearly discriminate between moods. *Figure 28* on the following page demonstrates the changes in clarity scores across all assessment phases. As predicted pre-group and mid-group comparisons found statistically significant improvements in clarity of moods (t (24) = - 3.97, p<0.01) with a large effect size (r = 0.62). Further significant

improvements were found between mid-group and post-group scores (t (23) = - 2.47, p = 0.02) with a moderate effect size detected (r = 0.46) which thus far supports the research hypothesis. However, post-group and follow-up comparisons found clarity scores decreased rather than increased which does not support the original hypothesis. This change did not reach statistical significance (p = 0.21) yet a large effect size was detected (r = 0.64).

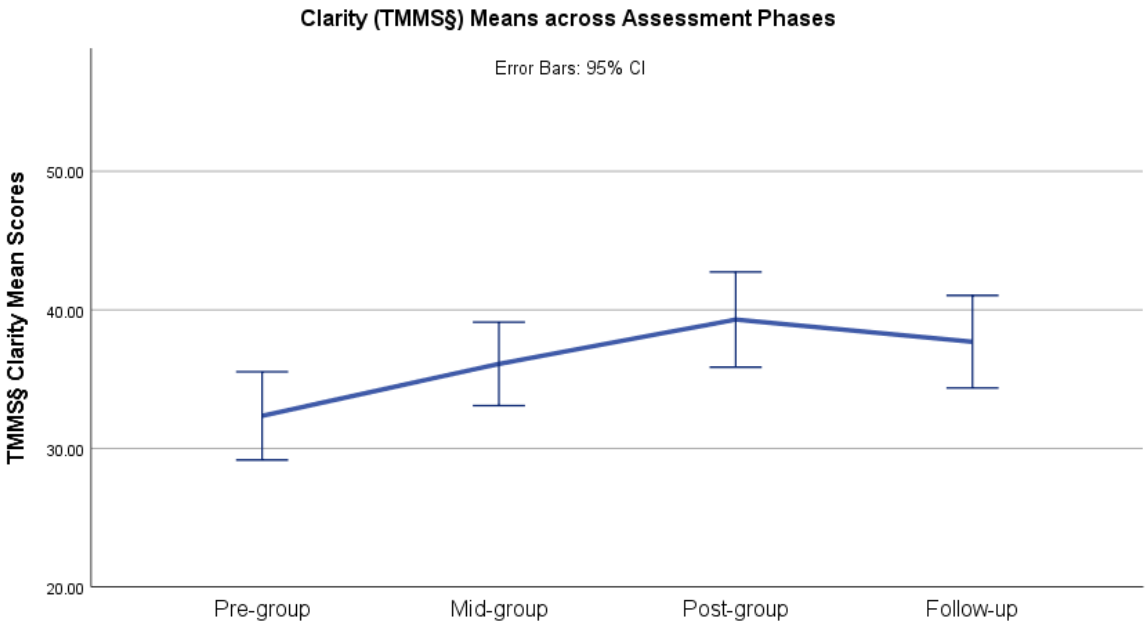

Figure 28. Line graph depicting mood management (TMMS§) subscale 'Clarity' mean scores across all assessment phases.

Pre and post-group comparison found a statistically significant increase in clarity scores (t (24) = - 6.34, p<0.01) with a large effect size detected (r = 0.69) as predicted. These results were further maintained between pre-group and follow-up scores reaching statistical significance (t (19) = -3.58, p< 0.01) with a large effect size (r = 0.64) which also supports the proposed hypothesis.

Repair subscale results. The repair subscale comprises of six items that indicate a person's ability to regulate their moods and emotions. *Figure 29* below demonstrates the

changes in repair scores across all assessment phases. Pre-group and mid-group scores show an improvement however they did not reach statistical significance (p = 0.32) with a small effect size detected (r = 0.20). Mid-group versus post-group scores also showed an improvement that approached statistical significances (p = 0.08) and found a moderate effect size (r = 0.32). Similar trends were also found between post-group and follow-up data (p = 0.41) with a small effect size (r = 0.19) indicating small improvements in participants' self-reported ability to regulate moods. While these results are in line with the research hypothesis they did not reach statistical significance.

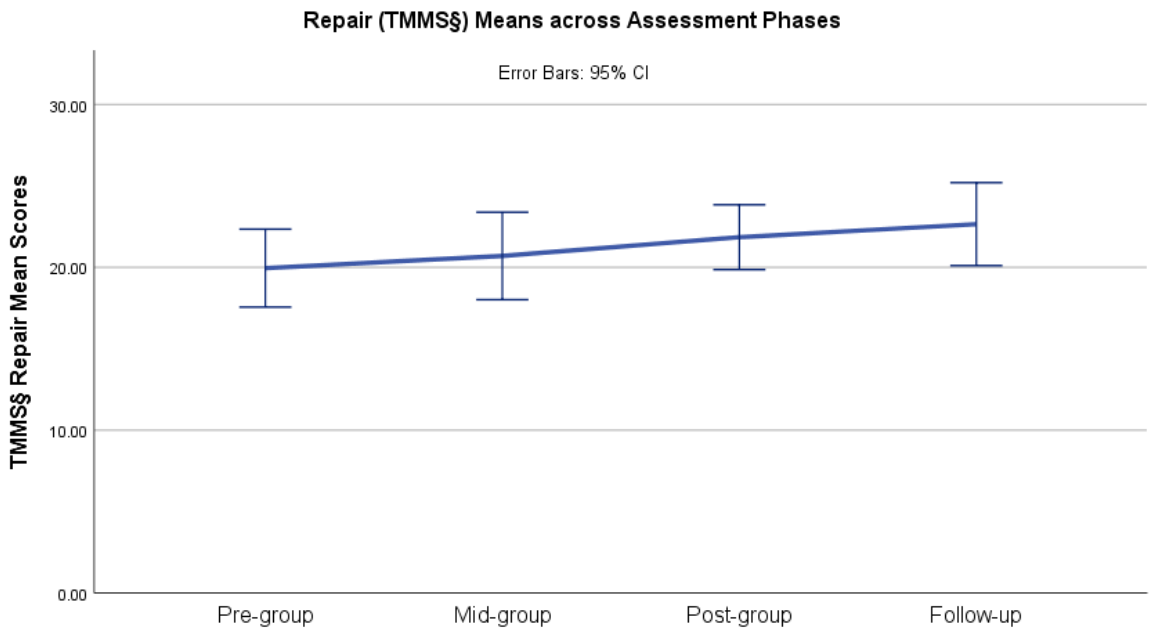

Figure 29. Line graph depicting mood management (TMMS§) subscale 'Repair' mean scores across all assessment phases.

Pre and post-group comparisons found statistically significant improvement in mood repair skills (t (24) = - 2.71, p = 0.03) with a moderate effect size found (r = 0.44). Pre-group versus follow-up scores also showed improvements in ability to regulate moods with the results only approaching statistical significance (p = 0.07) yet a moderate effect size was found (r = 0.40). These results indicate that although participants were able to improve their

ability to regulate their moods following an ACT-based group treatment programme these improvements did not reach a statistically significant level.

Total mood management. When participants score on the above subscales were summed (all 30 items) their results provided an indication of their total mood management score. *Figure 30* on the following page demonstrates the changes in total mood management scores across all assessment phases. Comparisons between pre-group and mid-group scores showed no statistically significant change ($p = 0.99$) with an effect size of 0 indicating that no change occurred. However, mid-group and post-group comparisons scores approached statistical significance ($p = 0.08$) with a moderate effect size detected. Post-group and follow-up scores showed a statistically significant improvement (t (19) = - 2.82, $p = 0.01$) with a large effect size detected ($r = 0.55$) which supports the research hypothesis.

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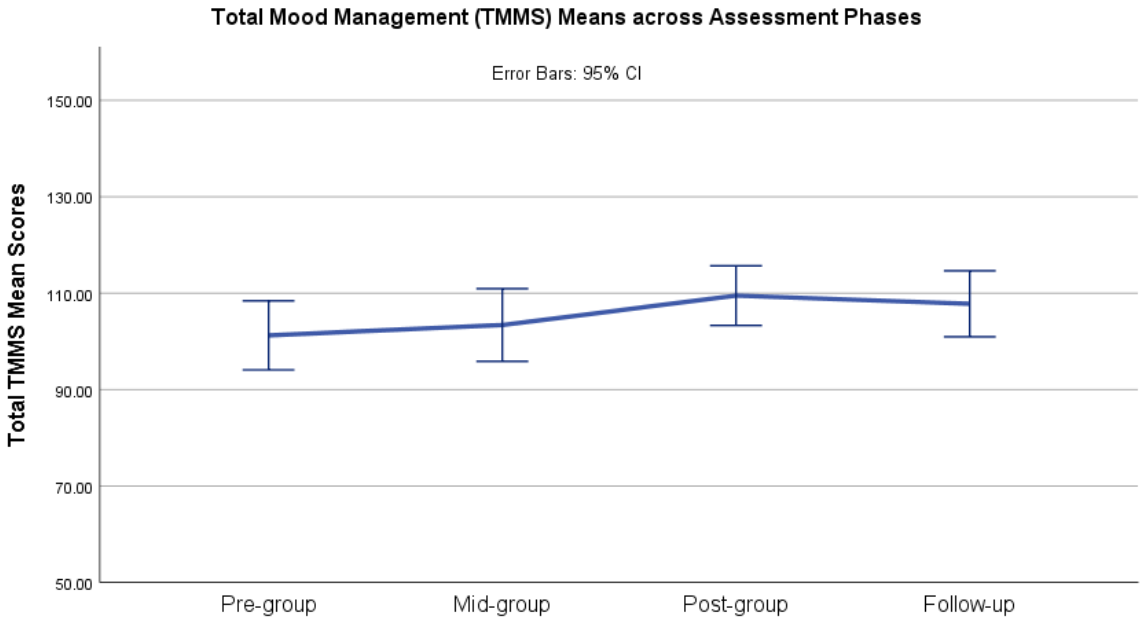

Figure 30. Line graph depicting the total mood management (TMMS) mean scores across all assessment phases.

Pre-group and post-group comparisons also showed that participants' total mood management scores improved following the ACT-based group treatment programme. However, the difference did not reach statistical significance ($p = 0.10$) but a moderate effect size was detected ($r = 0.44$). When comparing pre-group scores to follow-up scores the results indicated improvements that approached statistical significance ($p = 0.07$) with another moderate effect size detected ($r = 0.40$). While these results partially support the research hypothesis they did not reach statistical significance needed to confirm that an ACT-based group treatment programme significantly improves participants' overall mood management skills.

Mindfulness comparisons. The MAAS was used to measure participants' everyday mindfulness tendencies on a six-point Likert scale. Higher scores indicate more frequent mindfulness in everyday activities. *Figure 31* below demonstrates the changes in mindfulness tendencies across all assessment phases. Pre-group versus mid-group comparisons found that mindfulness tendencies did not significantly change (p = 1.00) with an effect size of 0 indicating no change occurring between the two time points. However, mid to post-group comparisons showed an increase in mindfulness scores that approached statistical significance (p = 0.08) and showed a moderate effect size (r = 0.36). Further comparisons between post and follow-up data found statistically significant increase in mindfulness scores (t (19) = -2.82, p = 0.01) with a large effect size detected (r = 0.55).

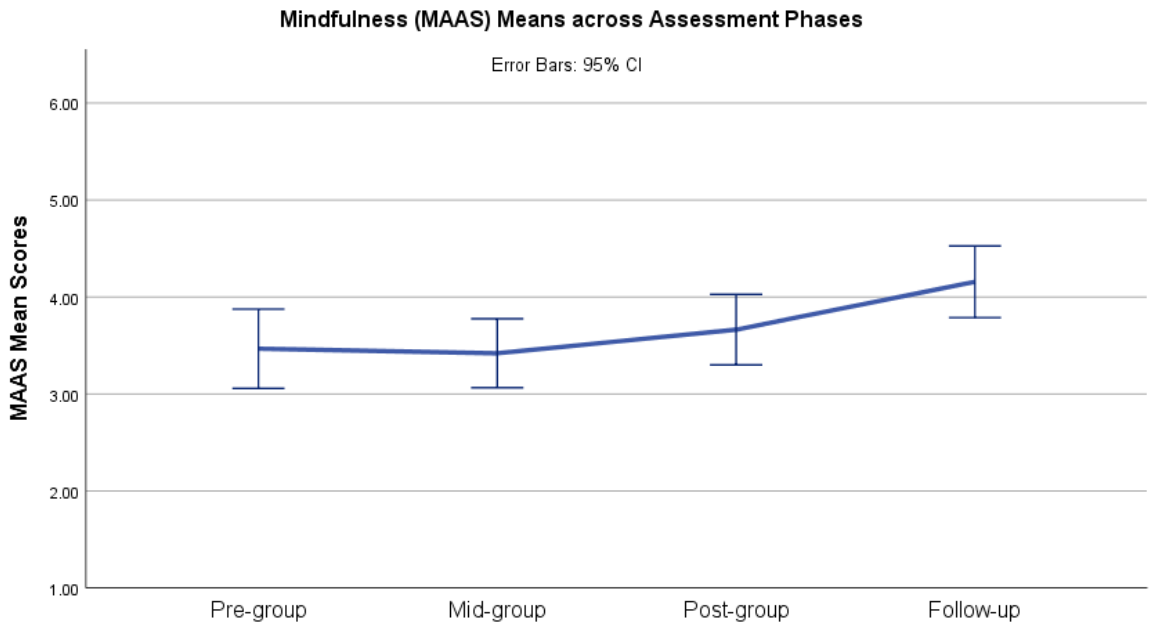

Figure 31. Line graph depicting the mindfulness (MAAS) mean scores across all assessment phases.

Pre-group versus post-group comparisons found no statistically significant increase in scores (p = 0.10) but did detect a moderate effect size (r = 0.44) indicating moderate change

occurred in participants' mindfulness tendencies following immediate completion of the ACT-based group treatment programme. These positive changes were observed to a statistically significant level between pre-group and follow-up data (t (19) = -2.87, p = 0.01) with a moderate effect size detected (r = 0.40) thus supporting the hypothesis that positive changes in participants' mindfulness tendencies would be improved at the three-month follow-up assessment phase.

The results for coexisting problems assessed throughout the ACT-based group treatment programme showed a mixture of significant changes that, in part, supported the research hypotheses proposed. Specifically, although there were reductions observed between pre to mid and mid to post for PSS-10 (stress), GAD-7 (anxiety), and BLOCS powerful others subscale (external locus of control) they did not reach statistical significance due to the small sample size and attrition rates further reducing the sample size. However, post to follow-up scores indicated these measures increased thus not supporting the hypothesis that reductions would be maintained or further observed from post to follow-up. Improvements in total mood management (TMMS) and TMMS subscales Clarity and Repair were observed as predicted. However, the attention subscale did not differ significantly throughout the group. Pre and post comparisons found significant changes in line with the hypotheses for all measures except MAAS (mindfulness) and the TMMS attention subscale. These results showed that PSS-10, GAD-7, and BLOCS powerful others subscale all showed significant reductions by post-group as predicted. However, MAAS score did not significantly increase as predicted, although at follow-up MAAS scores showed statistically significant improvement which supports the hypothesis that mindfulness would demonstrate an accumulative effect at follow-up.

SECTION FOUR: Bivariate Correlations

Bivariate correlations were conducted using the bivariate Pearson product-moment correlation coefficient (*r)*[12] (see *Figure 32*) to demonstrate the strength and direction of the relationship between two variables. A positive correlation indicates that there is a direct relationship, meaning as one variable increases so does the other variable. Whereas a negative correlation indicates an indirect relationship, that is, when one variables increases while the other decreases. It is important to note that these relationships do not imply causality. Cohen's (1988, as cited in Pallant, 2007) criteria for evaluating the strength of the associations are that an *r* value of 0.1 is small, 0.3 is moderate, and 0.5 is considered a strong relationship. Calculating the coefficient requires the number of pairs of scores, the sum of the products of paired scores, sum of x scores, sum of y scores, and the sum of squared x scores and y scores as depicted below in *Figure 32*.

$$r = \frac{\sum xy - \frac{(\sum x)(\sum y)}{n}}{\sqrt{\left(\sum x^2 - \frac{(\sum x)^2}{n}\right)\left(\sum y^2 - \frac{(\sum y)^2}{n}\right)}}$$

Figure 32. Formula for bivariate Pearson product-moment correlation coefficient, *r.*

Each dependent variable that had reliable internal consistency (α >0.70) was examined across all assessment phases. Correlation tables are used to show the relationships with each other from the same assessment phase and can be found in the appendices (see Appendix M). Most measures were highly correlated with one another, which is in line with research that shows the high rate of coexisting problems with AOD populations. However, the purpose of the current research was to assess the relationships specifically between mindfulness

[12] This is not the same *r* value used for effect size calculations in the previous statistical significance testing section. This is an important distinction for the bivariate correlations section.

tendencies and participants' alcohol and other drug use and cravings as well as coexisting problems. Therefore, it was hypothesised that significant negative correlations would be detected between mindfulness and alcohol use as well as substance use and cravings. That is, it was expected that when mindfulness scores increase, alcohol and other drug use and cravings scores would decrease. Further significant negative correlations were also predicted for participants' self-reported scores for perceived stress, anxiety, and external locus of control for powerful others. A significant positive correlation was expected between mindfulness scores and mood management scores, meaning that both scores are predicted to show an increase. Mindfulness scores were also expected to be highly correlated with each other when comparing the change over time, that is, it was expected that participants who scored highly on the mindfulness measures at the pre-group assessment phase were more likely to score highly on the mid-group, post-group, and three-month follow-up assessment phase.

Table 10 presents the Pearson product-moment correlation coefficients showing the strength and direction of associations between measures across all assessment phases for alcohol use, substance use and cravings, stress, anxiety, external locus of control subscale powerful others, and mood management, compared to mindfulness measures for all assessment points. Scatterplots are presented to aid visual interpretation for some of the significant relationships found between variables measures with data points colour coded to represent male and female scores.[13]

[13] Differences between male and female scores are provided to provide a detailed visual pattern of the data; however, of note there were no statistically significant differences between male and female participants in their self-reported substance use or coexisting problems or mindfulness.

Table 10.

Bivariate Correlations Between Mindfulness and all Other Dependent Variables Across all Assessment Phases.

MAAS	**AUDIT-C**				**ALC Section B Totals**				**TOB Totals**				**CAN Totals**			
	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U
Pre	0.13	0.12	0.17	0.09	0.19	0.31	-0.10	-0.05	-0.07	-0.00	-0.02	0.02	-0.03	0.02	0.08	0.13
Mid	0.03	-0.04	-0.06	-0.07	0.10	0.21	-0.13	-0.12	-0.23	-0.15	-0.12	-0.22	-0.38	-0.37	-0.08	-0.22
Post	0.03	-0.13	-0.04	-0.12	0.03	0.23	-0.14	-0.21	-0.16	-0.08	-0.04	-0.39	-0.14	-0.10	0.09	-0.08
F/U	0.26	-0.92	-0.13	-0.30	0.37	0.26	-0.26	-0.33	-0.25	-0.40	-0.42	-0.42	-0.07	-0.09	-0.35	-0.23

	AMPH Totals				**SED Totals**				**OPI Totals**			
	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U
Pre	-0.31	-0.26	-0.29	-0.12	-0.29	**-0.49***	-0.33	-0.21	-0.12	-0.22	-0.22	0.13
Mid	-0.17	-0.23	-0.15	-0.02	-0.35	-0.21	-0.15	-0.11	-0.00	0.03	-0.04	0.25
Post	-0.35	**-0.42***	-0.34	-0.40	-0.32	-0.32	-0.35	-0.43	-0.08	-0.09	-0.13	-0.04
F/U	-0.16	-0.25	-0.34	**-0.47***	-0.06	-0.23	-0.32	-0.39	-0.05	-0.01	-0.15	-0.10

	PSS-10				**GAD-7**				**BLOCS§**				**TMMS Totals**			
	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U
Pre	**-0.55****	**-0.59****	-0.26	-0.10	**-0.53****	**-0.51****	-0.25	0.20	-0.21	-0.32	-0.29	-0.35	**0.53****	**0.46***	0.28	0.23
Mid	**-0.47***	**-0.70****	**-0.51***	-0.16	-0.15	-0.25	-0.40	-0.23	**-0.48***	**-0.40***	**-0.55****	-0.15	**0.65****	**0.60****	**0.44***	0.44
Post	-0.32	**-0.60****	-0.39	-0.42	-0.34	**-0.51***	-0.36	-0.01	**-0.57****	-0.33	**-0.65****	-0.47-	0.35	0.27	**0.54****	**0.52***
F/U	-0.14	**-0.51***	**-0.53***	**-0.56***	-0.02	0.31	-0.31	-0.43	**-0.59****	**-0.66****	**-0.64****	**-0.60****	0.03	0.04	0.42	**0.50***

	TMMS Attention§				**TMMS Clarity§**				**TMMS Repair§**				**MAAS**			
	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U	Pre	Mid	Post	F/U
Pre	0.31	0.17	-0.04	0.26	**0.39***	**0.54****	**0.44***	0.19	**0.47****	**0.44***	0.16	0.05	1			
Mid	**-0.54****	**-0.45***	0.19	0.36	0.38	**0.61****	**0.57****	0.32	**0.42***	0.38	0.12	0.34	**0.65****	1		
Post	0.36	0.20	0.29	0.43	0.20	0.37	**0.60****	**0.50***	0.09	0.09	0.19	0.24	**0.54****	**0.58****	1	
F/U	-0.09	-0.06	0.26	0.25	0.22	0.09	0.42	**0.49***	-0.06	0.08	0.29	0.42	0.17	0.21	**0.52***	1

Note. AUDIT- C = Alcohol Use Disorder Identification Test-Consumption, ACL Section B =Alcohol Use Section B, PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, Powerful Others§ = Powerful Others Subscale, TMMS = Trait Meta Mood Scale, Attention§ = Attention TMMS Subscale, Clarity§ = Clarity TMMS Subscale, Repair§ = Repair TMMS Subscale, MAAS = Mindfulness Attention Awareness Scale. BLOCS scales for internal subscale locus of control and external chance subscale locus of control were also excluded. § = an abbreviation of 'subscale'. **Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed).

Alcohol correlations. Alcohol use, as measured by the AUDIT-C and by Section B of alcohol use in the protocol of measures, was examined for associations with mindfulness tendencies via the mindfulness, attention, awareness scale (MAAS). AUDIT-C results across assessment phases all showed small strengths of associations (r <0.30) with mindfulness, except for the relationship detected between follow-up phases that showed a moderate negative association between scores (r = - 0.30), which suggests that as mindfulness increased, alcohol use as measured by the AUDIT-C decreased. The remaining associations for mid-group and post-group and follow-up were negative correlations, indicating as mindfulness scores increased alcohol scores decreased, which is in line with the hypothesis, yet the strength was small.

Alcohol Use Section B total and mindfulness correlations showed positive relationship for both pre-group and mid-group scores across all assessment phases with the strength of the associations ranging from small to moderate (r = 0.10 - 0.30). Whereas associations for post-group and follow-up data showed a negative relationship. The correlation between follow-up assessment points showed a negative relationship with moderate strength (r = - 0.33, see *Figure 34*), which indicates that mindfulness scores increased and alcohol use in the past month decreased, which is also in line with the hypothesis proposed.

Substance use and cravings total correlations. Substance use and cravings scores from the WHO-ASSIST V3.0 were summed to provide totals and the relationship between mindfulness scores were examined.

Tobacco correlations. All associations between tobacco use and cravings scores combined (tobacco totals), and mindfulness scores showed a negative relationship, apart from the relationship between tobacco scores at follow-up assessment phase and pre-group mindfulness scores. This exception, however, only showed a small positive association, that suggests that higher mindfulness scores at pre-group were positively correlated with tobacco

use and cravings totals at follow-up. Negative correlations observed between mid, post, and follow-up total tobacco scores with follow-up scores on the MAAS showed a moderate strength in relationship (r = 0.40 – 0.42). This indicates that those who had higher scores on the MAAS at follow-up had lower scores at mid, post, and follow-up for tobacco use and cravings combined.

Cannabis correlations. The majority of correlations between mindfulness and cannabis use and cravings scores were negative non-significant but with weak to moderate strength. Four correlations were positive, in that higher scores on cannabis use and cravings were associated with higher scores on the mindfulness measure; however, these were not significant and weak (r <0.13). The strongest relationship was found between post-group cannabis total scores and follow-up mindfulness scores with a negative correlation (r = -0.35) indicating that as mindfulness scores increased, cannabis scores decreased. Participants who scored highly on mindfulness tendencies at follow-up were likely to have scored lower on cannabis measures of use and cravings combined (total) at post-group assessment phase. This trend was also noted at both cannabis and mindfulness follow-up scores; however, the strength of the association was small (r = 0.23)

Amphetamine correlations. All associations between amphetamine scores and mindfulness scores across all assessment phases showed a negative relationship with weak or moderate strength, indicating as mindfulness scores increased, amphetamine scores decreased. Correlations between mid-group amphetamine scores and post-group mindfulness scores (see *Figure 33* below) as well as follow-up mindfulness and follow-up amphetamine scores (see *Figure 34* on the following page) showed significant associations with moderate strength (r = -0.47). These results suggest that higher scores of mindfulness were associated with lower scores of amphetamine use and cravings, especially for those that showed a significant negative relationship with a moderate strength.

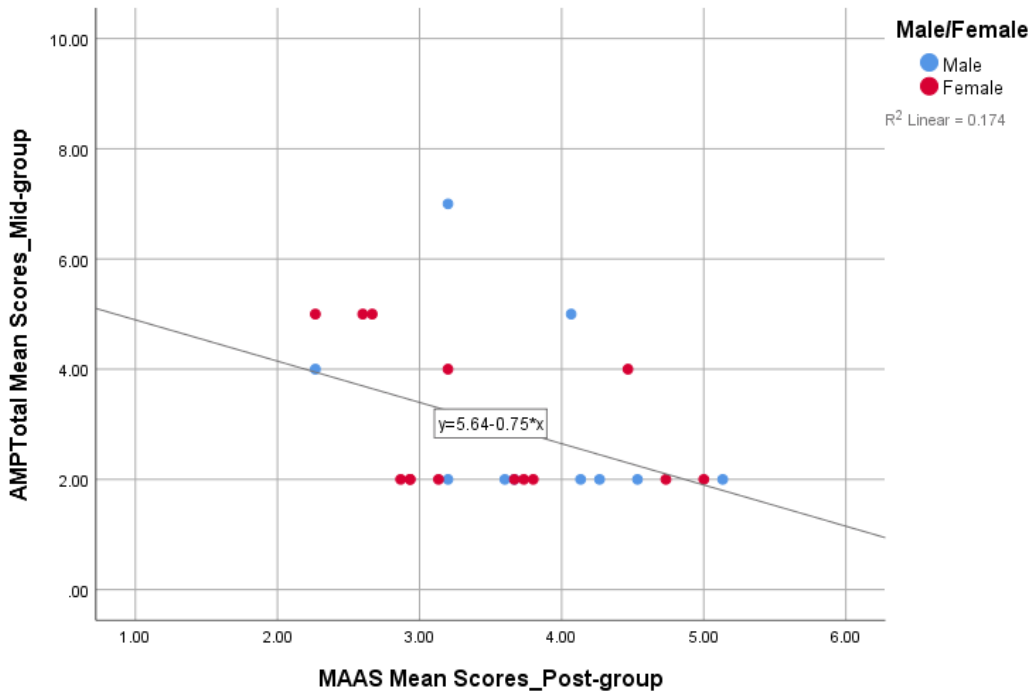

Figure 33. Scatterplot demonstrating the moderate negative correlation between mid-group total amphetamine scores and post-group MAAS scores that reached significance.

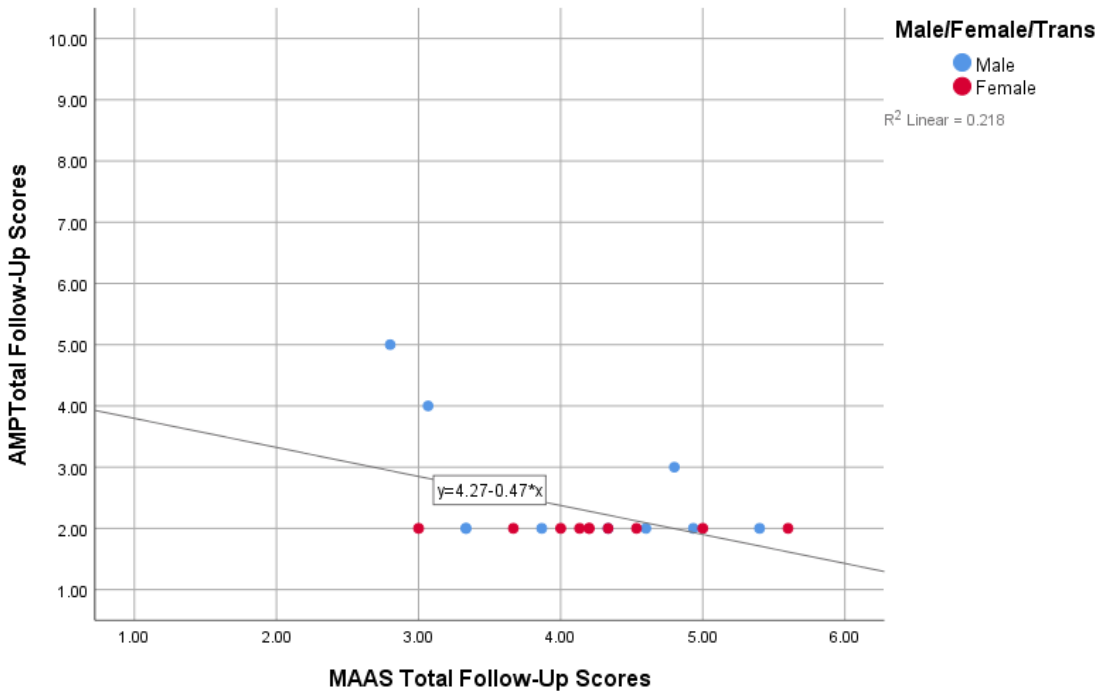

Figure 34. Scatterplot demonstrating the moderate negative correlation between follow-up total amphetamine scores and follow-up MAAS scores that reached significance.

Sedative correlations. All relationships between mindfulness scores and sedative scores were negative and ranged between small and moderate strength. A significant moderate negative correlation was found between mid-group sedative total scores and pre-group mindfulness scores (r = -0.49, see *Figure 35* below), indicating that those who scored higher for mindfulness tendencies at the pre-group assessment phase had lower scores for sedative use and cravings at mid-group assessment phase. This is in line with the hypothesis that those who are more mindfulness have lower rates of sedative use.

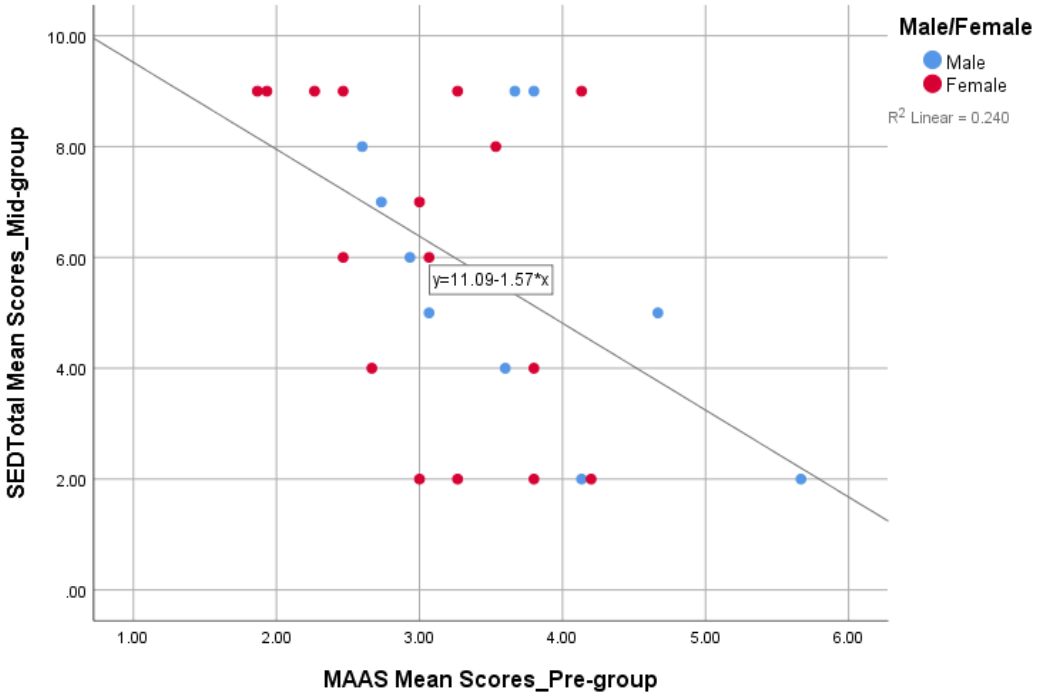

Figure 35. Scatterplot demonstrating the significant moderate negative relationship between total sedative scores at mid-group assessment phase and MAAS pre-group scores.

Opioid correlations. The majority of associations between mindfulness and opioid scores showed a weak negative relationship ($r < -0.30$) that indicates higher mindfulness scores are related with lower opioid use and cravings scores. Weak positive correlations were found between mid-group scores of mindfulness and total opioid scores ($r = 0.03$), as well as opioid scores at follow-up and mindfulness scores at pre-group ($r = 0.13$) and mid-group ($r = 0.25$) which suggests higher scores on both measures at these points. These relationships are not indicative of the predicted theory or previous research outlined in the literature review that has shown higher mindfulness rates are related to lower opioid use and cravings (Hayes, Wilson, Gifford, Bissett, et al., 2004; Stotts et al., 2012).

Perceived stress correlations. Nine out of 16 correlations between stress levels as measured by PSS-10 and mindfulness scores were significantly negative as hypothesised, with strengths in associations ranging from weak to strong. All mid-group stress scores showed strong negative associations with mindfulness scores across all assessment points. This indicates that as stress levels increased, mindfulness levels decreased. A significant strong and negative correlation between follow-up scores on stress and mindfulness levels indicates as mindfulness levels increased, stress levels decreased (see *Figure 36* below).

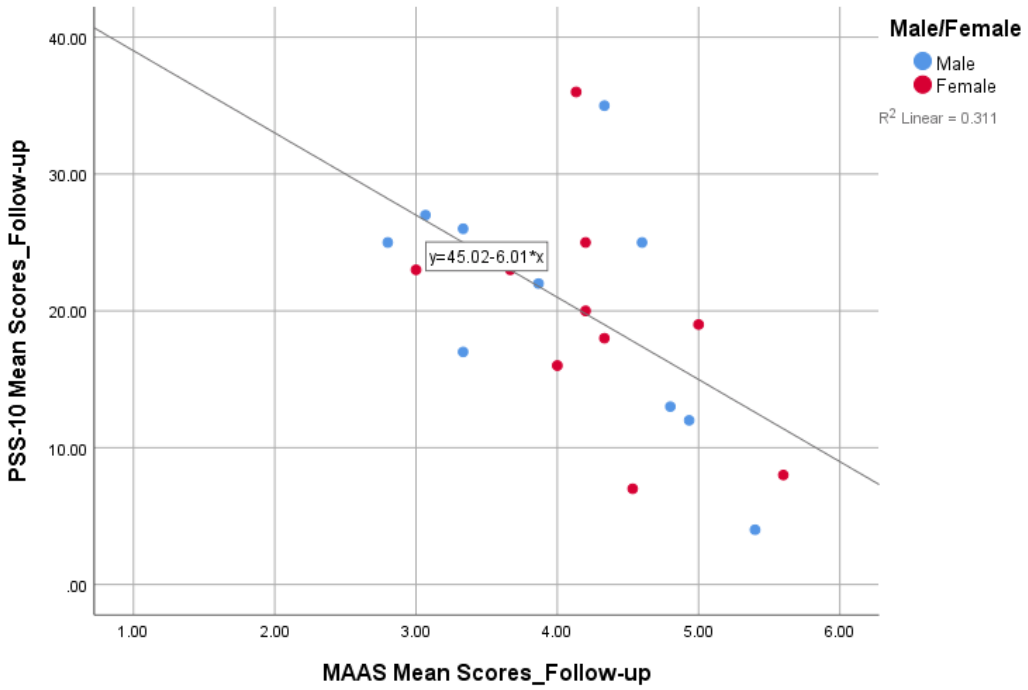

Figure 36. Scatterplot demonstrating the significant strong and negative relationship between PSS-10 scores and MAAS scores at the three-month follow-up assessment phase.

Anxiety correlations. Several strong negative relationships between anxiety levels and mindfulness scores were found. Specifically, pre-group mindfulness scores and pre-group anxiety scores were significant and indicate that those who scored high on the mindfulness measure were likely to have lower scores on the anxiety measure (r = -0.53). Significant relationships were also found between mid-group anxiety scores and pre-group mindfulness scores (r = - 0.51) and mid-group anxiety scores and post-group mindfulness scores (r = - 0.51, see *Figure 37*). A moderate strength was detected for a negative relationship between anxiety and mindfulness scores at follow-up which could suggest people who are more mindful experience less anxiety.

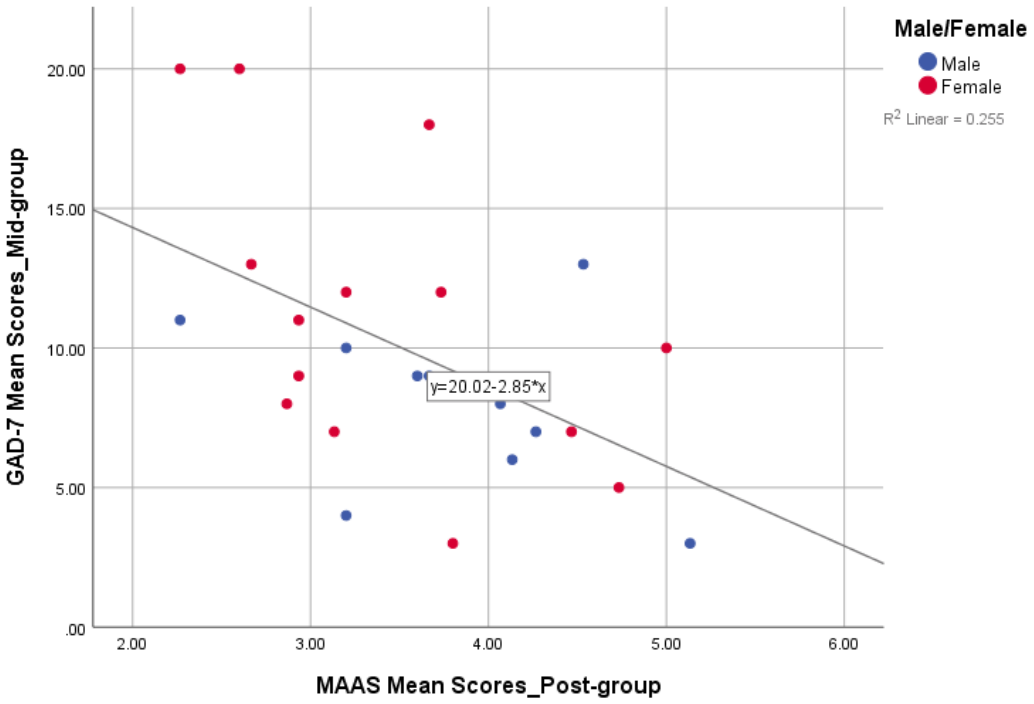

Figure 37. Scatterplot demonstrating the negative and significant relationship between GAD-7 scores at mid-group and MAAS scores at post-group.

External locus of control – "powerful others" subscale. Most of the relationships between mindfulness and the subscale of powerful others as measured by the BLOCS across all assessment phases were negative, with moderate to strong strength. Three of the associations were considered weak, however, several relationships reached statistical significance. For example, those who scored high on the mindfulness measure post-group were likely to show lower scores on the external locus of control subscale at follow-up (r = 0.64, see *Figure 38* below). Overall these results indicate that higher mindfulness tendencies are strongly associated with lower external locus of control beliefs for powerful others. This supports the hypothesis that being awareness of the present moment may increase a person's sense of control of their actions and thereby reduce perceived control by others on their lives.

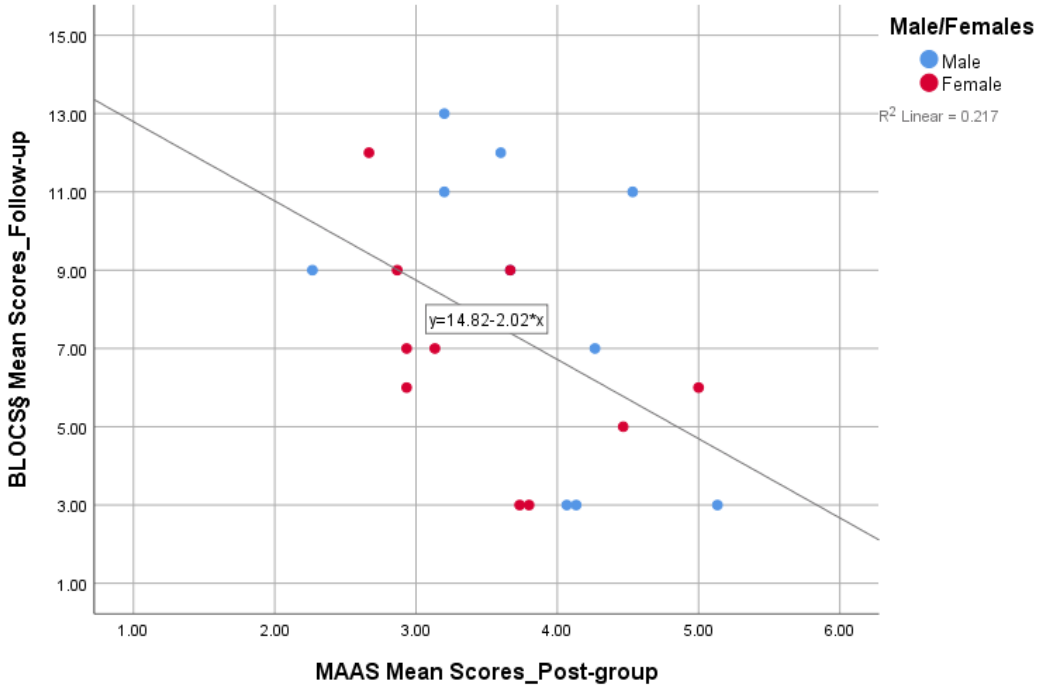

Figure 38. Scatterplot demonstrating the strong negative and significant relationship between BLOCS subscale 'powerful others' scores at follow-up and MAAS scores at post-group.

Mood management correlations. All associations between total mood management scores and mindfulness scores across all assessment phases were positive, indicating that increases in mindfulness tendencies are correlated with increases in mood management skills. Several relationships were significant with a strong association found (*r* >0.50). The strongest relationship was found between pre-group total mood scores and mid-group mindfulness scores (see *Figure 39* below*)*. This means that participants who had higher mood management scores at pre-group assessment phase were found to have higher mindfulness tendencies at the mid-group assessment point. The same trend is noted at follow-up phases for total mood management and mindfulness scores.

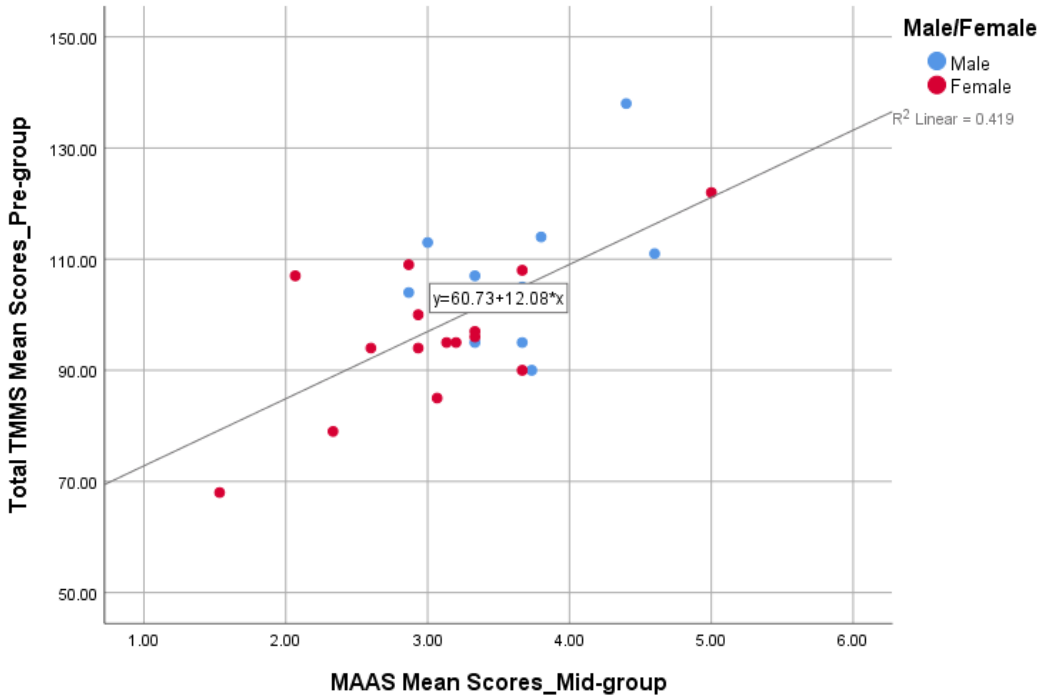

Figure 39. Scatterplot demonstrating the strong positive and significant relationship between total TMMS pre-group scores and MAAS mid-group scores.

Attention subscale. A mixture of positive and negative relationships were detected between the attention subscale scores and mindfulness scores across assessment phases. Positive relationships were expected to be found and for most of the correlations this proved to be true, however, there were five associations that were negative. Of the negative associations, two met significant levels with moderate to strong strength in relationships, indicating that as mindfulness scores increased attention scores decreased, which does not support the theory that increasing mindfulness would also increase attention to mood. The remaining positive associations ranged between weak to moderate strength.

Clarity subscale. As with the total mood management correlations, the clarity subscale relationships with mindfulness were all positive as predicted, with nearly half demonstrating a strong positive correlation meeting significant levels (e.g., see *Figure 40* below). These results indicate that as mindfulness tendencies increase participants ability to clearly discriminate between moods improves.

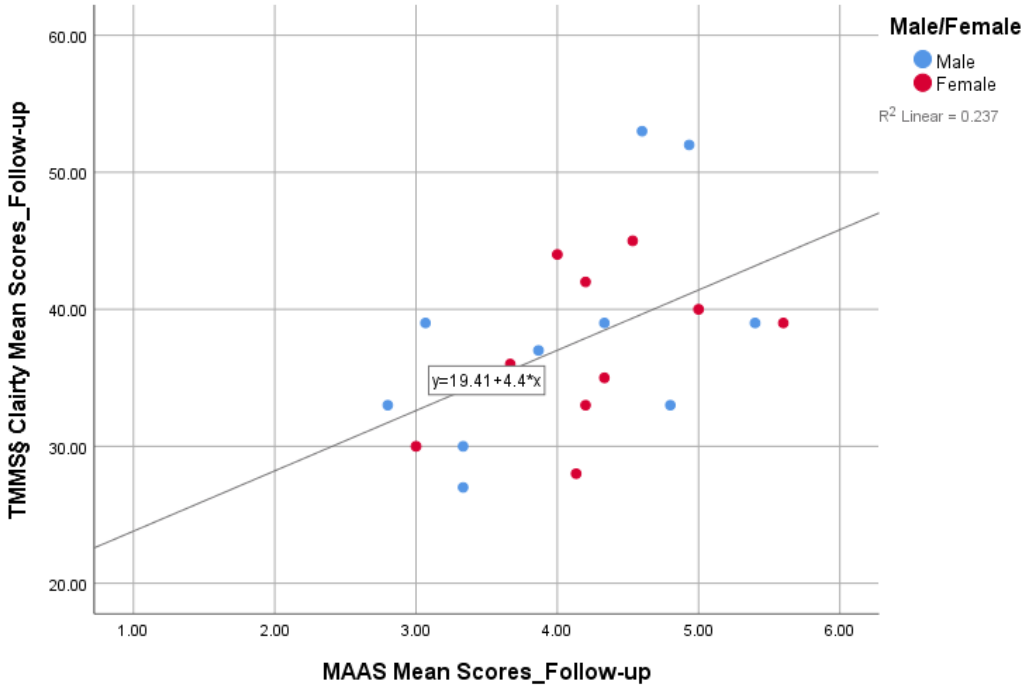

Figure 40. Scatterplots demonstrating the strong positive and significant relationship between MAAS follow-up scores and TMMS ‘Clarity’ subscale follow-up scores.

Repair subscale. Apart from one negative correlation found between pre-group repair scores and follow-up mindfulness scores, the rest showed positive associations that varied in strength (small to moderate). Significantly positive relationships with moderate strength were found between pre-group scores of repair and pre-group (r = 0.47) and mid-group (r = 0.42) mindfulness scores (see *Figure 41* below). A significant and positive relationship between mid-group repair scores and pre-group mindfulness scores was also detected. These results indicate that as mindfulness scores increase participants ability to regulate moods increases with this relationship reaching statistical significant for several correlations.

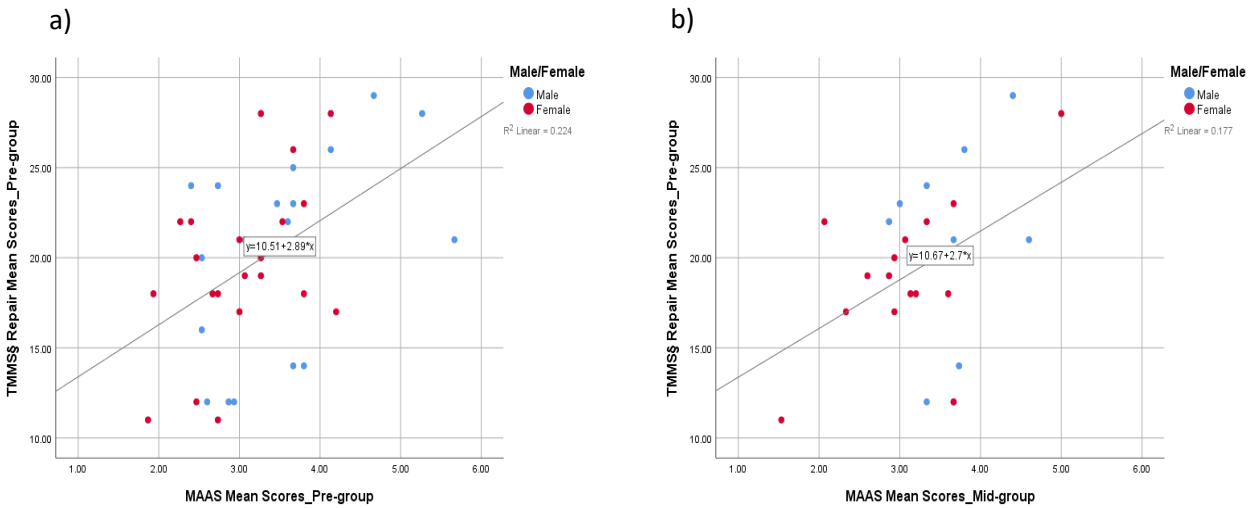

Figure 41. Scatterplots demonstrating the significantly moderate positive relationships between TMMS 'Repair' subscale scores at pre-group and MAAS scores at a) pre-group and b) mid-group.

Mindfulness correlations. As expected, the majority of associations between mindfulness scores with each other across assessment points were positively and significantly correlated with strong associations detected (r >0.50). This means that participants who scored highly on the mindfulness measure at pre-group were likely to score higher at mid-group and post-group. However, the relationship between pre-group and follow-up mindfulness scores although positive was not significant and weak (r = 0.17). A significant and positive relationship was detected between post-group and follow-up scores (see *Figure 42* on the following page). These results are in line with the prediction that those who those who had more mindfulness tendencies were likely to retain high scores of mindfulness at the three-month follow-up.

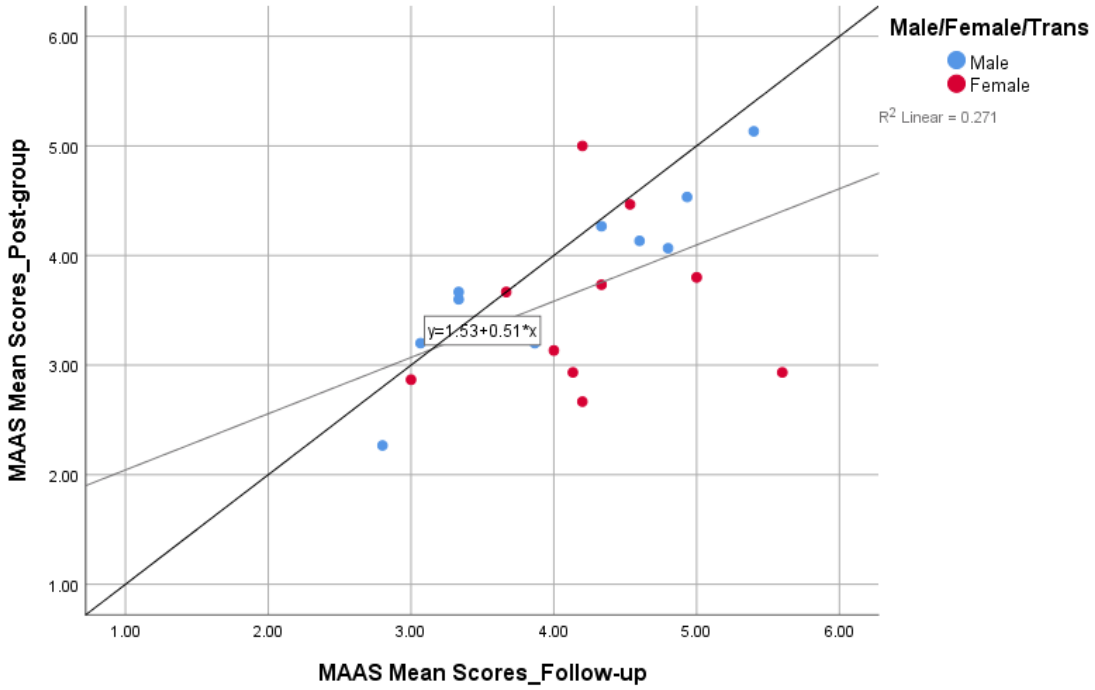

Figure 42. Scatterplot demonstrating the significant and positive relationship between MAAS scores at post-group and follow-up assessment phases.

Executive Summary

The overall results from the analysis are summarised as follows:

- Significance testing highlighted few statistically significant differences between substance use throughout the ACT group treatment programme assessment phases. Consistent patterns were noted whereby all substance use analysed (with the exception of alcohol use), showed increases from pre-group to mid-group, followed by reductions in use and cravings at post-group and follow-up assessment points. Alcohol use reduced across all assessment phases.
- Comparisons between pre-group, post-group, and follow-up showed reduced substance use and cravings with moderate to strong effect sizes reported. The lack of statistically significant differences between comparisons may be due to the small sample size.
- Stress, anxiety, and mood management outcomes were all statistically significant between pre-group and post-group. No significant change over time was found for mindfulness scores. Statistically significant changes were no longer evident at follow-up for the majority of measures, suggesting a degree of regression following the completion of the ACT group. The exception to this trend related to the mood management clarity subscale and the mindfulness scores, which remained statistically significant at follow-up.
- Overall the bivariate correlation analyses showed no significant relationships between mindfulness and alcohol, tobacco, cannabis, and opioids. Some evidence pointed to a significant relationship between mindfulness and both amphetamine and sedative scores. This pattern must be interpreted with caution as significant findings may be due to chance given the number of tests that showed no significant relationships.

Nevertheless, the general trends suggested that the majority of these were negative relationships, indicating that as mindfulness increases, substance use decreases.

- Bivariate correlations between mindfulness and coexisting problems revealed many significant relationships. These findings support the hypotheses that increased rates of mindfulness decreased self-reported stress, anxiety, and external locus of control as well as increased mood management. The cluster of significant relationships identified suggests these results are unlikely to be due to chance.
- The significant correlations of different variables against mindfulness supported the prediction that those who score higher on mindfulness are likely to retain high scores throughout the assessment phases.

SECTION FIVE: Supplementary Measures

Responses from the various feedback questionnaires were used to provide anecdotal information about the effectiveness of the group treatment programme. Of note, this qualitative data was not analysed using standard thematic analysis due to the qualitative information being obtained from participants' hand-written feedback from session rating scales, group rating scales, and via the follow-up questionnaire that was administered following a semi structured interview three-month post-group. Therefore, the themes of such were not able to be significantly analysed but offer the participants of the group a voice and gives context to the groups that were conducted in the current study.

Session rating scales results

Session rating scales were utilised at the end of every session. Participants rated the sessions overall enjoyability and helpfulness on a four-point Likert scale of 0, strongly disagree, to 4, strongly agree. Table 11 presents the means across all sessions for each group. Group one had an average rating of 3.32 and 3.37 for enjoyability and helpfulness of the sessions, respectively. Group two averaged 3.55 for enjoy-ability and 3.64 for helpfulness, with group three showing similar results (3.50 and 3.56, respectively). Group four demonstrated the highest rating 3.60 enjoy-ability and 3.65 helpfulness on average across all sessions. These results indicate that, on average, participants agreed or strongly agreed that the sessions were enjoyable and helpful. Three open-ended questions sought to identify specific aspects of the session that were either helpful or unhelpful. Most of the feedback for the unhelpful aspects of sessions from participants across all four groups were "nothing" in answer to this question or left it blank when completing the questionnaire. Most helpful aspects included feeling not alone in their struggle with alcohol or substance use in the group format and listed the skill for the specific session as helpful. The third open ended question sought to elicit any other comments from the participants to which most participants responding with thank you.

Table 11.

Session Rating Scale Means, Standard Errors of the Means, and Standard Deviations for Each Group.

Overall SRS		**Enjoyed**			**Helpful**	
	Mean	*SEM*	*SD*	*Mean*	*SEM*	*SD*
Group 1	3.34	0.95	0.76	3.37	0.90	0.72
Group 2	3.55	0.07	0.56	3.64	0.73	0.55
Group 3	3.50	0.09	0.67	3.56	0.08	0.60
Group 4	3.60	0.08	0.54	3.65	0.08	0.52

Group rating scales results

Combining the group rating scale results for all four groups, participants scored enjoy-ability, helpfulness, structure, facilitators, and resources of the group on a four-point Likert scale ranging from 0 strongly agree to 4 strongly disagree (see Table 12). Results indicated that the 23 participants who completed the group rating scales strongly agreed that the overall ACT-based group treatment programme was enjoyable, helpful, well structured, had appropriate and competent facilitators, and provided appropriate and helpful resources.

Table 12.

Overall Group Rating Scale Means, Standard Errors of the Means and Standard Deviations for all Groups.

(All groups)	***Mean***	***SEM***	***SD***
Enjoyability	3.86	0.07	0.34
Helpfulness	3.91	0.06	0.28
Structure	3.65	0.10	0.48
Facilitators fit	3.91	0.06	0.28
Resources provided	3.86	0.09	0.46

Table 13 presents the common themes obtained from the three open-ended questions sought to identify specific aspects of the whole group that were helpful and unhelpful.

Table 13.

Common Themes from the Open-ended Questions in the Group Rating Scales.

Helpful themes	**Percentage**
Change of thought process/different perspective	30.4%
Help with urges to drink/thinking before drinking/help with addiction issues/commitment to sobriety	21.7%
Strategies/practical skills to help with issues/coping strategies	21.7%
Acceptance	13.0%
Mindfulness	13.0%
Living aligned with my values/gave direction	13.0%
Confronting demons/challenging/avoidance/talking about my issues	13.0%
Positivity and non-judgemental forum	8.7%
Quotes, stories, and Ted talks	4.3%
Relapse prevention	4.3%
Everything was helpful	4.3%
Unhelpful themes	**Percentage**
Nothing or left blank or cannot think of anything	65.2%
Getting off topic	8.7%
Complex ideas, a lot of material and information to take in	4.3%
Longer sessions	4.3%
Having it in working hours	4.3%

Follow-up feedback questionnaire results

The final sample of 20 participants were administered additional questionnaires that included specific questions about the impact of the ACT-based group treatment programme. Questions and responses on a four-point Likert Scale are outlined in Table 14 on the following page. Responses were reversed scored with higher scores out of four representing positive responses whereas lower scores such as one or two indicated neutral or undesirable responses. Various response statements applied to specific questions, for example most response statements ranged from ‘yes – a lot’, ‘yes – a bit’, ‘no change’, and ‘no – worse now’ (applied to questions 2, 3, 5, 6, 7, 8, 9, 13, 14, 15, 16). Whereas questions 1 and 4 response statements ranged from ‘excellent’, ‘good’, ‘fair’, and ‘poor’. Other response options for questions 10 and 12 were ‘very satisfied’, ‘somewhat satisfied’, ‘somewhat dissatisfied’, and ‘very dissatisfied’. Lastly, question 11 ranged from ‘very competent’, ‘moderately competent’, ‘somewhat competent’, and ‘not at all competent’.

Table 14.

Follow-up Feedback Questionnaire Means, Standard Errors of Means, and Standard Deviations.

Question (0-4 Likert Scale)	***Mean***	***SEM***	***SD***
1. State of wellbeing at time of contact?	3.15	0.13	0.59
2. Since then has your state improved?	3.25	0.20	0.91
3. If wellbeing has change is it due to contact with ACT group?	3.40	0.15	0.68
4. Ability to carry out everyday activities at first contact with ACT group?	2.95	0.18	0.83
5. Since then has ability of everyday activities improved?	3.25	0.19	0.85
6. If ability changed is it due to contact with ACT group?	3.20	0.16	0.70
7. ACT group helped cope/manage life better?	3.50	0.11	0.51
8. ACT group improved sense of happiness and wellbeing?	3.40	0.11	0.50
9. ACT group contributed to satisfaction with life?	3.35	0.15	0.67
10. Overall satisfaction with facilitators responses?	3.65	0.11	0.49
11. How competent were the facilitators?	3.95	0.05	0.22
12. Overall satisfaction with the ACT group?	3.75	0.10	0.44
13. Since the ACT group has it helped you sit with unwanted psychological experiences?	3.35	0.13	0.59
14. Since the ACT group has it helped you cope with addiction related problems?	3.40	0.11	0.50
15. Since the ACT group are you living in line with your values?	3.30	0.13	0.57
16. Since the ACT group has your committed action to value driven goals improved?	3.35	0.15	0.67

Overall, most participants responses corresponded with ‘yes – a lot’ or ‘yes -a bit’ (scores 3 and 4) indicating that the ACT group had improved participants’ psychological wellbeing, everyday abilities, ability cope/manage in life, sense of happiness and wellbeing, satisfaction with life, ability to sit with unwanted psychological experiences, ability to cope with addiction problems, ability to live in line with their values, and ability to commit to value-based goals. The majority of the final group responded with ‘good’ for state of

wellbeing at first contact and ability to carry out everyday activities at first contact. Most participants indicated satisfaction with facilitators' responses and overall satisfaction with the ACT group was 'very satisfied' as represented by means of 3.65 and 3.75, respectively. A mean of 3.95 for question 11 indicates participants felt the facilitators were 'very competent'.

Four open-ended questions were included to elicit further feedback for the most helpful and least helpful aspects of the group as well as how they think the group could be improved with the last question eliciting any further comments or suggestions. Table 15 provides a summary of the common themes from participants' responses for the most helpful and least helpful aspects and improvement suggestions of the ACT-based group treatment programme. The other comments question consisted of expressions of gratitude to the facilitators and the programme. Most common answers are presented first.

Table 15.

Common Themes with Supporting Verbatim Quotes from Open-ended Questions in the Follow-up Feedback Questionnaire.

Most helpful themes and supporting verbatim quotes	**Percentage**
Development and practise of the mindfulness skill, learning to be in the present moment	50%
"Realising how little attention I was paying to what I was doing, and to things going on around me…practicing mindfulness and sitting and feeling emotions"	
Contact with others, support and interaction within the group format	30%
"I never felt alone, I felt very supported. They listened"	
Acceptance skills	20%
"Learning that acceptance is a developed skill and working on that"	
Learning to cope with emotions/feelings/addiction differently	20%
"Being able to cope with previous addiction patterns and be able to cope and deal with them easier"	
Different perspective on problems and life	20%

"Different way of handling problems and different ways of thinking about problems"	
Increased self-awareness and awareness of the costs of addiction	20%
"learning to be more self-aware…. awareness of how addiction has ruined my life"	
Values, making choices and living in line with values	15%
"I like the values – helps to describe/quantify what a "good life" may look like"	
The facilitators	10%
"The people running it have helped me a lot to open up…their friendliness has touched my life"	
Responding not reacting	5%
"Learning to think more before acting"	
Websites and resources directed outside of group	5%
"Having the facilitators guide me to websites and resources outside the course material"	

Least helpful themes	**Percentage**
Nothing or left blank	50%
Poor attendance record for some sessions	10%
Lack of continued programme	5%
Not enough time for group discussions	5%
Not long enough programme	5%
Need to redo the programme to reinforce ideas/skills	5%
First few weeks were hard and felt worse	5%
Unhelpful contact from a group member	5%
Group members going off topic or talking over others	5%

Improvements	**Percentage**
Nothing or left blank	40%
Longer group programme	15%
Establishing of group meetings (AA format) and/or follow-up classes	10%
Longer group discussions	10%
More in-depth information specific for each person	5%
Easier questions and homework	5%

Treatment fidelity results

Across all groups treatment fidelity did not fall below 80%. Sessions four, five, seven, and nine across all groups had 100% treatment fidelity rates (see Table 16). This means that integrity of the treatment programme designed remained intact, promoting minimal variation between the groups delivered, and ensured participants received the same ACT-based group treatment.

Table 16.

Treatment Fidelity Means, Standard Errors of the Means, and Standard Deviations for Each Session Across all Groups.

Session number (All groups)	***Mean***	***SEM***	***SD***
Session 1	9.25	0.32	0.65
Session 2	9.00	0.20	0.41
Session 3	9.75	0.25	0.50
Session 4	10	0.00	0.00
Session 5	10	0.00	0.00
Session 6	9.75	0.25	0.50
Session 7	10	0.00	0.00
Session 8	9.37	0.38	0.75
Session 9	10.00	0.00	0.00
Session 10	8.75	0.25	0.50

Overall summary of feedback

Therapy feedback indicated that all participants rated treatment components as helpful, but through selecting common themes, mindfulness was considered the most helpful. No major modifications were suggested other than an increase in the number of sessions and the length of the group programme. A number of participants suggested monthly group meetings that would function similar to Alcoholics Anonymous (AA) with respect to checking in with other participants and discussing the benefits of implementing the ACT skills learnt in group. A participant letter in Appendix O of this thesis highlights the meaningful contribution of the ACT group programme that outlines the idea of a monthly ACT maintenance group. There are a number of implications from the current research results and a number of confounding factors and limitations that will be discussed further in the following chapter.

CHAPTER FOUR

DISCUSSION

Post-group feedback

Group facilitator: "What has been the most helpful aspect of the ACT group?"

Group participants: "These sessions have been so valuable to me. I have changed for the better. I see life with more meaning and purpose. I have now got a great sense of direction as to which road I hope to stay on now" … "It has helped me to refocus my efforts at staying clean, and also provided me with a bit more direction and motivation around getting my life back on track. It has been good to get out and feel less isolated" … "I learned skills for dealing with anxiety, emotions, thoughts etc in life that will help me remain drug free. Gained confidence in my ability to be able to live drug free and improve quality of life"

- Anonymised quotes, ACT Group

These quotes illustrate some of the positive, life changing outcomes observed from the current study's ACT-based group treatment programme. Several participants reported improvements in managing substance related problems but also reported improvement in quality of life. Anecdotal results such as the quotes above will be presented alongside the overall findings of the current research with references to the hypotheses delineated in the literature review in section one of this discussion chapter. Hypotheses will be presented alongside interpretation of the research results in the context of the existing literature before discussing the implications of the key findings. Remaining sections of the discussion chapter present the strengths and limitations of current research, recommendations for future research, and a final conclusion.

SECTION ONE: Summary of the findings and hypotheses

The overarching aim of this study was to develop a manual for an ACT-based group treatment programme for SUDs and deliver and evaluate said programme in a real-world setting with people who struggle significantly with alcohol and other drug problems. A repeated-measures design was used to assess the effectiveness of the manualised group treatment programme with adults aged between 29 and 66 years old who were clients from the Palmerston North Alcohol and Other Drug Service. The current research sought to examine three specific research questions:

Research question one: Does an ACT-based group treatment programme reduce participants' self-reported alcohol use and substance use and cravings at the end of the treatment (post-group) as well as at the three-month follow-up? This reduction is expected to gradually occur over the course of the group programme, evidenced by reductions at mid-group, post-group, and follow-up assessment points.

Alcohol use findings and interpretation. The AUDIT-C is a valid and reliable tool for measuring hazardous drinking patterns (Bradley et al., 2007; Bush et al., 1998; DeBenedetti et al., 2007; Dawson et al., 2005). Therefore, the current study's AUDIT-C results can be considered valid and reliable. Cautious interpretation of the Alcohol Use Section B results is required as it is not a psychometrically supported tool for measuring alcohol use. However, the results of the Alcohol Use Section B allow a more recent indication of frequency and quantity of alcohol consumption in the past month (Cripsin-Morrall, 2013) and is considered an appropriate and effective way to measure changes for a ten-week group programme. The current study showed that there was minimal change in alcohol use between pre and mid-group assessment points; however, there were reductions in alcohol use post-group and at three-month follow-up for both alcohol measures used. Although these reductions did not

reach statistical significance, moderate effect sizes provided corroborative evidence for reductions in alcohol use between pre-group and follow-up as measured by the AUDIT-C. However only a small effect size was detected with the Alcohol Use Section B measure.

While previous studies have demonstrated the applicability of ACT to alcohol use disorders, such as Heffner's et al.'s 2003 study and Thekiso et al.'s 2015 study; the current study did not yield statistically significant changes in participants' alcohol use. Heffner et al.'s (2003) findings showed successful abstinence from alcohol following implementation of the values component of ACT to support this change. Thekiso et al. (2015) found significantly higher rates of days abstinent from alcohol and significantly lower rates of alcohol cravings. These examples provided the basis for the research hypothesis and while the initial trends in the current data set suggest participants reduced their alcohol use, the small sample size meant the study only had the power to detect statistical significance with moderate to large changes.

Changes in the alcohol measures across the assessment phases as measured by effect sizes were small, however a moderate effect size was found between pre and follow-up scores. This suggests there was a moderate change in participants' alcohol use at follow-up which may support the "incubation" effect as reported in smoking cessation studies (Gifford et al., 2004; Gifford et al., 2011). Svanberg et al. (2017) also mentioned this phenomenon, that significant changes in substance use have been commonly seen at the follow-up for ACT groups compared to other treatment groups such as CBT, TAU, and waitlist controls. However, without a treatment comparison group in the current study it is unknown whether these results are specifically due to the ACT-group treatment programme. Although a CBT comparison group was initially sought, the attrition rate and incomplete data from those groups meant that these comparisons could not be made.

Additional information received as part of the interview process at the follow-up phase showed that several participants had stopped drinking alcohol completely and attributed this change to the ACT group. The following two quotes highlight the positive impact that the ACT group had on participants' alcohol use.

"*Was very reinforcing in regard to my commitment to sobriety. Found it gave me extra tools to help with coping strategies when things became difficult."*

"This programme helped me so much to believe in myself. Excellent strategies to help with my anxiety and also how to help with my thinking before I want to drink."

– Anonymised quotes, ACT Group

Substance use and cravings findings and interpretations. The outcomes for substance use and cravings were also mixed. Overall, substance use, cravings, and their combined totals demonstrated reductions for amphetamine, sedatives, and opioids from pre-group to post-group and follow-up. Of these substance changes, many showed moderate reductions with only a few showing statistically significant results. Tobacco and cannabis, however, had small reductions and non-significant differences between post-group and follow-up scores, yet showed increases at mid-group assessment phase. Although the majority of statistical significance tests showed non-significant results, there was a significant reduction observed for sedative use at post-group with a moderate change detected. There was also a significant reduction in total amphetamine scores at follow-up with another moderate change detected.

Numerous studies, as outlined in the literature review of this thesis, have demonstrated that the use of ACT was influential in smoking cessation, through web-based, telephone-based, or smart phone apps (Bricker et al., Bricker et al., 2010; Bricker et al., 2013; Bricker et

al., 2014; Bricker et al., 2017, Brown et al., 2008; 2013; Gifford et al., 2004; 2011; Hernández-López et al., 2009; Litvin et al., 2012). However, the current study's results for tobacco use and cravings increased rather than decreased at several points. A noteworthy explanation for this trend is that the intention of those screened to participate in the ACT group was not to address their smoking behaviour but rather other substances like alcohol and other drugs that they themselves identified as significantly interfering with their lives. Therefore, given smoking cessation was not a primary goal for this sample, their motivation to change smoking behaviour was understandably low. Other explanations for the increase in smoking may include the influence of group members who were smokers on those who had previously quit and took up smoking during the breaks with the other group members. Substance substitution could be an additional factor leading to the increase in smoking. Reduction in the use of their target substance meant they substituted their use with an alternative, seemingly less problematic substance. An alternative to this theme is that some may have changed their form of smoking. For instance, some participants stated they had changed to vaporisers throughout the course of the treatment. Finally, routinely sitting with uncomfortable thoughts and feelings in the group may lead some to seek temporary reprieve from unpleasant internal events through smoking.

There is limited literature on cannabis and ACT specifically, however, Twohig et al.'s (2007) study found ACT was effective in reducing, and in some cases, seeing clients abstaining from cannabis use. Although no significant changes in cannabis use or cravings were found in the current study, post-group data indicated small effect sizes, and these increased to moderate at follow-up, suggesting an incremental reduction over time. One participant at follow-up even revealed she had been abstinent from cannabis since the group and attributed this change to the ACT intervention. She also reported that the values and committed action work contributed to her gaining confidence to successfully apply for jobs.

Changes in opioid use and cravings showed very small effect sizes and most analyses did not show significant change. A moderate effect size change was found for opioid cravings post-group, with no significant changes observed at follow-up when compared to pre-group data. However, there are two important considerations for the lack of effect in these findings, 1) most opioid users were on the OST programme therefore dose reduction or changes to their prescribed dose are typically conducted over long periods of time and at a very slow rate, and 2) more than half of the participants who used opioids dropped out by the follow-up phase. Again, two participants reported at follow-up that they were able to reduce their dose throughout the programme; one even reported becoming completely abstinent from methadone and had since gone off the OST programme and obtained employment. These stories seem more in step with the existing dose reduction literature on ACT and methadone. Saedy et al. (2018) for instance, found the ACT group had lower methadone doses post-treatment compared to controls and there were significant reductions in cravings at post-treatment and at three-month follow-up. The current study's results support Saedy et al.'s (2018) findings somewhat, in that significant reductions in opioid cravings between post-group and the three-month follow-up occurred. No significant changes were found at post-group, suggesting a delayed effect occurred in change post-intervention. There were no significant differences in the length of treatment offered or the number of participants in the group of Saedy et al.'s study and the current study.

Other studies examining ACT and methadone support the use of ACT in conjunction with an established dose reduction programmes like methadone maintenance (referred to as the OST programme in NZ). Hayes et al. (2004) found the use of ACT was related to lower rates of methadone and total drug use at follow-up, providing further support for effective longevity and accumulative effects of ACT. Stott et al.'s study (2012) provides further support for the additive benefits of ACT when combined with methadone dose reduction

programmes. Not only were there higher rates of complete detoxification at end of treatment, but there was also a reduction in the fear of detoxification. Fear of detoxification was reported as one of the main reasons people struggle with becoming abstinent from methadone (i.e., coming off the OST programme). This includes the fear of the well-known significant aversive withdrawal symptoms (e.g., sweats, nausea, pain). Several participants in the ACT group reported their hesitation to become fully abstinent from methadone for these reasons. ACT provided skills that aided people through this process by focusing on what was deeply important to them while utilising acceptance of their experiences in the present moment (e.g., making room for withdrawal symptoms and urge surfing).

Although there has been only one study conducted for methamphetamine treatment using ACT, the outcomes showed reduction in methamphetamine use (both objective and subjective reports), negative consequences, and dependence severity (Smout et al., 2010). The authors endorse ACT as a viable alternative to CBT for stimulant use disorders. The current study found that the use of the stimulant, amphetamine, did not significantly change at post-group and there were only small effect sizes for both use and cravings. However, at the three-month follow-up, similar results to that found by Smout et al. (2010) occurred, in that amphetamine use and craving scores combined showed statistically significant reductions with moderate effect sizes. Amphetamine use and cravings alone at the follow-up showed moderate effect sizes, suggesting ACT moderately impacts amphetamine use and cravings and that the non-significant findings may be due to the study being underpowered. Due to the real world setting of this study, it was not surprising that issues with detecting statistically significant change were observed. However, the effect sizes found for amphetamine use and cravings demonstrate there was a moderate reduction following the ACT group, which supports the promising evidence for ACT applied to these SUDs.

No specific studies examining sedative or benzodiazepine use and cravings were identified. The current study found a significant reduction in sedative use at the post-group assessment point, with a moderate effect size detected. However, this change deteriorated at the three-month follow-up, with no significant changes detected. This pattern differs from the amphetamine and opioid reduction trends. One explanation for this difference may be that many participants reported they were prescribed sedatives and therefore did not consider they craved sedatives as such but rather took them when needed or as prescribed, generally for pain or sleep. This may also indicate that people are more likely to follow rule-governed behaviour, in that they are following the rules of someone else, typically, someone of respectable status (e.g. a psychiatrist or doctor) and may be less likely to abuse the substance or be more likely to be resistant to change. Another consideration, similar to that discussed when reporting the tobacco findings, was that the sedative use and cravings were not reported as the substance target for change for most participants; therefore, significant reductions for sedatives was unlikely. Again, qualitative information obtained from the three-month follow-up interviews found that a few participants were able to wean off or reduce their sedative use by the end of treatment which accounts for the statistically significant reductions reported in the thesis.

Other studies such as those conducted by Lanza and Gonzalez-Menendez (2013), Gonzalez-Menendez et al. (2014), and Lanza et al. (2014) investigated the utility of ACT for SUDs for incarcerated women. These articles were produced from the same large RCT sample but examined different aspects of the data set. Overall, their results supported ACT as a viable alternative to CBT for SUDs and as an effective treatment for SUDs and co-occurring mental health disorders, as well as demonstrating the well-known incubation effect for improved outcomes at long-term follow-up points of ACT. Overall, the current study was able to show some reductions in substance use and cravings, however, due to the study being

underpowered, many of these reductions did not reach statistical significance. Unexpected increases in tobacco were also observed, and explanations for such unexpected findings have been attempted. The main reason may be that the gradual reductions expected over the course of group may have been under the wrong premises and rather it could have been expected that increases in substance use or other problems would be seen in the early stages of the therapy which is more in line with the literature on exposure. The secondary aim of this research, like that of many of the other studies mentioned, was to investigate co-occurring mental health problems commonly seen in the AOD population. These were assessed through perceived stress, anxiety, external locus of control, and mood management skills.

Research question two: Does an ACT-based group treatment programme reduce common problems coexisting with SUDs such as perceived stress, anxiety, and external locus of control, and does an ACT-based group treatment programme enhance internal locus of control, resistance to peer pressure, and mood management? It was expected these changes would be gradually occurring over the course of the group, evidenced by changes observed at mid-group, post-group, and follow-up assessment points. These changes were expected due to the transdiagnostic qualities ACT encapsulates whereby common underlying mechanisms for a range of psychopathology can be targeted simultaneously.

The results for coexisting problems assessed throughout the ACT-based group treatment programme showed a mixture of significant changes that, in part, supported the research hypotheses proposed for coexisting problems. Pre to mid, and mid to post comparisons for stress, anxiety, and external locus of control for ‘powerful others’ subscales between were not significant; however, the general trend did demonstrate reductions. These reductions are partially in line with the hypothesis that these changes would gradually occur over the course of the group. By post-group assessment phase significant and large reductions

in stress, anxiety, and external locus of control for powerful others were detected as predicted. These reductions however did not appear to be sustained at the three-month follow-up. Significant improvements for overall mood management skills and mindfulness tendencies were detected at post-group. However, for total mood management scores, these changes were not maintained at the follow-up, whereas mindfulness scores showed an accumulative positive effect suggesting further improvement over time.

Anxiety and stress findings and interpretations. The current study's anxiety and stress outcomes showed mostly significant reductions from pre to post-group, which is in line with existing research that supports the utility of ACT in addressing these common problems typically observed alongside SUDs. However, Svanberg et al. (2017) found no change in mental health with the context of severe SUDs post ACT intervention as measured by the DASS-21. They argued that change with severe SUDs takes time, with longer recovery for those struggling with anxiety alone typical of this population. Therefore, reductions in these symptoms may take longer to occur with people who are changing their problematic substance use than those who do not have a comorbid SUD diagnosis. Severe withdrawal symptoms from alcohol in some serious cases may include post-acute-withdrawal syndrome. This involves a prolonged delay in improvements in anxiety and mood withdrawal symptoms. An individual may experience such withdrawal symptoms for one or two years post abstinence. The current study's follow-up results for anxiety showed no significant decrease compared to pre-group scores. In fact, there was an increase in anxiety and stress levels at follow-up, suggesting a rebound effect. A key factor that may explain the trend in the current study's results is the idea that ACT promotes exposure-like processes (i.e. from an ACT perspective people should face their unwanted experiences rather than avoid them) therefore unpleasant emotions are likely to initially increase; whereas over time these aversive experiences are likely to decrease with continued exposure. These findings suggest that

further gradual reductions in anxiety and stress may be more likely to be observed over an extended period of time with continued abstinence. However, the overall trend for the current anxiety results clearly demonstrates and reiterates existing literature that deems ACT as an empirically supported treatment for anxiety. Additionally, these findings provide evidence to suggest that ACT can also effectively treat anxiety within the context of a comorbid SUD.

Mood management findings and interpretations. The findings for mood management are in line with the existing literature that supports an integrative approach that ACT has demonstrated for treating coexisting mood disorders and SUDs. That is, significant improvements in total mood management skills were detected throughout the group, thus supporting Vieten et al.'s (2010) findings in which positive affect increased while negative affect decreased when using mindfulness-based skills. Similar results from Heffner et al (2003), Petersen & Zettle (2009), and Thekiso et al (2015) can be applied to the current findings as well, in that they all reported significant reductions in depressive symptoms post-treatment and at the follow-up assessment phases. This study measured mood management where improvements in mood management skills can be considered to relate to lower levels of depressive symptoms. Again, the current study adds support for the use of ACT with mood disorders as well as providing evidence that ACT is also effective for coexisting SUDs and mood disorders.

Locus of control findings and interpretations. The subscale 'powerful others' on the BLOCS rated participants' perceptions of others being responsible for their circumstances (i.e., external control). Results showed a large effect size for post-group data that reached statistical significance, suggesting reductions in participants' powerful others' locus of control compared to pre-group. These findings are line with Harvey et al.'s (2017) results utilising the same measure whereby significant reductions were found post-intervention for a military

group-based programme targeting anger and alcohol. However, the current study found that by the three-month follow-up, the effect size reduced to small and no statistical significance was found in the changes between pre and follow-up scores on this measure. An explanation for these rebound effects may be that several participants reported in their three-month follow-up interviews that significant stressful life events had occurred, with most feeling out of control. This sense of lack of control is likely to diminish this change and also correspondingly increase stress and anxiety scores.

Further explanations for rises in anxiety, stress, and external locus of control and reductions in mood management at the mid-group assessment point may be influenced by one of the underlying philosophies in ACT, that is, the aim is "to not feel better but to get better at feeling" (Eifert & Forsyth, 2005, p. 158). Instead of wanting participants to suppress or avoid their unwanted experiences a core goal of ACT is to increase people's ability to reduce the impact of unhelpful thought processes and unworkable behaviours on their lives. Focusing on taking action towards value-driven behaviours and being in the present moment without judgement allows an individual to become psychologically flexible (Hayes & Strosahl, 2004; Hayes, 2016). In this psychological flexible state, a person is better at feeling rather than feeling better. This fundamental idea also lends itself to the underlying processes of exposure. As already briefly outlined, when exposing people to unwanted psychological experiences it is normal that there are increases in aversive experiences in the initial stages of the exposure work, whereas decreases in aversive experiences are normally observed after some time. Another explanation for the increase rather than a reduction that was predicted is that participants who were reducing their alcohol and or other drug use were not using their well-learned coping strategy (that is, substance use) to suppress or self-medicate their unwanted psychological experience. Therefore, increases in anxiety and stress and external locus of control are a normal part of the process as well.

The incubation effect of ACT was not evident in the current study for measures of stress, anxiety, external locus of control, and mood management skills. It seemed that significant positive change peaked by post-group assessment phase followed by reductions of this positive change at the follow-up phase. Although these reductions at follow-up did not support previous literature on the incubation effect, the follow-up scores for most measures (excluding mindfulness) were still indicative of positive changes compared to their pre-group scores. However, the difference between pre and follow-up scores was not as significant as the differences between pre and post comparison scores. It may be that a three-month follow-up was too short, in that, a longer follow-up period may have produced results similar to previous studies that demonstrated the incubation effect commonly observed post ACT interventions. The existing literature for this phenomenon includes follow-up timeframes ranging from six months (Lanza et al., 2014), 12 months (Batten & Hayes, 2005; Bricker et al., 2010; Gifford et al., 2004; Gifford et al., 2011; Stotts et al., 2009) and 18-month follow-up points (González-Menéndez et al., 2014); all studies exhibiting continued improvements in outcomes following ACT treatment, even when compared to CBT. Furthermore, following the ACT group, it may be natural for participants to struggle on their own, attempting to implement the skills learnt as they are no longer accountable to the group members or facilitators. This may explain the reduction in scores observed in the current study's follow-up data.

Research question three: Given mindfulness is a core ACT strategy, would the self-reported use of mindfulness techniques be significantly related to improvements in coexisting difficulties and reductions in alcohol and other drug use and cravings? It was expected that participants would report an increase in mindfulness tendencies over the course of group (observed at mid-group, post-group, and follow-up assessment phases) and that significant relationships would be evident between mindfulness scores and all other dependent

variables (alcohol use, substance use and cravings, perceived stress, anxiety, locus of control, resistance to peer pressure, and mood management). Specific predictions were that participants who scored higher on the mindfulness measure would have lower scores on substance use and cravings, perceived stress, anxiety, and external locus of control. Higher mindfulness scores would be highly correlated with higher mood management scores and those who reported higher mindfulness tendencies at pre-group were predicted to have strong positive relationship with higher scores on the mindfulness measure at mid, post, and follow - up assessment points.

Mindfulness findings and interpretations. Mindfulness scores, as measured by the Mindfulness Attention Awareness Scale (MAAS) did not gradually increase throughout the group process thus not supporting the original hypothesis. By the post-group assessment point, self-reported mindfulness tendencies had increased; however, this change was not statistically significant and was small. Yet at the three-month follow-up mindfulness scores showed statistically significant improvement which supports the hypothesis that mindfulness would demonstrate an accumulative effect over time.

Significant relationships, that is correlations that reached statistical significance, between mindfulness scores and amphetamine totals (use and cravings), sedative totals, stress, anxiety, external locus of control for powerful others, and total mood management as well as mood management subscales were found. Non-significant relationships were found between mindfulness scores and alcohol scores, tobacco scores, cannabis scores, and opioid scores. While there was a mix of significant and non-significant results as well as positive and negative relationships between variables, the overall picture given by bivariate correlations findings for the current study was that higher scores for mindfulness appear to be related to lower scores for alcohol use, substance use and cravings, perceived stress, anxiety, external

locus of control as well as higher scores of mindfulness relating to higher scores of mood management skills. All of these results are in line with the existing literature on mindfulness-based behaviours observed in those who have lower rates of substance use and mental health problems (Bowen et al., 2006; Brewer, 2016; Chiesa & Serretti, 2014).

Qualitative information collected at the follow-up interviews and via the supplementary feedback measures showed that participants rated the mindfulness components of the group the most helpful. Many participants had continued to practise daily mindfulness since the group and attributed their overall wellbeing to this practice. One unexpected finding was the relationship between mindfulness scores and the attention subscale on the Trait Meta Mood Scale (TMMS). The attention subscale indicates participants' awareness of moods. The assumption is that mindfulness tendencies (i.e., attention to the present moment) correspondingly increase with awareness of mood states. However, the attention subscale data were at odds with this assumption in that relationships between mindfulness and attention were non-significant with small effects. This may be due to no change in attention subscale scores between pre-post scores which may have been due to participants not understanding or interpreting the measure correctly.

SECTION TWO: Strengths and limitations

The current study implemented several design features to address issues previously outlined as recommendations for future research by the existing literature. This includes the use of post treatment data and three-month follow-up data, as well as the use of treatment fidelity checklists to ensure treatment integrity, and session rating scales to obtain feedback directly from participants. This study was conducted in a real-world setting and demonstrates the feasibility and positive results of an ACT-based group treatment programme tailored towards SUDs. Also noteworthy is that the ACT group appears to have the same effectiveness for both males and females, demonstrated by the non-significant differences in self-reported scores across all assessment phases for all measures. However, there are several limitations that warrant further discussion. Methodological constrains include the research design, aspects of the procedures, and lengthy assessment measures. Other general issues involve confounding factors such as contamination of treatment conditions by concurrent therapies, impact of co-facilitators' experience as well as dual roles of the co-facilitators, and group attrition rates.

Research design and small sample size

A randomised control trial was beyond the scope of the current study. Additionally, comparison groups were attempted for recruitment but did not eventuate due to attrition rates amongst other issues. This meant a repeated measures design was preferable. This design allows an assessment of effect over time and excludes effects of individual differences as they assess the same person across time. This design is also cost effective, time efficient, and amendable in real-world contexts. However, this design method also carries a number of limitations. Order effects are a consideration; participants may have become fatigued with the assessment measure throughout the group. Hence participants' scores may have decreased or alternatively participants may have learned what each measure was trying to capture. This

means their scores may have increased as a result of demographic characteristics rather than a direct change from the group treatment implemented.

Perhaps the most important limitation was the small sample size. This had the effect of reducing the power of the study to detect change. The combination of small sample size, with multiple comparisons conducted across all assessment phases means there is the possibility of type one error. This means that the significant results in the current study may be due to chance and need to be interpreted with caution. The small sample size also limits the generalisability of the results. The ethnic profile of the sample for the current study was consistent with that of the general population of NZ, in that the majority identified as NZ European with Māori as the second largest identified ethnicity. However, a key finding from the NZ mental health survey was that young Māori males were more at risk of struggling with SUDs (Oakley-Browne et al., 2006) which indicates that the current sample was not representative of NZ's AOD population. Therefore, future studies that sought to include culturally diverse participants would be beneficial to increase the generalisability. Lee et al.'s (2015) meta-analysis stated the need for more cultural diversity within ACT studies.

Protocol of measures

While efforts were made to keep the protocol of measures brief and measure several aspects of interest, shorter measures that encapsulate depression, anxiety, and stress such as the DASS-21 may have provided similar information in a succinct fashion compared to the three measures used in the current study to obtain information about mood, stress, and anxiety (TMMS includes 30items, PSS-10 includes ten items, and GAD-7 includes seven items). It is also important to acknowledge that the choice of psychometrics can influence what participants believe about the purpose of the group. For example, an item embedded in the GAD-7 asks respondents to state how often they had difficulty controlling their worry. The implicit message given is that anxiety can be controlled, a message antithetical to the

philosophy embedded within ACT theory and applied within the group treatment programme. Therefore, careful consideration of outcomes measures is vital to ensure synergy between what is being measured and what the participants are being asked to do.

Another consideration might be that different techniques would have been effective for different purposes and that this was not captured by the outcome measures. For example, the follow-up feedback questionnaire sought to investigate if participants practised and recognised improvements in ACT-based skills as a result of the group. However, these questions were not part of the protocol of measures and were not asked throughout the group. Therefore, development of ACT-skills and the impact of such were not able to be explored.

Further, the mindfulness measure (MAAS) was implemented to investigate whether mindfulness tendencies increased because of the ACT-based group intervention. The MAAS was used to assess not only participants' mindfulness tendencies but also relationships between being mindful and participants' experiences of substance use and cravings as well as perceived stress levels, anxiety, external locus of control for powerful others and mood management. Although this measure was useful to understand the degree of these relationships, the Acceptance and Action Questionnaire (AAQ) is a viable alternative designed to evaluate psychological flexibility. Psychological flexibility is considered the underlying process of ACT in which the goal of treatment is to increase an individual's ability to be flexible when managing their psychological experiences, both positive and negative or wanted and unwanted. However, AAQ was not included given that the other measures already made the assessment protocol lengthy and an addition of another measure had not been approved by the HDEC committee. Other process measures were not used, and this limitation is outlined in the findings from Lee et al.'s (2015) meta-analysis in which the authors highlight the need specifically for AOD studies using ACT to gather information on the

process of change in order to help further understand the mechanisms of ACT applied to SUDs.

Self-report measures. A number of issues exist with self-report measures utilised with the AOD population. Other, more stringent measures for collecting accurate data for substance use were not used in the current study due to a potential deterrent effect for participants and may have conveyed distrust by the service and group facilitators. For example, participants were not asked to provided urine samples to indicate what, if any, levels of substances were in their system at any point during the group programme or thereafter. Participants did not provide hair samples or oral swabs, or any physical substance use measures. These measures were used by Villagra-Lanza and Gonzalex-Menendez (2013) for smoking, Smout et al. (2010) for methamphetamine, Stotts et al. (2013) for methadone, and Twohig et al. (2007) for cannabis, to support self-reported measures of substance use during their study.

Other considerations for the use of the self-report measures are personality characteristics that may affect the validity of the self-report data; the need for approval or wanting to be liked (social desirability) may influence participants' responses in a way that would allow them to be seen as desirable, 'good' participants. This may mean that participants may have been 'faking good' and underreported their substance use and cravings, including alcohol, and other aversive symptoms such as stress and anxiety.

Confounding factors

An important consideration is the impact of dual roles, that is, the author being the lead researcher, co-facilitator of the group, and an Intern Psychologist at the AOD service. This meant that some of participants in the groups were also seen by the author for individual sessions as an Intern Psychologist. Therefore, therapeutic alliances may have impacted

participants' attendance, motivation, and created potential biases like simulation which is when a participant wants to appear likeable by the facilitator (Van de Mortel, 2008 as cited in Thekiso et al., 2015). This particular issue was not measured, and it is recognised that this may have influenced the data.

While the group was run by an experienced senior Clinical Psychologist and an Intern Psychologist, differences in experience and competence need to be considered. However, feedback data suggests that participants reported both facilitators to be 'very competent' with only one indicating 'moderately competent'. Lack of competence ratings for research has been reported as a limitation in several studies and hence it is an important consideration for further research.

Contamination of the ACT group treatment condition by concurrent therapies was considered one of the most important confounding factors for the results. It is difficult to separate out the effects of the ACT group with those that were receiving parallel individual treatment. Although the various individual treatments were accounted for in the initial questionnaire participants completed, it is difficult to characterise the specific content for each therapy or counselling provided. The follow-up questionnaire attempted to distinguish the direct impact of the ACT group on participants by asking if the ACT group was responsible for changes in overall satisfaction with life and their sense of happiness and wellbeing, for example. However, it remains a limitation of the current research and was stated as one of the common methodological limitations of the existing ACT research (Ost, 2008; 2014). One participant offered an insight into this via their follow-up questionnaire in which they stated:

"I'm not entirely sure how much of it has been the ACT group and how much an influence of circumstance, and other influences, but I do think that I have been able to turn

my life around and improve my circumstance dramatically since participating in the ACT group, and would credit that participation with being key to my success in recent months"

- Anonymised quote, ACT Group

Attrition rates

While the first group had 95% retention rate for the follow-up assessment phase, the other remaining groups halved in size by three months post-group. Holding the group during working hours meant several participants withdrew from the ACT group due to work commitments. Other attrition issues included several participants who struggled significantly with anxiety issues and therefore either did not attend the group at all or attended one or two sessions and withdrew. Therefore, these participants may have required further support prior to group to address anxiety in order to cope and engage with the group format of the ACT-based treatment programme. Several ACT studies have found lower rates of attrition when comparing the transdiagnostic therapy to other treatments such as CBT, TAU, or control groups (Luoma et al., 2012).

Group format

The benefits of group treatment have been outlined as time and cost effective as well as offering a format for connection with others who are struggling with similar problems. Qualitative information obtained from the supplementary measures (session rating scales and group rating scales) showed that most participants found the group format to be welcoming and non-judgemental. The quotes below support the use of the group treatment programme for the current study.

"I learnt that other people use/abuse substances for similar reasons as myself. Already I feel less isolated and less like these issues are due to some sort of personal failing."

"I really enjoyed today, it gave me a sense of belonging and confidence to speak in front of others and was very interesting to hear others opinions etc."

"I simply enjoy being a part of a group with no judgment and it feels like a positive step towards my and others recovery"

- Anonymised quotes, ACT Group

These quotes are in line with the benefits of ACT delivered in a group format previously described by Walser and Pistorello (2004), namely, support, validation, increased self-awareness, and better understanding through different perspectives.

Manualised approach

Öst (2008; 2014) stated that adherence to a manual increases the validity and reliability of the treatment given and recommends that this method should be used in all studies to ensure group members receive the well-researched and supported material that is encapsulated in a manualised group programme. The current research project included developing a manual for an ACT-based group treatment programme specifically tailored for those that struggle with alcohol and other drug problems. This manual served as the base for all four groups from which data were collected and then examined in order to gain an idea of the effectiveness of group programmes utilising ACT for SUDs in NZ. The facilitator's manual and the corresponding participant workbooks allowed each group to receive nearly identical therapeutic intervention content, and this was ensured via the treatment fidelity checklists. However, Öst (2008; 2014) still recommends that sessions should videotaped or audiotaped with a 20% sample randomly reviewed by an external assessor to assess treatment adherence and therapist competency and further research that could implement this if the resources are available is recommended.

SECTION THREE: Future implications and recommendations

While many of limitations outlined above were beyond the control and feasibility of the current research, Öst's (2014) recommendations for future research are still applicable to the ever-growing body of empirical evidence investigating ACT, specifically with SUDs and coexisting problems. For further implementation of an ACT-based group treatment programme for coexisting SUDs and mental health problems in NZ, larger, more diverse samples are needed alongside waitlist controls, TAU comparisons, and more importantly active treatment comparisons (such as already established treatments). It will be important for future studies to make corrections to the Alpha level, particularly when making multiple comparisons with small sample sizes. Specific tailoring to the needs of New Zealanders who struggle with AOD problems is warranted which may incorporate Māori specific processes and language given the high prevalence of SUDs in this population. An ACT-based intervention offers a therapy that usually has stronger retention rates and has shown to be potentially effective for multiple comorbid conditions should be pursued within NZ.

Some ideas for change to the current study's ACT-based group treatment programme include:

1) only measure participants' specific substances that they target for change as a result of attending group rather than measuring all substances for each participant,
2) apply corrections for statistical significance testing such as adjusting the Alpha levels reported to address type one error,
3) allocate more time to explain and prepare participants about the underlying processes of exposing themselves to unwanted psychological experiences they have previously avoided or suppressed,

4) in order to address the tobacco use, breaks may be shorter, or the group could be held in a non-smoking environment that participants would not be able to leave the grounds within the break, and more specific content geared towards smoking cessation may be included,
5) organise more routine follow-up with an AOD counsellor or mental health worker to remind participants of the skills learnt, specifically when stressful life events have occurred post-intervention.

While these changes may produce improvements in outcomes from future studies, it may be that the rebound stress, anxiety, and external locus of control scores at follow-up are a normal part of the process. ACT is about sitting with uncomfortable internal states rather than removing oneself through avoidance strategies such as substance use. Through this real-world setting the ACT group showed what realistic changes can occur for New Zealanders struggling with an array of difficulties.

The next logical step for ACT interventions for SUDs and comorbid diagnoses would involve a replication of the current study with the changes outlined above, as well as the inclusion of a waitlist group to control for the impact of concurrent therapies. This would allow for greater confidence in interpreting outcomes as a result of the ACT group programme itself rather than the influence of concurrent therapies. Other inclusions would be a measure of facilitator's competencies with ACT model, incorporating process of change measures such as the AAQ, and reporting detailed demographic characteristics of the sample.

SECTION FOUR: Concluding Statement

Overall, evidence supporting the use of ACT with SUDs and co-occurring mental health problems is still emerging. SUDs are complex and rarely diagnosed in the absence of significant coexisting problems such as anxiety and depression. The current study applied a transdiagnostic approach for those struggling with AOD and comorbid mental health disorders. Although the outcomes are preliminary due to the small sample size, the data are certainly encouraging and suggest ACT is a promising alternative therapy for coexisting substance use and mental health disorders. This transdiagnostic approach to treating such comorbid and challenging problems is a significant advance in the way treating services begin to conceptualise problems outside of the medical model. Not only is ACT able to broadly treat underlying processes commonly found in several mental health disorders (including SUDs) and physical health conditions, but it also helps people in general to come in contact, or closer in contact, with their deeply held values, and forges a way towards making active changes in people's behaviours to enable a more vital and meaningful life. The group format offered a comforting sense of connection and was a cost and time effective way to impart ACT-based skills. The current study supports the continued use and development of group-based treatment programmes with ACT and has shown its applicability for such formats. Further research is necessary to promote the continued and further use of ACT-based treatment programme for complex coexisting problems, and more extensive use of the manual for group therapy is likely to build on the evidence in support of ACT for the AOD population in New Zealand. This piece of research, albeit small scale, has illustrated the potential of ACT to make a difference in the lives of those affected.

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APPENDICES

Appendix A. Information brochure for recruiting participants

ACT Group Programme

We want to learn more about ACT applied to alcohol and drug problems in NZ.

10 week programme aimed at learning skills to help people deal with alcohol and drugs while increasing overall wellbeing.

MidCentral District Health Board

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

ACT Group Programme

Participant Information

We are inviting people with alcohol and drug problems to participate in exciting new research using Acceptance and Commitment Therapy (ACT) in a group treatment programme.

ACT promotes learning to accept what is out of your control while committing to action that will improve your quality of life – Russ Harris

Participation is voluntary

We need participants who...

- **Are over 18**
- **Have problems with alcohol and/or drugs**
- **Motivated and willing to attend group therapy**

What does the study involve?

- **One on one pre group interview**
- **10 group sessions**
  - **2 hour sessions**
  - **Weekly sessions**
- **One on one follow up interview**

Benefits

- **Learn new coping skills with a range of difficulties**
- **$20 supermarket voucher end of the programme**
- **ANOTHER $20 supermarket voucher at follow up interview**

This study had been ethically approved as part of doctoral research with Massey University.

If you would like some more information about ACT please visit:

http://www.thehappinesstrap.com

https://contextualscience.org/act

http://www.getselfhelp.co.uk/act.

Appendix B. Protocol of measures

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Acceptance and Commitment Therapy for Alcohol and Drug Populations

This questionnaire measures a range of areas that can be affected by substance use in everyday life. Questions will range from alcohol and drug use, stress, anxiety, emotional management, feelings of control, influences from peers, and mindful awareness.

Before you start, please fill out the following information about yourself:

Code #: ……..Date:…….

D.O.B. (dd/mm/yyyy):……...Ethnicity: …….

Gender: M / F / T

Relationship status (e.g. single, defacto, married, etc):…..……...….....

Education level (e.g. high school, trade, undergraduate, postgraduate):……...

..…….....

Employment (e.g. unemployed, part time, full time):……

……

Reason for referral to this group (e.g. substance/emotional struggle):

..……

……..……

Have you attended *any group treatment* in the past? Yes or No or Unsure

If yes, please specify what type (e.g. ACT, mindfulness, CBT, etc)

....……

……

……

Are you receiving *any individual therapy* while attending *this group*? Yes or No or Unsure

If yes, please specify what type (e.g. ACT, mindfulness, CBT, etc)

……

……

……

Alcohol Use Assessment

Section A

1. How often do you have a drink containing alcohol? (Please tick ONE circle)

Never	Monthly or less	Two to four times per month	Two to three times per week	Four or more times a week
①	②	③	④	⑤

2. How many drinks containing alcohol do you have on a typical day when drinking?
(Please tick ONE circle)

1 or 2	3 or 4	5 or 6	7 to 9	10 or more
①	②	③	④	⑤

3. How often do you have six or more drinks on one occasion? (Please tick ONE circle)

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
①	②	③	④	⑤

Section B

1. Think about your drinking over the <u>PAST 4 WEEKS</u>. On how many days did you have at least ONE drink in the past 4 weeks?

"I had at least one drink on _____ days during the past 4 weeks"

2. On how many of THESE days did you have <u>4 or more drinks</u> in the course of the day?

"I had at least 4 drinks on _____ days during the past 4 weeks"

3. On how many of THESE days did you have <u>8 or more drinks</u> in the course of the day?

"I had at least 8 drinks on _____ days during the past 4 weeks"

Drug Use Assessment

In the *past month* how often have you used the following substances? (On each line please circle the appropriate response for you)	Never	Once or twice	Monthly	Weekly	Daily or almost daily
1. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	①	②	③	④	⑤
2. Cannabis (marijuana, pot, grass, hash, etc.)	①	②	③	④	⑤
3. Cocaine (coke, crack, etc.)	①	②	③	④	⑤
4. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	①	②	③	④	⑤
5. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	①	②	③	④	⑤
6. Sedatives and sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	①	②	③	④	⑤
7. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	①	②	③	④	⑤

8. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	①	②	③	④	⑤
9. Other – specify: _____	①	②	③	④	⑤

In the *past month* how often have you had a strong desire or urge to use the following substances? (On each line please circle the appropriate response for you)	Never	Once or twice	Monthly	Weekly	Daily or almost daily
1. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	①	②	③	④	⑤
2. Cannabis (marijuana, pot, grass, hash, etc.)	①	②	③	④	⑤
3. Cocaine (coke, crack, etc.)	①	②	③	④	⑤
4. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	①	②	③	④	⑤
5. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	①	②	③	④	⑤
6. Sedatives and sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	①	②	③	④	⑤
7. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	①	②	③	④	⑤
8. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	①	②	③	④	⑤
9. Other – specify: _____	①	②	③	④	⑤

Stress Assessment

In the last month, how often have you...	Never	Almost Never	Some-times	Fairly Often	Very Often
1. ...been upset because of something that happened unexpectedly?	①	②	③	④	⑤
2. ...felt that you were unable to control the important things in your life?	①	②	③	④	⑤
3. ...felt nervous and "stressed"?	①	②	③	④	⑤
4. ...felt confident in your ability to handle your personal problems?	①	②	③	④	⑤
5. ...felt that things were going your way?	①	②	③	④	⑤
6. ...found that you could not cope with all the things that you had to do?	①	②	③	④	⑤
7. ...been able to control irritations in your life?	①	②	③	④	⑤
8. ...felt that you were on top of things?	①	②	③	④	⑤
9. ...been angered because of things that happened that were outside of your control?	①	②	③	④	⑤
10. ...felt difficulties were piling up so high that you could not overcome them?	①	②	③	④	⑤

Anxiety Assessment

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day

1. Feeling nervous, anxious or on edge	①	②	③	④
2. Not being able to stop or control worrying	①	②	③	④
3. Worrying too much about different things	①	②	③	④
4. Trouble relaxing	①	②	③	④
5. Being so restless that it is hard to sit still	①	②	③	④
6. Becoming easily annoyed or irritable	①	②	③	④
7. Feeling afraid as if something awful might happen	①	②	③	④

Locus of Control Assessment

For each of the statements below please tick the response that best applies to you.	Strongly disagree	Some what disagree	Neither agree nor disagree	Some what agree	Strongly agree
1. My life is determined by my own actions.	①	②	③	④	⑤
2. To a great extent, my life is controlled by accidental happenings.	①	②	③	④	⑤
3. My life is chiefly controlled by powerful others.	①	②	③	④	⑤
4. I am usually able to protect my personal interests.	①	②	③	④	⑤
5. I feel like what happens in my life is mostly determined by powerful people.	①	②	③	④	⑤
6. When I get what I want, it's usually because I'm lucky.	①	②	③	④	⑤
7. I can pretty much determine what will happen in my life.	①	②	③	④	⑤
8. Often there is no chance of protecting my personal interest from bad luck.	①	②	③	④	⑤
9. People like myself have very little chance of protecting our personal interests where they conflict with those of strong pressure groups.	①	②	③	④	⑤

Emotion Management

For each of the statements below please tick the response that best applies to you.	Strongly disagree	Some what disagree	Neither agree nor disagree	Some what agree	Strongly agree
1. I try to think good thoughts no matter how badly I feel.	①	②	③	④	⑤
2. People would be better off if they felt less and thought more.	①	②	③	④	⑤
3. I don't think it's worth paying attention to your emotions or moods.	①	②	③	④	⑤
4. I don't usually care much about what I'm feeling.	①	②	③	④	⑤
5. Sometimes I can't tell what my feelings are.	①	②	③	④	⑤
6. I am rarely confused about what my feelings are.	①	②	③	④	⑤
7. Feelings give direction to life.	①	②	③	④	⑤
8. Although I am sometimes sad, I have a mostly optimistic outlook.	①	②	③	④	⑤
9. When I am upset I realize that the "good things in life" are illusions.	①	②	③	④	⑤
10. I believe in acting from the heart.	①	②	③	④	⑤
11. I can never tell how I feel.	①	②	③	④	⑤
12. The best way for me to handle my feelings is to experience them to the fullest.	①	②	③	④	⑤
13. When I become upset I remind myself of all the pleasures in life.	①	②	③	④	⑤
14. My belief and opinions always seem to change depending on how I feel.	①	②	③	④	⑤
15. I am often aware of my feelings on a matter.	①	②	③	④	⑤
16. I am usually confused about how I feel.	①	②	③	④	⑤
17. One should never be guided by emotions.	①	②	③	④	⑤
18. I never give into my emotions.	①	②	③	④	⑤
19. Although I am sometimes happy, I have a mostly pessimistic outlook.	①	②	③	④	⑤
20. I feel at ease about my emotions.	①	②	③	④	⑤
21. I pay a lot of attention to how I feel.	①	②	③	④	⑤
22. I can't make sense out of my feelings.	①	②	③	④	⑤
23. I don't pay much attention to my feelings.	①	②	③	④	⑤
24. I often think about my feelings.	①	②	③	④	⑤
25. I am usually very clear about my feelings.	①	②	③	④	⑤
26. No matter how badly I feel, I try to think about pleasant things.	①	②	③	④	⑤
27. Feelings are a weakness humans have.	①	②	③	④	⑤
28. I usually know my feelings about a matter.	①	②	③	④	⑤
29. It is usually a waste of time to think about your emotions.	①	②	③	④	⑤
30. I almost always know exactly how I am feeling.	①	②	③	④	⑤

Peer Influence Assessment

For each statement below, decide which sort of person you are most like — the one described on the right or the one described on the left. Then decide if that is "sort of true" or "really true" for you, and tick that choice**. For each line tick only ONE of the four choices.**

EXAMPLE

Really true for me	Sort of true for me				Really true for me	Sort of true for me
①	②	Some people go along with their friends just to keep their friends happy.	BUT	Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy.	③	④

Really true for me	Sort of true for me				Really true for me	Sort of true for me
①	②	Some people go along with their friends just to keep their friends happy.	BUT	Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy.	③	④
①	②	Some people think it's more important to be an individual than to fit in with the crowd.	BUT	Other people think it is more important to fit in with the crowd than to stand out as an individual.	③	④
①	②	For some people, it's pretty easy for their friends to get them to change their mind.	BUT	For other people, it's pretty hard for their friends to get them to change their mind.	③	④
①	②	Some people would do something that they knew was wrong just to stay on their friends' good side.	BUT	Other people would not do something they knew was wrong just to stay on their friends' good side.	③	④
①	②	Some people hide their true opinion from their friends if they think their friends will make fun of them because of it.	BUT	Other people will say their true opinion in front of their friends, even if they know their friends will make fun of them because of it.	③	④
①	②	Some people will not break the law just because their friends say that they would.	BUT	Other people would break the law if their friends said that they would break it.	③	④
①	②	Some people change the way they act so much when they are with their friends that they wonder who they "really are".	BUT	Other people act the same way when they are alone as they do when they are with their friends.	③	④
①	②	Some people take more risks when they are with their friends than they do when they are alone.	BUT	Other people act just as risky when they are alone as when they are with their friends.	③	④
①	②	Some people say things they don't really believe because they think it will make their friends respect them more.	BUT	Other people would not say things they didn't really believe just to get their friends to respect them more.	③	④
①	②	Some people think it's better to be an individual even if people will be angry at you for going against the crowd.	BUT	Other people think it's better to go along with the crowd than to make people angry at you.	③	④

Mindfulness, Attention, and Awareness Assessment

Please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be.	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
1. I could be experiencing some emotion and not be conscious of it until some time later.	①	②	③	④	⑤	⑥
2. I break or spill things because of carelessness, not paying attention, or thinking of something else.	①	②	③	④	⑤	⑥
3. I find it difficult to stay focused on what's happening in the present.	①	②	③	④	⑤	⑥
4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	①	②	③	④	⑤	⑥
5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	①	②	③	④	⑤	⑥
6. I forget a person's name almost as soon as I've been told it for the first time.	①	②	③	④	⑤	⑥
7. It seems I am "running on automatic," without much awareness of what I'm doing.	①	②	③	④	⑤	⑥
8. I rush through activities without being really attentive to them.	①	②	③	④	⑤	⑥
9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	①	②	③	④	⑤	⑥
10. I do jobs or tasks automatically, without being aware of what I'm doing.	①	②	③	④	⑤	⑥
11. I find myself listening to someone with one ear, doing something else at the same time.	①	②	③	④	⑤	⑥
12. I drive places on "automatic pilot" and then wonder why I went there.	①	②	③	④	⑤	⑥
13. I find myself preoccupied with the future or the past.	①	②	③	④	⑤	⑥
14. I find myself doing things without paying attention	①	②	③	④	⑤	⑥
15. I snack without being aware that I'm eating.	①	②	③	④	⑤	⑥

Thank you!

Appendix C. Session Rating Scales

Session Rating Scale

The following are general questions about **today's sessions on ACT.** Please indicate the extent to which you agree or disagree with each statement:

I ENJOYED this ACT session.

0 Strongly disagree	1 Disagree	2 Neither agree nor disagree	3 Agree	4 Strongly agree

This ACT session was HELPFUL

0 Strongly disagree	1 Disagree	2 Neither agree nor disagree	3 Agree	4 Strongly agree

In what way was this session helpful?

_____

_____

_____

_____

_____

_____

_____

What did you NOT find helpful about this session?

_____

_____

_____

_____

Please write any other comments or suggestions you have about this session?

Appendix D. Group Rating Scales

Group Rating Scale

The following are general questions about **ACT group programme as a whole.** Please indicate the extent to which you agree or disagree with each statement:

I ENJOYED the ACT group programme.

0 Strongly disagree	1 Disagree	2 Neither agree nor disagree	3 Agree	4 Strongly agree

This ACT group programme was HELPFUL for you.

0 Strongly disagree	1 Disagree	2 Neither agree nor disagree	3 Agree	4 Strongly agree

The STYLE of the ACT group programme was appropriate (e.g. weekly sessions/ group discussions / exercises).

0 Strongly disagree	1 Disagree	2 Neither agree nor disagree	3 Agree	4 Strongly agree

The FACILITATORS were a good fit for the ACT group programme (e.g. approachable/ engaging / acknowledgeable).

0 Strongly disagree	1 Disagree	2 Neither agree nor disagree	3 Agree	4 Strongly agree

The HAND OUT MATERIAL was relevant and helpful.

0 Strongly disagree	1 Disagree	2 Neither agree nor disagree	3 Agree	4 Strongly agree

In what way was this group programme helpful?

_____

_____

_____

_____

_____

What did you NOT find helpful about this group programme?

_____

_____

_____

_____

_____

Please write any other comments or suggestions you have about this group programme?

_____

_____

_____

_____

_____

_____

Thank you for your valuable feedback.

Appendix E. Follow-up Feedback Questionnaire

ACT Group Participant Survey

The following questions are to help us understand how well the **ACT group** meets the needs of the people who use its services. **Please circle the answer below each question that best describes your experience.**

	①	②	③	④
1. Around the time you first had contact with the ACT group, how would you have described your state of psychological wellbeing?	Excellent	Good	Fair	Poor
2. Since then, has your state of psychological wellbeing improved?	Yes – a lot	Yes – somewhat	No change	No - worse
3. If your psychological wellbeing has changed, would you say your contact with the ACT group had anything to do with the change?	Yes – a lot	Yes – a bit	No	Does not apply
4. Around the time you first had contact with the ACT group, how would you have described your ability to carry out the everyday activities you wanted to do?	Excellent	Good	Fair	Poor
5. Since then, has your ability to carry out everyday activities improved?	Yes – a lot	Yes – somewhat	No change	No - worse
6. If your ability to carry out everyday activities has changed, would you say that the ACT group has had anything to do with the change?	Yes – a lot	Yes – a bit	No	Does not apply
7. Overall, would you say that contact with the ACT group has helped you to cope or manage better in your life?	Yes – a lot	Yes – a bit	No change	No – worse now
8. Overall, would you say that contact with the ACT group has helped to improve your sense of happiness and wellbeing?	Yes – a lot	Yes – a bit	No change	No – worse now
9. Overall, would you say that contact with the ACT group has contributed to your satisfaction with life?	Yes – a lot	Yes – a bit	No change	No – worse now
10. Overall, how satisfied have you been with how the ACT group	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very dissatisfied

facilitators have responded to assist you?				
11. In your opinion, how competent were the facilitator's you have dealt with from the ACT group?	Very competent	Moderately competent	Somewhat competent	Not at all competent
12. Overall, how satisfied do you feel with your contact with the ACT group?	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very dissatisfied
13. Overall, since your contact with the ACT group, has it helped you to sit with your unwanted psychological experiences?	Yes – a lot	Yes – a bit	No change	No – worse now
14. Overall, has the ACT helped you cope with problems related to addiction?	Yes – a lot	Yes – a bit	No change	No – worse now
15. Overall, since your contact with the ACT group are you living more in line with your values?	Yes – a lot	Yes – a bit	No change	No – worse now
16. Overall, since your contact with the ACT group has your commitment to carrying out your goals that are in line with your values improved?	Yes – a lot	Yes – a bit	No change	No – worse now

What have been the most helpful aspects of your contact with the ACT group?

What have been the least helpful aspects of your contact with the ACT group?

How do you think the ACT group programme could be improved?

Please make any other comments you wish to make here:

Thank you for your valuable feedback.

Appendix F. Treatment Fidelity Checklist Example

Session 1 Checklist

Treatment Fidelity

	Facilitators introduced each other and modelled to the group how it's done.
	Group members got to know another group member and introduced the person sitting next to them.
	Facilitators outlined limits of confidentiality (expectations and obligations).
	Group expectations were collaboratively agreed upon.
	Introduced ACT and mindfulness theories.
	Completed a brief mindfulness exercise.
	Group exercises demonstrating the concept of "control is the problem" - White bear exercise - Chinese finger trap
	Group discussion about the reasons for using substances (good and bad).
	Outline the expectations for practicing skills outside of the group in the form of weekly challenges.
	Closing comments for the group and administer the session rating scale.
/10	Total

Appendix G. ACT Group Agreement Example

ACT Group Agreement

Confidentiality (what is said in the group stays in the group)

Respect (no put downs and be nice)

Trust (trust each other with vulnerable information about ourselves)

Active listening/No interrupting (let people finish talking)

Phones on silent or off

Turn up for group sober and straight (if this is not possible at least appear sober and straight for the group)

No invitations to group members to be involved in drug or alcohol use (no organising trips to the pub etc.)

I _____ agree and commit to upholding the group expectations outlined above.

Signed: _____Date:_____

Appendix H. Participant Information Sheet and Consent Form

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Acceptance and Commitment Therapy for Alcohol and Drug Populations

PARTICIPANT INFORMATION SHEET

Locality: Palmerston North Hospital Alcohol and Other Drug Service

Address: Nikau House, Community Health Village, Palmerston North Hospital, Gate 13 (off Ruahine Street)

Lead Researcher: Rachel Cotter

You are invited to take part in a research study to examine the efficacy of Acceptance and Commitment Therapy (ACT) and its Application to Group Treatment Intervention in an Alcohol and Other Drug Community Sample.

My name is Rachel Cotter and I am a doctoral student in the clinical psychology programme at Massey University. I am seeking volunteers to help me complete my doctorate research thesis by taking part in a ten week Acceptance and Commitment Therapy group treatment programme aimed at reducing substance cravings and their related symptoms (e.g. anxiety, stress, and depression). I am recruiting individuals who have a diagnosis of substance use disorder between the ages of 18 and 65 years old. I am conducting my research under the supervision of Doctor Shane Harvey (Massey University, Palmerston North), Senior Clinical Psychologist, Guy Breakwell (Alcohol and Other Drug Service, Palmerston North), and Doctor Simon Bennett (Massey University, Wellington).

This study will involve up to 30 individuals (18-65 years old), who use alcohol and other drugs and have a diagnosis of substance use disorder. Three groups of ten people will be formed in order to run a group therapy programme.

Your participation is entirely *voluntary*. Whether or not you take part is *your choice*. If you do not wish to take part in this study you do not need to give a reason, and it will not affect your future health care in any way. If

---

you do want to take part, but change your mind later, you can pull out of the study *at any time*. You may wish to talk to a friend, family or whānau member, or a healthcare provider before you make a decision.

I will contact you by phone once you have had time to read and process this information sheet. During the phone call please feel free to ask any questions you may have about the study. If you agree to take part in this study, you will be asked to sign the Consent Form on the last page of this document. You will be given a copy of both the Participant Information Sheet and the Consent Form to keep.

This document is 7 pages long, including the Consent Form. Please make sure you have read and understood all the pages.

What is the purpose of the study?

The aim of this study is to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) to reduce substance use cravings and increase overall quality of life. ACT is a new therapy that has shown favourable results in the reduction of negative symptoms experienced for a number of problems including chronic pain and smoking cessation. Our intention is to develop and pilot an alternative treatment programme for alcohol and other drug issues.

What will my participation in the study involve?

Participation in this study will involve *up to three hours* of your time *each week* for *ten weeks*. The whole study will consist of 12 visits: a one on one initial interview, ten group sessions, and a follow-up session three month post treatment (see Table 1. below). There may be some simple *homework activities* for you to complete during the week to put into practice the skills that you learned during the session. You will be required to transport yourself to Palmerston North AOD Service to attend the group. Punctuality and respectful behaviour is expected as well as willingness to actively participant in group exercise and discussions. You will be required to complete a range of questionnaires at four assessment points (pre, during, post, and follow-up).

Table 1.

Summary Table for ACT group programme

Session Timeline	Tasks	Assessment Points
Initial Session	- Participant information sheets explained - Consent form signed - Address any questions about study	- Pre-group treatment assessment
Group Sessions 1 -10	- Introduction to programme - Core principles of ACT - Group Discussions - Group Exercises - Individual homework - Relapse prevention	- During treatment assessment (administered in session 5) - Post treatment assessment (administered in session 10)
Follow-Up Session	- Relapse prevention - Progress so far - Recap on skills learnt	- Follow-up assessment

Who can participate?

If you are:

- Between the ages of 18 and 65
- Have a diagnosis of a substance use disorder
- Not suffering from severe depression, suicidal ideation, or diagnosed with a personality disorder
- Willing to take part in ten therapy sessions and two assessment sessions and maintain sobriety for these sessions (i.e. you will not attend group intoxicated or under the influence of drugs)

What are the possible benefits and risks of this study?

Research has shown ACT helps individuals cope effectively with a range of difficulties. We anticipate participants may benefit from taking part in this study by gaining skills to cope with a wide range of every day struggles associated with using substances.

The potential risks of participating in this study are minimal. You may experience some discomfort in the group format when discussing substance use and related symptoms. However we will endeavour to ensure confidentiality is upheld. You do not have to share anything in the group that may make you feel uncomfortable.

You will not be expected to pay any money to participate in this study. You will be gifted a $20 supermarket voucher *at the completion* of the ten therapy sessions. You will also be gifted with another $20 voucher (supermarket) at the *completion of the three-month follow-up* session.

You have the right to access information collected about you as part of the study. Please contact the lead researcher if you would like to do so. You will be informed of any new information that becomes available during the study through assessment sessions or via telephone.

Will my information remain confidential?

The interview and questionnaires are anonymous, and files will be coded with anonymous identification numbers to ensure confidentiality to individuals. Only the lead researcher and three supervisors are able to directly access any written material.

All material will be kept in a secure location and destroyed after ten years. No material that could personally identify you will be used in any reports of this study. The information collected will be used for the study and may be submitted for publication in an academic journal. Only collective data from the entire sample will be described.

Please note that while confidentiality will be *strongly encouraged* within the group format by signing the consent form, we *cannot guarantee complete confidentiality* due to the nature of group work.

Confidentiality may be broken at the discretion of the facilitators if there *is any risk to yourself or others.*

If any risks arise, actions will be taken to ensure safety of all participants under the Palmerston North AOD Service procedures.

What happens after the study?

You can choose to be sent an information sheet with the results of the study when they are available. These results will be summarised and will be in the form of group averages, therefore no individual results will be identifiable.

Thank you very much for your time and help in making this study possible. Please contact me if you have any queries about this study.

Rachel Cotter, Doctoral Student

Telephone: [redacted]

Email: [redacted]

Dr Shane Harvey

Telephone: (06) 350 5196

Email: S.T.Harvey@massey.ac.nz

Guy Breakwell

Telephone: (06) 350 9130

Email: Guy.Breakwell@midcentraldhb.govt.nz

Dr Simon Bennett

Telephone: (04) 801 5799

Email: S.T.Bennett@massey.ac.nz

If you want to talk to someone who isn't involved with the study, you can contact an independent health and disability advocate on:

Phone: 0800 555 050

Fax: 0800 2 SUPPORT (0800 2787 7678)

Email: advocacy@hdc.org.nz

For Māori Heath support please contact :

MidCentral Specialist Māori Mental Health

Phone: 06 350 9155

Freephone: 0800 00 78 78

You can also contact the health and disability ethics committee (HDEC) that approved this study on:

Phone: 0800 4 ETHICS

Email: hdecs@moh.govt.nz

Contact Phone Number: 021 354 141

Ethics Committee Reference Number: 15CEN134

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Acceptance and Commitment Therapy for Alcohol and Drug Populations

CONSENT FORM

- ✓ I have read and I understand the participant information sheet
- ✓ I have had the opportunity to discuss this study with the researcher, and I am satisfied with the information I have been given. I have a copy of this consent form and information sheet.
- ✓ I have had sufficient time to decide whether or not to take part in this study.
- ✓ I understand that taking part in this study is voluntary (my choice), and that I may withdraw from this study at any time, and this will in no way affect my continuing health care.
- ✓ I consent to the research staff collecting and processing my information, including information about my health.
- ✓ If I decide to withdraw from the study, I agree that the information collected about me up to the point when I withdraw may continue to be processed: *(please tick one)*

  YES ☐ NO ☐

- ✓ I understand that the study will include a total of ten sessions and will take up to three hours each session and will take approximately 20 hours to complete over a ten week period.
- ✓ I understand that my participation in this study is confidential and that a participant number (not my name) will be recorded next to any data collected from me over the course of this study.
- ✓ I understand my responsibilities as a study participant:

- Being punctual
- Willingness to actively participate in group exercises and discussions
- Upholding respectful and appropriate behaviour (aggressive behaviour is not acceptable)
- Upholding confidentiality of the individuals in the group (Do NOT discuss group members outside of this room)
- Completing homework and questionnaires at given times

✓ I wish to receive a copy of the results: *(please tick one)*

YES ☐ NO ☐

✓ I understand that I can contact the researcher or the co-facilitator and supervisors if I have any questions about this study.

I _____ hereby consent to participate in this study.

Signature:

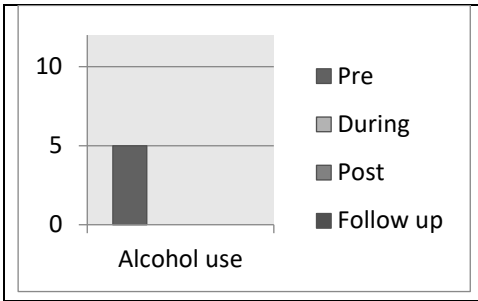
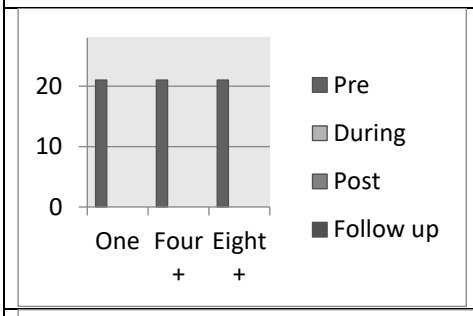
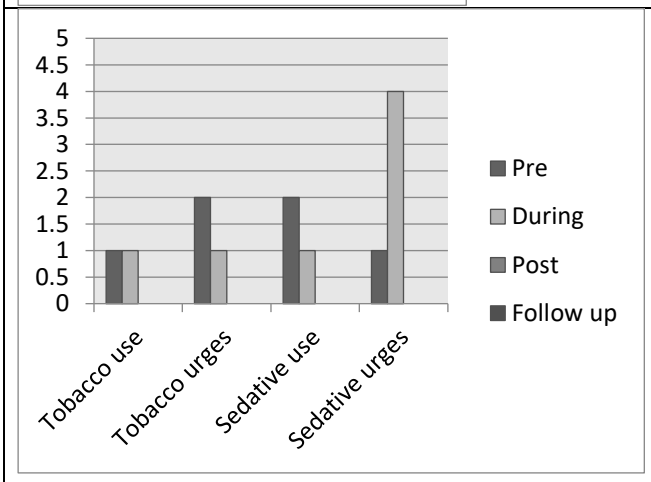
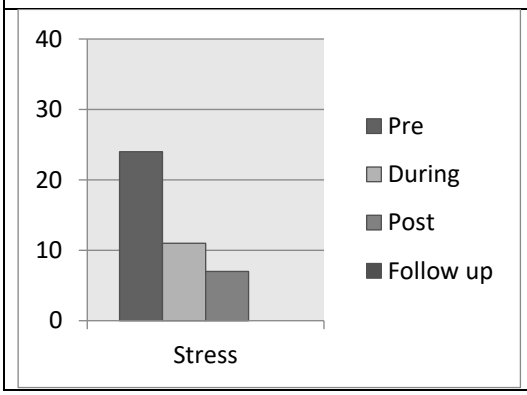
Date:

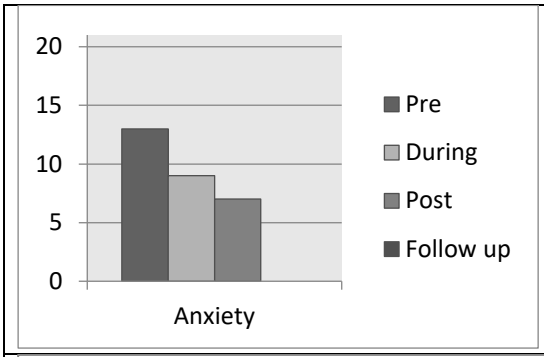
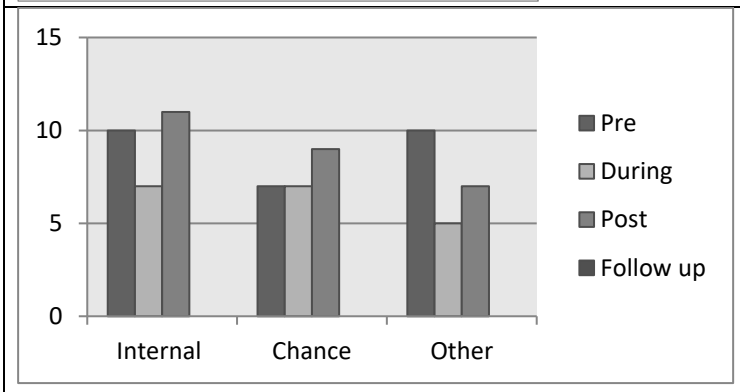
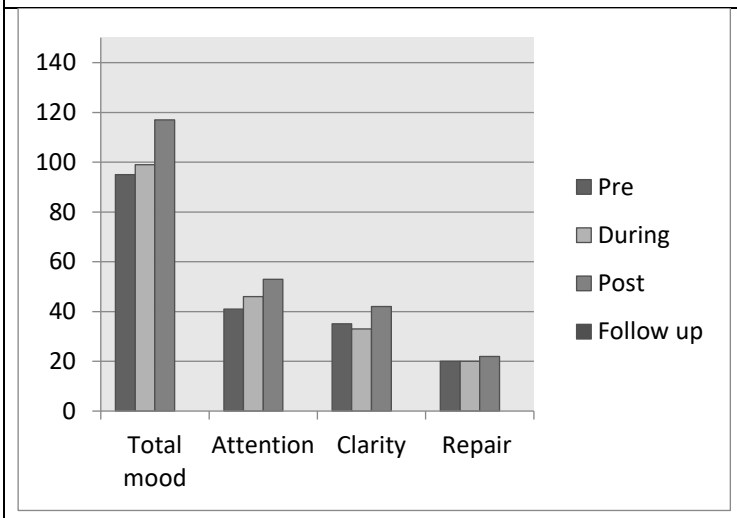
Study explained by:

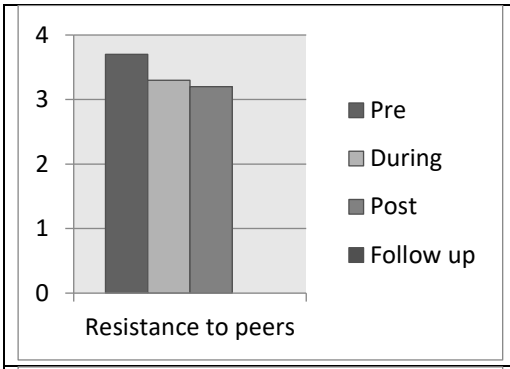
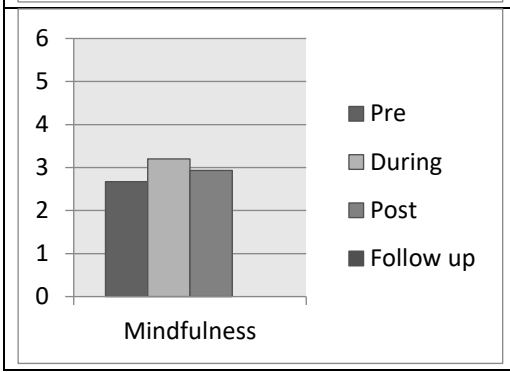
Signature:

This project has received ethical approval from the Health and Disability Ethics Committee, Reference Number: 15CEN134

Appendix I. Participant Feedback Summary – Anonymised copy

	Scores over 5 indicate increasing or higher risk drinking. At pre-group assessment your score indicated increased risk drinking however at during and post-group assessment points you reported no hazardous alcohol use.
	At pre-group assessment point you reported consuming more than 8 drinks on 21 days out of the last month. At during and post-group assessment you reported no alcohol use within the last month.
	At pre and during group assessment points you reported tobacco cravings once or twice in the last month. At pre-group assessment you reported once or twice sedative use in the last month. At during group assessment, you reported no sedative use but reported weekly sedative cravings. No use or urges to use tobacco or sedatives in post-group questionnaire. No other substance use or urges reported throughout group.
	At pre-group assessment your stress score fell within the moderate stress range. At during and post-group assessment your scores fell within the low stress range.

	At pre-group assessment your anxiety score fell within the moderate range. At during and post-group assessment your scores decreased to the mild anxiety range.
	At pre-group assessment point you reported that your belief that you have control over your life (internal) was the same as others having control over your life. Your during and post-group assessment points reflect that your internal control belief increased and your chance and others having control over your life decreased.
	Your total mood management scores increased throughout group and fell within the range that suggests you have a handle on emotions but could use more work. Attention: your self-perceived ability to attend to your mood/emotions increased throughout group and remained within the range of growing awareness. Clarity: your self-perceived ability to clearly discriminate between your mood/emotions varied throughout group but remained within the range of growing clarity. Repair: your self-perceived ability to regulate your emotions/moods slightly increased throughout group and fell within in the range of attempts to repair.

	Higher scores on this measure reflect higher resistance to peer influence. Your scores remained high with a slight decrease evident throughout group.
	Higher scores on this measure reflect more frequent mindful tendencies. Your scores slightly varied throughout group but remained at the lower end of being mindful in everyday practices.

Appendix J. Ethical Approval

Health and Disability Ethics Committees

Health and Disability Ethics Committees
Ministry of Health
Freyberg Building
20 Aitken Street
PO Box 5013
Wellington
6011

0800 4 ETHICS
hdecs@moh.govt.nz

05 November 2015

Miss Rachel Cotter
School of Psychology, T4 Building
Massey University
P.O. Box 756
Wellington 6140

Dear Miss Cotter

Re:	**Ethics ref:**	**15/CEN/134**
	Study title:	Acceptance and Commitment Therapy (ACT) and its Application to Group Treatment with an Alcohol and Other Drug (AOD) Community Sample

I am pleased to advise that this application has been *approved* by the Central Health and Disability Ethics Committee. This decision was made through the HDEC-Full Review pathway.

Conditions of HDEC approval

HDEC approval for this study is subject to the following conditions being met prior to the commencement of the study in New Zealand. It is your responsibility, and that of the study's sponsor, to ensure that these conditions are met. No further review by the Central Health and Disability Ethics Committee is required.

Standard conditions:

1. Before the study commences at *any* locality in New Zealand, all relevant regulatory approvals must be obtained.

2. Before the study commences at *any* locality in New Zealand, it must be registered in a WHO-approved clinical trials registry (such as the Australia New Zealand Clinical Trials Registry, www.anzctr.org.au).

3. Before the study commences at *a given* locality in New Zealand, it must be authorised by that locality in Online Forms. Locality authorisation confirms that the locality is suitable for the safe and effective conduct of the study, and that local research governance issues have been addressed.

After HDEC review

Please refer to the *Standard Operating Procedures for Health and Disability Ethics Committees* (available on www.ethics.health.govt.nz) for HDEC requirements relating to amendments and other post-approval processes.

Your **next progress report** is due by **04 November 2016**.

Participant access to ACC

The Central Health and Disability Ethics Committee is satisfied that your study is not a clinical trial that is to be conducted principally for the benefit of the manufacturer or distributor of the medicine or item being trialled. Participants injured as a result of treatment received as part of your study may therefore be eligible for publicly-funded compensation through the Accident Compensation Corporation (ACC).

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely,

Mrs Helen Walker
Chairperson
Central Health and Disability Ethics Committee

Encl: appendix A: documents submitted appendix B: statement of compliance and list of members

Appendix L. Table of means, standard error of means, and standard deviation for Paired Sample t-Tests

Dependent variable	**Pre versus Post**				**Pre versus Follow-up**				**Post versus Follow-up**		
n		***(24)***				***(20)***				***(20)***	
Values *Pairs*	$\bar{x}$	*SD*	*SEM*		$\bar{x}$	*SD*	*SEM*		$\bar{x}$	*SD*	*SEM*
PSS-10											
Pre	22.50	6.17	1.26	**Pre**	21.50	6.16	1.38	**Post**	17.10	5.83	1.30
Post	18.17	6.11	1.25	**F/U**	20.05	8.51	1.90	**F/U**	20.05	8.51	1.90
GAD-7											
Pre	11.32	5.49	1.10	**Pre**	10.40	4.88	1.10	**Post**	7.75	3.61	0.81
Post	7.92	4.38	0.88	**F/U**	8.75	6.40	1.43	**F/U**	8.75	6.40	1.43
BLOCS§											
Pre	8.08	3.37	0.67	**Pre**	7.65	3.56	0.80	**Post**	6.60	3.12	0.70
Post	6.60	2.93	0.59	**F/U**	7.40	3.38	0.76	**F/U**	7.40	3.38	0.76
TMMS total											
Pre	101.04	13.91	2.78	**Pre**	101.25	15.28	3.42	**Post**	109.50	13.21	2.95
Post	109.92	12.59	2.52	**F/U**	107.80	14.61	3.27	**F/U**	107.80	14.61	3.27
ATTN§											
Pre	49.20	8.74	1.75	**Pre**	48.95	9.06	2.03	**Post**	48.35	4.99	1.12
Post	49.20	6.05	1.21	**F/U**	47.45	6.53	1.46	**F/U**	47.45	6.53	1.46
CLAR§											
Pre	32.00	6.65	1.33	**Pre**	32.35	6.80	1.50	**Post**	39.30	7.33	1.64
Post	38.84	6.97	1.39	**F/U**	37.70	7.13	1.60	**F/U**	37.70	7.13	1.59
REP§											
Pre	19.84	4.61	0.92	**Pre**	19.95	5.11	1.14	**Post**	21.85	4.25	0.95
Post	21.88	3.97	0.79	**F/U**	22.64	5.44	1.22	**F/U**	22.65	5.44	1.22
MAAS											
Pre	3.31	0.87	0.17	**Pre**	3.47	0.87	0.20	**Post**	3.66	0.78	0.17
Post	3.59	0.81	0.16	**F/U**	4.16	0.79	0.18	**F/U**	4.16	0.79	0.18
Dependent variable	**Pre versus Mid**				**Mid versus Post**				**Mid versus Follow-up**		
n		***(26)***				***(24)***				***(20)***	
Values	$\bar{x}$	*SD*	*SEM*		$\bar{x}$	*SD*	*SEM*		$\bar{x}$	*SD*	*SEM*
PSS-10											
Pre	22.46	5.72	1.12	**Mid**	19.78	6.55	1.37	**Mid**	19.15	6.33	1.41
Mid	20.35	6.36	1.24	**Post**	17.65	5.69	1.19	**F/U**	20.05	8.51	1.90
GAD-7											
Pre	11.46	5.46	1.07	**Mid**	9.79	4.68	0.96	**Mid**	8.90	3.64	0.81

Mid	10.27	4.83	0.95	**Post**	7.75	4.39	0.90	**F/U**	8.75	6.40	1.43
BLOCS§											
Pre	7.88	3.37	0.66	**Mid**	7.21	3.48	0.71	**Mid**	6.60	3.28	0.73
Mid	7.42	3.47	0.68	**Post**	6.75	2.89	0.59	**F/U**	7.40	3.38	0.76
TMMS											
Pre	100.54	13.84	2.71	**Mid**	103.63	15.19	3.10	**Mid**	103.40	16.10	3.60
Mid	103.00	14.75	2.90	**Post**	109.58	12.75	2.60	**F/U**	107.80	14.61	3.27
ATTN§											
Pre	48.73	8.51	1.67	**Mid**	47.25	6.76	1.38	**Mid**	46.60	6.94	1.55
Mid	47.19	6.61	1.30	**Post**	48.71	5.65	1.15	**F/U**	47.45	6.53	1.46
CLAR§											
Pre	32.23	6.23	1.22	**Mid**	35.75	6.28	1.28	**Mid**	36.10	6.44	1.44
Mid	35.54	6.07	1.19	**Post**	38.88	7.12	1.45	**F/U**	37.70	7.13	1.59
REP§											
Pre	19.58	4.76	0.93	**Mid**	20.63	5.47	1.12	**Mid**	2070	5.73	1.28
Mid	20.27	5.46	1.07	**Post**	22.00	4.01	0.82	**F/U**	22.65	5.44	1.22
MAAS											
Pre	3.29	0.87	0.17	**Mid**	3.31	0.76	0.15	**Mid**	3.42	0.76	0.17
Mid	3.29	0.74	0.15	**Post**	3.59	0.83	0.17	**F/U**	4.16	0.79	0.18

Note: $\bar{x}$ = mean, *SD* = standard deviation, *SEM* = standard error of the mean, § = an abbreviation of 'subscale', F/U = follow-up, AUDIT-C = Alcohol Use Disorder Identification Test – Consumption, ALC Section B = Alcohol Use Section B, PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, TMMS = Trait Meta Mood Scale, MAAS = Mindfulness Attention Awareness Scale. Scores for Cocaine, inhalants, hallucinogens, and "other" on the WHO-ASSIST V3.0 (World Health Organisation – Alcohol, Smoking, and Substance Involvement Screening Test Version 3.0) were excluded from the analysis due to minimal or no endorsement. BLOCS scales for internal locus of control and external chance locus of control were also excluded.

Appendix M. Correlation Matrices Showing Associations Between Dependent Variables Across all Assessment Phases

Pre-group treatment assessment phase

N (39)		AUDIT-C	ALC	TOB	CAN	AMPH	SED	OPI	PSS-10	GAD-7	BLOCS	TMMS	ATTN	CLAR	REP	MAAS
AUDIT-C		1														
ALC		**0.662****	1													
TOB		0.000	-0.248	1												
CAN		-0.033	-0.305	0.221	1											
AMPH		-0.197	-0.260	-0.023	0.147	1										
SED		0.155	-0.078	0.176	0.079	**0.567***	1									
OPI		-0.279	-0.202	0.079	0.091	0.267	**0.379***	1								
PSS-10		0.105	-0.040	**0.332***	0.166	0.176	**0.518****	0.222	1							
GAD-7		0.098	-0.112	0.097	0.148	**0.377***	**0.584****	0.286	**0.752****	1						
BLOCS		-0.151	-0.104	0.025	0.370	0.281	0.296	0.224	0.315	0.196	1					
TMMS		-0.274	-0.103	-0.117	-0.010	-0.078	-0.262	0.214	**-0.487****	**-0.429****	-0.272	1				
	ATTN	-0.235	-0.176	-0.154	0.141	0.021	-0.081	0.174	-0.183	-0.142	-0.171	**0.760****	1			
	CLAR	-0.001	0.124	-0.034	-0.286	-0.234	-0.169	0.077	**-0.423****	**-0.395***	-0.267	**0.635****	0.079	1		
	REP	**-0.390***	-0.167	-0.036	0.118	0.054	**-0.388***	0.223	**-0.524****	**-0.464****	-0.141	**0.759****	**0.418****	**0.357***	1	
MAAS		0.126	0.191	-0.067	-0.030	-0.307	-0.288	-0.116	**-0.546****	**-0.534****	-0.211	**0.527****	0.310	**0.392***	**0.473****	1

Note. AUDIT- C = Alcohol Use Disorder Identification Test-Consumption, ACL =Alcohol Use Section B, TOB = Tobacco total, CAN = Cannabis total, AMPH = Amphetamine total, SED = Sedative total, OPI = Opioid total, PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, TMMS = Trait Meta Mood Scale, MAAS = Mindfulness Attention Awareness Scale. BLOCS scales for internal locus of control and external chance locus of control were also excluded. § = an abbreviation of 'subscale'. **Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed)

Mid-group treatment assessment phase

N (26)		AUDIT-C	ALC	TOB	CAN	AMPH	SED	OPI	PSS-10	GAD-7	BLOCS	TMMS	ATTN	CLAR	REP	MAAS
AUDIT-C		1														
ALC		**0.563****	1													
TOB		0.144	-0.171	1												
CAN		-0.197	-0.284	0.220	1											
AMPH		-0.362	-0.316	0.070	0.342	1										
SED		-0.026	-0.186	0.004	-0.064	**0.466***	1									
OPI		-0.340	-0.277	0.209	0.114	**0.508****	**0.549****	1								
PSS-10		0.299	-0.092	0.262	0.178	0.300	0.369	0.102	1							
GAD-7		0.246	-0.098	0.183	0.013	0.366	**0.393***	**0.407***	**0.624****	1						
BLOCS		-0.011	-0.300	0.211	0.071	0.289	0.116	0.036	**0.552****	0.330	1					
TMMS		-0.322	-0.170	0.072	0.025	0.220	-0.117	0.356	**-0.631****	-0.206	-0.193	1				
	ATTN	-0.259	-0.165	0.145	0.078	0.238	-0.060	0.239	-0.355	0.101	-0.049	**0.779****	1			
	CLAR	-0.188	-0.074	0.040	-0.219	0.030	-0.102	0.256	**-0.629****	-0.335	-0.188	**0.820****	0.380	1		
	REP	-0.373	-0.177	-0.025	0.218	0.273	-0.128	0.388	**-0.575****	-0.305	-0.254	**0.846****	**0.470***	**0.643****	1	
MAAS		-0.040	0.205	-0.150	-0.370	-0.231	-0.205	0.028	**-0.703****	-0.247	**-0.404***	**0.596****	**0.454***	**0.609****	0.383	1

Note. AUDIT- C = Alcohol Use Disorder Identification Test-Consumption, ACL =Alcohol Use Section B, TOB = Tobacco total, CAN = Cannabis total, AMPH = Amphetamine total, SED = Sedative total, OPI = Opioid total, PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, TMMS = Trait Meta Mood Scale, MAAS = Mindfulness Attention Awareness Scale. BLOCS scales for internal locus of control and external chance locus of control were also excluded. § = an abbreviation of 'subscale'. **Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed)

Post-group treatment assessment phase

N (25)		AUDIT-C	ALC	TOB	CAN	AMPH	SED	OPI	PSS-10	GAD-7	BLOCS	TMMS	ATTN	CLAR	REP	MAAS
AUDIT-C		1														
ALC		**0.742****	1													
TOB		0.047	0.129	1												
CAN		-0.182	0.082	**0.477***	1											
AMPH		-0.355	-0.246	0.128	**0.396***	1										
SED		-0.233	-0.196	0.072	-0.083	**0.524****	1									
OPI		-0.346	-0.219	0.163	0.067	**0.503***	**0.733****	1								
PSS-10		0.262	0.229	**0.435***	0.250	0.227	0.090	0.110	1							
GAD-7		0.254	0.220	0.329	0.202	0.293	0.284	0.274	**0.490***	1						
BLOCS		0.092	0.234	0.238	0.016	0.094	0.209	0.032	**0.420***	0.225	1					
TMMS		-0.180	-0.061	-0.259	0.319	0.154	-0.103	0.242	**-0.526****	-0.192	**-0.545****	1				
	ATTN	-0.052	0.177	0.231	**0.527****	0.332	-0.079	0.308	-0.143	0.252	**-0.421***	**0.699****	1			
	CLAR	-0.087	-0.081	**-0.519****	-0.007	-0.156	-0.131	0.025	**-0.551****	**-0.490***	**-0.419***	**0.805****	0.235	1		
	REP	-0.340	-0.320	-0.259	0.222	0.258	0.023	0.253	**-0.481***	-0.132	-0.352	**0.693****	0.280	**0.438***	1	
MAAS		-0.042	-0.135	-0.042	0.092	-0.341	-0.350	-0.134	-0.389	-0.360	**-0.646****	**0.536****	0.292	**0.604****	0.194	1

Note. AUDIT- C = Alcohol Use Disorder Identification Test-Consumption, ACL =Alcohol Use Section B, TOB = Tobacco total, CAN = Cannabis total, AMPH = Amphetamine total, SED = Sedative total, OPI = Opioid total, PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, TMMS = Trait Meta Mood Scale, MAAS = Mindfulness Attention Awareness Scale. BLOCS scales for internal locus of control and external chance locus of control were also excluded. § = an abbreviation of 'subscale'. **Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed)

Three-month follow-up group treatment assessment phase

N (20)	AUDIT-C	ALC	TOB	CAN	AMPH	SED	OPI	PSS-10	GAD-7	BLOCS	TMMS	ATTN	CLAR	REP	MAAS
AUDIT-C	1														
ALC	**0.798****	1													
TOB	**0.475***	0.334	1												
CAN	0.144	-0.080	0.288	1											
AMPH	-0.273	-0.194	-0.163	0.229	1										
SED	-0.294	0.008	0.015	-0.102	0.310	1									
OPI	-0.339	-0.267	-0.217	-0.145	0.162	**0.444***	1								
PSS-10	0.131	0.113	**0.551***	-0.070	0.168	**0.515***	0.277	1							
GAD-7	-0.014	-0.001	.0155	-0.080	0.210	**0.457***	0.416	**0.737****	1						
BLOCS	0.203	0.215	0.207	-0.017	0.226	0.229	0.207	0.334	0.146	1					
TMMS	**-0.492***	-0.401	**-0.573****	-0.151	-0.134	-0.052	0.406	-0.414	-0.117	-0.453	1				
ATTN	-0.411	-0.429	-0.192	0.007	-0.108	-0.142	0.324	-0.129	0.075	**-0.589****	**0.670****	1			
CLAR	-0.335	-0.297	**-0.641****	-0.262	-0.149	-0.045	0.282	-0.326	-0.077	-0.229	**0.805****	0.195	1		
REP	-0.389	-0.173	**-0.468***	-0.071	-0.035	0.089	0.333	**-0.528***	-0.302	-0.210	**0.827****	0.344	**0.617****	1	
MAAS	-0.304	-0.326	-0.421	-0.225	**-0.467***	-0.391	-0.103	**-0.557***	-0.426	**-0.599****	**0.504***	0.245	**0.487***	0.421	1

Note. AUDIT- C = Alcohol Use Disorder Identification Test-Consumption, ACL =Alcohol Use Section B, TOB = Tobacco total, CAN = Cannabis total, AMPH = Amphetamine total, SED = Sedative total, OPI = Opioid total, PSS-10 = Perceived Stress Scale – 10, GAD-7 = General Anxiety Disorder – 7, BLOCS = Brief Locus of Control Scale, TMMS = Trait Meta Mood Scale, MAAS = Mindfulness Attention Awareness Scale. BLOCS scales for internal locus of control and external chance locus of control were also excluded. § = an abbreviation of 'subscale'. **Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed)

Appendix N: Research Case Study

A Preliminary Analysis of an Acceptance and Commitment Therapy Group Treatment Programme in a Real-World Alcohol and Other Drug Community Setting: A case study of research and reflection

Rachel Cotter

Massey University

Doctorate of Clinical Psychology Candidate

Intern Psychologist at Alcohol and Other Drug Service

MidCentral DHB

This case study represents the research of Rachel Cotter throughout the DClinPsych programme and the resultant reflections of her internship in 2017.

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Abstract

This preliminary analysis examined a group therapy programme utilising Acceptance and Commitment Therapy (ACT) for people diagnosed with Substance Use Disorders (SUDs) and coexisting mental health problems. The group programme consisted of ten group sessions that ran for up to three hours on a weekly basis. A final sample total of eight participants were included in the study, who were clients of the Palmerston North Alcohol and Other Drug (AOD) Service. A repeated measures design was used to explore the effectiveness of the ACT group programme targeting alcohol, stress, anxiety, and mood. These were measured at pre and post-group assessment points using the AUDIT-C, PSS-10, GAD-7 and TMMS respectively. Retention rates were high with 95% of the ACT group completing post-group assessments. There were reductions in stress (PSS-10) and anxiety (GAD-7) and an improvement in mood management (TMMS) as well as a slight reduction in alcohol use (AUDIT-C) scores post-treatment. These results, although only small, demonstrate the promising therapeutic gains of ACT when applied to alcohol use and coexisting mental health problems within the context of an AOD population and within a group format. The limitations of this preliminary analysis are discussed and the benefits of this experience in relation to my development as a clinical psychology intern are reflected.

Keywords: Acceptance and Commitment Therapy, Substance Use Disorders, Group Treatment Programme

A Preliminary Analysis of an Acceptance and Commitment Therapy Group Treatment Programme in a Real-World Alcohol and Other Drug Community Setting

Substance Use Disorders (SUDs), commonly referred to as addictions, affect a broad range of people. An individual with a SUD often experiences mental health issues co-morbidly, which make the treatment of these co-existing problems a complicated and complex challenge to those assigned to treat them. Not only does the individual suffer from the chronic enduring nature of these problems but the families and communities surrounding that individual are also affected. These rippling effects of addiction are an important rationale for investigating and examining potential alternative treatments for SUDs.

The World Health Organisation (WHO, 2008) reported 125 million people worldwide suffer from some form of alcohol use disorder. The global prevalence rate for a drug use disorder was 11.8% with men being nearly seven times more likely than females to have an alcohol or drug use disorder (WHO, 2008). These findings were reflected in New Zealand (NZ) through the Te Rau Hinengaro Mental Health Survey where the lifetime prevalence for any SUD was 12.3% and the 12-month prevalence was 3.5%. Again, males were more likely to suffer from SUDs compared to females (5.0% and 2.2% respectively). Furthermore, out of the 12.3% of people diagnosed with a SUD, 40% also suffered from anxiety disorders and 29% suffered from any mood disorder (Oakley-Browne et al., 2006). Therefore, a transdiagnostic treatment that addresses both mental illness and addictive behaviours is another important rationale for implementing an intervention for comorbid problems rather than one that solely addresses one issue over the other.

A common aspect observed in SUDs and mental health problems is experiential avoidance. Experiential avoidance is a process that occurs when a person is unwilling to experience emotions, thoughts, memories, or bodily sensations and they take actions to avoid or alter the frequency of these experiences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). The strategy used to control or suppress the aversive emotional states in this context is substance use (Hayes et al., 1996). An integrated approach to treating such dual diagnoses has been put forward as the gold standard. These treatment methods haven grown out of "third wave" therapies such as Cognitive Behavioural Therapy and more recently have expanded to include mindfulness, DBT, and ACT.

ACT is a transdiagnostic therapy that has been specifically developed to reduce experiential avoidance. Therefore, this therapy was deemed an appropriate modality to apply a pilot group programme targeting SUDs and coexisting mental health problems. The aim of ACT is to increase a person's psychological flexibility through behaviour change and mindfulness and acceptance processes and skills. There are six core processes listed in Table 1 on the following page and are commonly presented in a Hexaflex (see *Figure 1*). Each skill promotes psychological flexibility and represents opportunities for clinical intervention (Ciarrochi, 2012; Hayes et al., 1999; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes et al., 2004).

Table 1.

Six Core Principles of Acceptance and Commitment Therapy.

Core Principle	Description
Present moment awareness	Mindfulness component of therapy involves the person gaining awareness of the present moment that is often occupied by thoughts about the past or future.
Values	Clarification of a person's values is essential in identifying goals to work towards. This step provides the reason to deal with discomfort and to engage in important areas of life.
Committed Action	Identifying and taking action about what matters in the person's life while facing uncomfortable feelings and thoughts. This assists people to actualize their valued goals.
Self as context	Addresses core beliefs the client has about themselves and the world. This step aims to free the person of beliefs about roles, ways of being, and who they are.
Defusion	A skill to change a person's relationship with unhelpful thoughts that lead to engagement in behaviour that is not in line with their valued goals. This process provides a platform for people to practise letting go of the unhelpful thoughts.
Acceptance	Hold the thought that arises and allow them to be there rather than trying to ignore the thought that is likely to make it stronger. Attempts to avoid thoughts typically lead to actions that are out of line with the person's values.

Note: Adapted from Hayes et al., 2004 and Hayes et al., 2006.

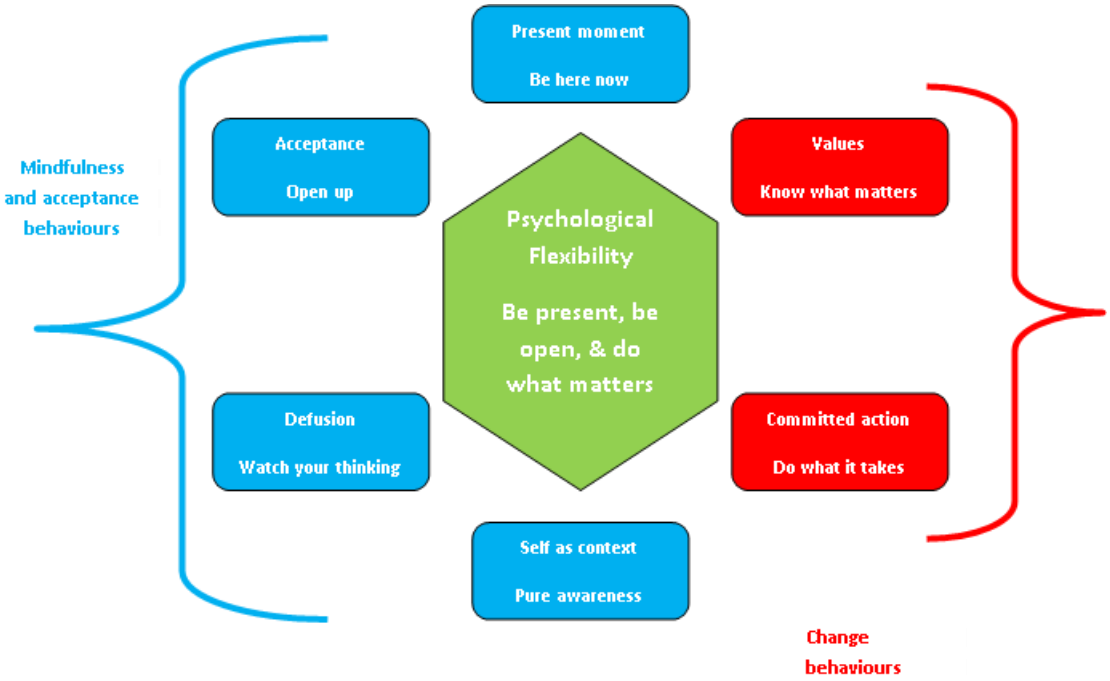

Figure 1. The Hexaflex Diagram adapted from various sources.

Previous research utilising ACT with a number of different populations including SUDs have shown promising results; those pertaining to SUDs will be briefly outlined. A full analysis of ACT's efficacy applied to various health problems is beyond the scope of this case study, however key meta-analysis and review articles demonstrating ACT's efficacy across mental health and physical disorders include A-Tjak et al. (2015) and Öst (2014) amongst others. With a focus on SUDs literature, the research is strengthening scientific evidence for ACT's effectiveness in treating people who struggle with SUDs. To date, there have been several case studies examining alcohol dependence (Heffner, Eifert, Parker, Hernandez, & Sperry, 2003), cananbis use (Twohig, Shoenberger, & Hayes, 2007), and comorbid alcohol and mood disorders (Thekiso et al., 2015). While it is important for case studies and pilot studies to be conducted in the early stages of the development of a new therapy, there are several limitations of such research. These studies all show the potential of ACT

to treat SUDs; however, the major limitation of this study design is the generalisability of the results. Even though their results cannot be generalised to larger populations they are crucial to the development of empirical evidence of ACT and all support the further investigation of ACT applied to SUDs.

Numerous Randomised Controlled Trials (RCTs) are being conducted and published with promising results dating back to the early 2000s that support the exploratory case studies findings. Studies focusing on nicotine have demonstrated the long term effectiveness of ACT for smoking cessation in comparison to medication as well as other TAU options including CBT and suppression based strategies (Gifford et al., 2004; Gifford et al., 2011; Hernández-López, Luciano, Bricker, Roales-Nieto, & Montesinos, 2009; Litvin, Kovacs, Hayes, & Brandon, 2012; Brown et al., 2013; Russell, 2013). Studies that applied ACT for people struggling with comorbid alcohol and depressive disorders compared to TAU showed positive shifts in participants' mood and experiential avoidance (Petersen & Zettle, 2009; Thekiso et al., 2015). Hayes et al. (2004) and Stotts et al. (2012) focused on methadone treatment programmes incorporating ACT principles to support dose reduction, both showing successful detoxification of methadone by the end of treatment. Smout et al. (2010) compared the effectiveness of ACT vs CBT to treat methamphetamine use and found ACT to be equivalent to CBT (Smout et al., 2010). Other aspects of SUDs include shame and stigma; one study demonstrated ACT's ability to decrease substance use as well as reduce individuals' experience of shame associated with substance use. ACT was also compared to CBT within the context of female inmates with polysubstance use disorders in three studies that demonstrated again ACT can perform as well as CBT and should be considered an alternative treatment for SUDs (Luoma,

Kohlenberg, Hayes, & Fletcher, 2012, González-Menéndez, Fernández, Rodríguez, & Villagrá, 2014; Lanza, García, Lamelas, & González-Menéndez, 2014).

A meta-analysis specifically investigating ACT's effectiveness in treating SUDs has now been published (Lee et al., 2015). This initial meta-analysis examined the aggregated effect sizes of ACT compared to other treatments (including CBT, 12 step facilitation, pharmacotherapy, and TAU). This study supported ACT as a promising alternative for treatment of SUDs. More specifically the authors found a significant small effect size (g = .29) for ACT compared to control conditions at post-treatment. However, it is acknowledged that more studies are needed to make it an empirically supported treatment option, particularly studies that address the limitations in the previous research. The purpose of the present study, therefore, was to add to this research by conducting a preliminary analysis to test the hypothesis that a manualised ACT group treatment programme for people struggling with SUDs and mental health problems such as stress, anxiety, and mood would improve their overall wellbeing from pre to post and a three-month follow-up. It was hypothesised that alcohol use, stress, and anxiety levels would decrease whilst mood management would improve from pre, post, and follow-up assessment points.

Methodology

Study Design and Setting

A repeated measures design was used to test the hypothesis outlined above. This study was conducted in the Alcohol and Other Drug Service, Palmerston North, NZ and was approved by the Health and Disability Committees of NZ (HDEC).

Participants

Ten clients who met the study criteria and gave written informed consent were recruited for the ACT group treatment programme for SUDs on a voluntary basis. Each client was interviewed for intake purposes using a semi structured clinical interview. The research study was embedded within the AOD service thereby participants were clients who already met referral requirements for the service (i.e. significant alcohol and drug problems). Inclusion criteria included a) between the ages of 18-66; b) be able to commit to 10 weekly sessions up to two hours duration; and c) have a nominated case manager at the AOD or Community Mental Health services. Exclusion criteria included a) suffering from severe or active depression, suicidal ideation/behaviour, PTSD, or psychotic symptoms; b) those in active withdrawal phases or active hazardous substance use; and c) case by case consideration of personality disorders/factors that would significantly derail group processes, methadone maintenance programme users, and those with current legal court issues. The latter were based on the severity of the behaviours. Given the real world setting of the study the criteria for participation served as a guideline and as a result no participants that were referred were excluded from the study.

One participant withdrew prior to the group commencing due to other commitments. One further participant withdrew by session four due to obtaining employment. Therefore, a total of eight individuals completed the first ACT group treatment programme. Of these participants five were male and three were female. Ages ranged between 29 and 66 years old with the average being 47 years of age (*SD* = 14.23). All participants lived within the MidCentral District Health Board (DHB) area and were NZ citizens except for one participant who identified as Australian. Most participants were unemployed and single. The complexity of the presentations varied however most participants had more than one substance use problem and comorbid mental health issue.

Measures

To provide evidence for evaluating the programme treatment effectiveness quantitatively the study used brief psychometric measures to examine participants' alcohol use and related symptoms such as stress, anxiety, and mood commonly observed in substance use disorders. The measures are already used by a larger study of ACT group-based programme for the NZ army through Massey University. The measures were selected based on the research questions which arose from the literature review and to provide outcome data suitable for the programme evaluation purpose. The protocol of measures included Alcohol Use Disorder Identification Test-Consumption (AUDIT-C), Perceived Stress Scale – 10 (PSS-10), Generalised Anxiety Disorder – 7 (GAD-7), and the Trait Meta Mood Scale (TMMS).

Alcohol Use Disorder Identification Test-Consumption (AUDIT-C). The AUDIT-C (World Health Organisation) is designed to briefly measure quantity and frequency of alcohol consumption on a typical day as well as binge drinking patterns.

It involves three items scored from 0 to 4 with a possible total score of 12. Higher scores indicate heavy/hazardous drinking and possible alcohol abuse and dependence. The AUDIT-C psychometric properties are similar to the full 10-item AUDIT which has good reliability and validity (Meneses-Gaya et al., 2010).

Perceived Stress Scale-10 (PSS-10). The PSS-10 is a 10-item scale that assesses the degree general life situations are perceived as stressful. Each item is scored on a 5-point Likert scale and has shown good psychometric properties in a range of populations (Cohen, Kamarck, & Mermelstein, 1983).

Generalised Anxiety Disorder Screen (GAD-7). The GAD-7 assesses general anxiety using a 7-item scale with a possible score of 0-3 for each item. The GAD-7 has good psychometric properties across a range of reliability and validity (Spitzer, Kroenke, Williams, & Lowe, 2006).

Trait Meta-Mood Scale (TMMS). The TMMS is a 30-item self-administered questionnaire that comprises a 5-point Likert scale with three sub scales (attention, clarity, and repair). The TMMS has adequate psychometric properties (Palmer et al., 2003).

Procedures

The sample for the ACT group was drawn from adults referred to the AOD service in Palmerston North. The facilitators of the group managed the recruitment process for selection and participation in collaboration with case managers working within the AOD service. Each potential participant was screened for exclusion and inclusion criteria before receiving a copy of the information sheet and informed consent. Informed consent involved participants agreeing to attend ten weekly group therapy

sessions based on ACT applied to SUDs, completing psychometric inventories at pre-determined assessment points, and agreeing to attend a three-month follow-up assessment point for a subsequent analysis in the completion of the thesis. The measures were collected by the two group facilitators at the pre-treatment interview and at the completion of the therapy programme. Brief measures are practical, reliable, and valid for initial assessment and appraisal of treatment efficacy in clinical settings (Campbell and Hemsley 2009).

Data Analysis

Due to data regarding the results of ACT interventions for both SUDs and mental health problems treatment outcomes not being found in the available literature at the time of writing, a proper calculation of the sample size to obtain the generally accepted statistical power of 0.8 could not be achieved a priori. Consistent with the idea that this was an exploration study, the research used the data elicited from the participants that could be enrolled within the existing resources, a principle described in Haynes (2012) as using “the patients I can get” (pg. 139, 2012). This study was therefore limited with a sample size of eight.

Quantitative data were analysed using the Statistical Package for the Social Sciences software (SPSS; version 20.0 for Windows, IBM Corp., Armonk, NY). Data was coded and entered into the SPSS database. Demographic variables of age, sex, levels of education, marital status, and ethnicity were also included. Age was measured on a continuous scale. Preliminary checks were conducted to ensure there were no violations of the assumptions of the statistical analyses used. A Wilcoxon signed-rank test was chosen to compare pre and post measures from the same

participants for alcohol use whereas Paired sample t-tests were used for stress, anxiety, and total mood management as the data appeared to be normally distributed.

Initial findings

The first ACT group had a 95% retention rate post treatment. Table 2 below outlines means for each measure including the standard deviation and standard error of the mean pre and post-group using the final sample size of eight (excluding the two participants who withdrew and did not complete the post-group assessment phase).

Table 2.

Dependent Variable Sample Means, Standard Deviation (SD), and Standard Errors of the Mean (SEM) for ACT group treatment programme at pre and post assessment phases.

Measure	**Pre-group (*N* = 8)**			**Post-group (*N* = 8)**		
Values	**M**	**SEM**	**SD**	**M**	**SEM**	**SD**
AUDIT-C (Alcohol)	6.8	1.3	3.9	6.5	1.1	3.0
PSS-10 (Stress)	23.4	1.6	5.5	18.6	1.1	3.2
GAD-7 (Anxiety)	11.1	2.0	5.6	7.8	0.8	2.1
TMMS (Total mood management)	97.9	3.3	10.6	110.1	3.8	10.9

Wilcoxon Ranged Signs Test results demonstrated that a 10-week ACT group treatment programme for SUDs and mental health problems did not elicit a statistically significant change in alcohol use ($Z = -0.43$, $p = 0.67$), see *Figure 2* below.

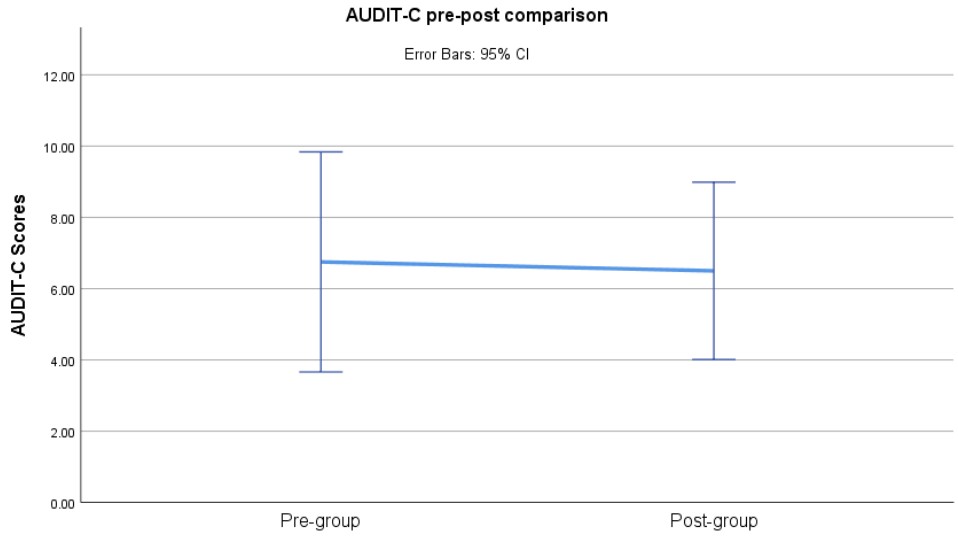

Figure 2. Alcohol use (AUDIT-C) pre and post-group mean scores demonstrating a slight decrease in scores and reduced error bars at completion of the ACT group treatment programme.

Paired sample t-test results for stress and total mood management revealed statistically significant results. There was a significant decrease in stress scores (see *Figure 3*) by post-group (t (7) = 2.67, p = 0.01) and a significant increase in total mood management scores (see *Figure 4*) by post-group (t (7) = -3.28, p = 0.03). However, there was no statistically significant decrease observed in anxiety scores (t (7) = 1.56, p = 0.16) at post-group, see *Figure 5*.

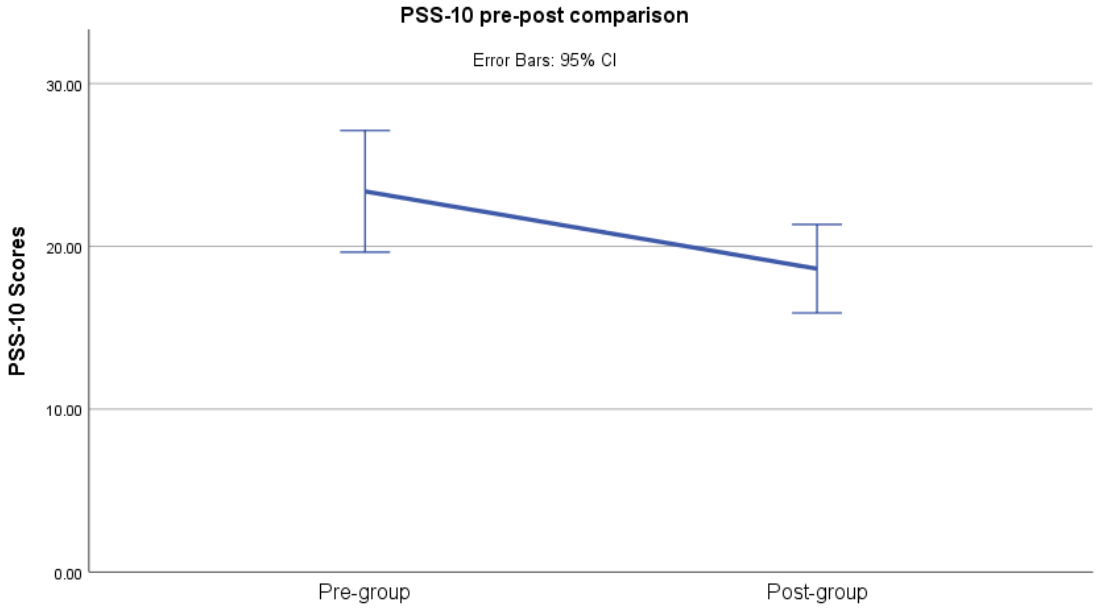

Figure 3. Total average scores pre and post for stress (PSS-10).

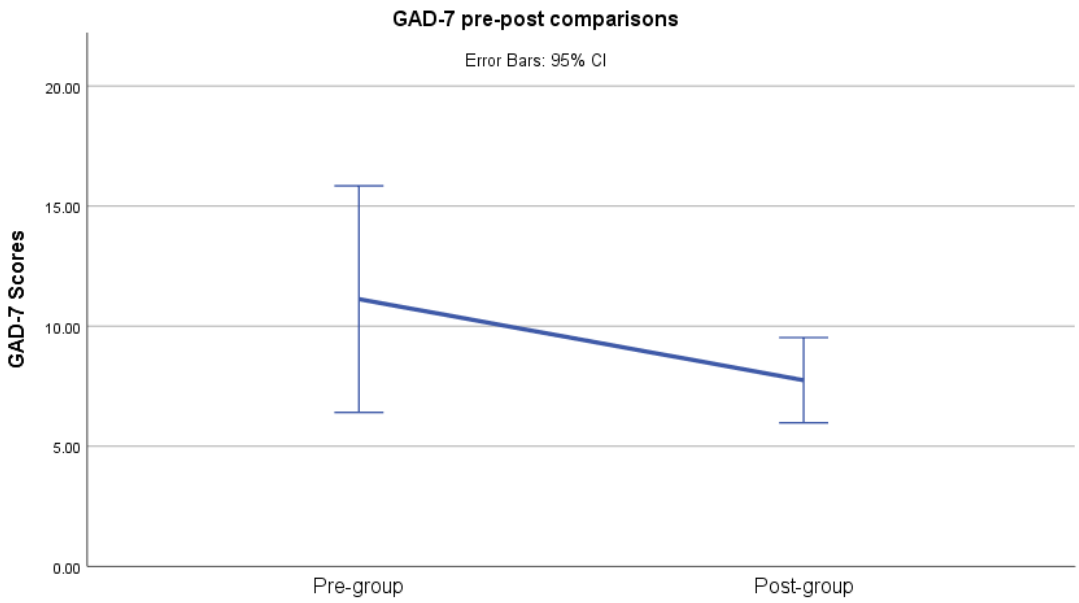

Figure 4. Total average scores pre and post for anxiety (GAD-7).

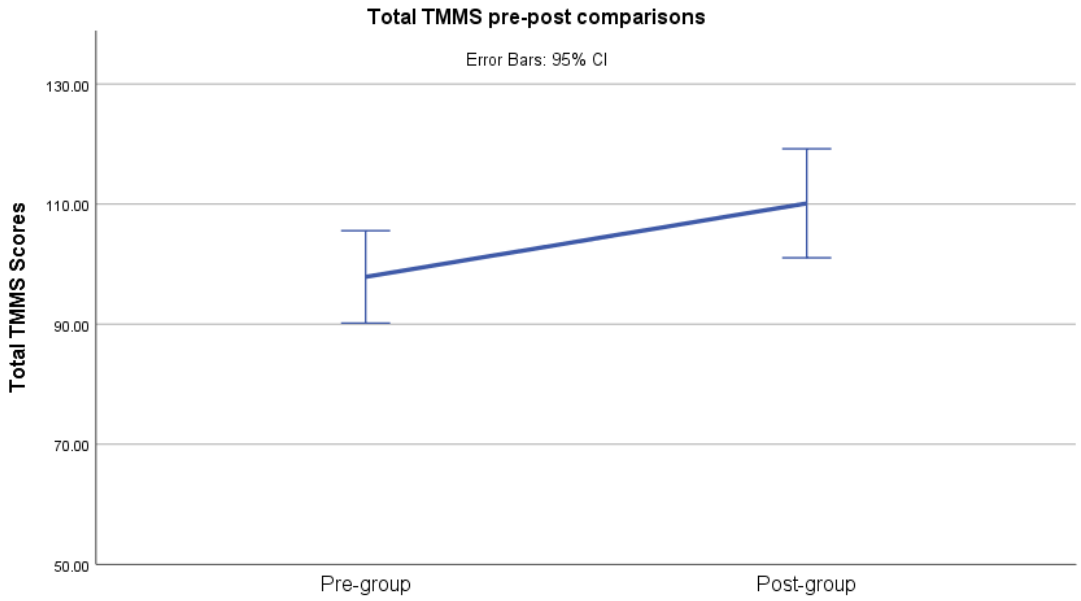

Figure 5. Average total scores for mood management (TMMS) at pre and post assessment points.

This study, conducted in a real-world AOD setting, provides a preliminary analysis on the effectiveness of an ACT-based group treatment programme with people who struggle from both SUDs and mental health problems (with a focus on stress, anxiety, and mood). The initial findings support the hypothesis to the extent that initial trends in the results demonstrate reduction in alcohol consumption and anxiety. The significant results found for stress and mood management were as predicted and support the idea that a manualised ACT group treatment programme provides added benefits to people with SUDs and coexisting problems. The initial results also support the use of group as an acceptable format of delivery for participants targeted specifically for AOD problems and commonly comorbid mental health disorders. This is consistent with the literature that shows ACT is as effective as established psychological interventions for treating anxiety and depression (A-Tjak et al., 2015) as well as stress (Öst, 2014). The findings are also in line with Lee et al 2015's study where their initial meta-analysis for ACT applied to SUDs reported the

promising future of utilising such a transdiagnostic approach to treating such complex problems.

Heffner et al. (2003), Petersen and Zettle (2009), and Thekiso et al. (2015) examined ACT applied to alcohol use. These studies all found reductions in both alcohol use and longer periods of sobriety reported at follow-up points. Although the results of the present study for alcohol use did not elicit a significant reduction by post-group assessment, a meta-analysis found that ACT treatments were more likely to show significant results at extended follow-up assessment points. This indicates that ACT may have increased effectiveness at follow-up compared to post-group assessment points. This finding may then be applied to the current results, in that, through further practise of psychological flexibility via ACT-based skills learnt in group, a continued positive behaviour change and growth over time may occur at the follow-up assessment point with an increased likelihood for potentially statistically significant results (Lee et al., 2015).

This study has some important limitations. Firstly, as this was a preliminary analysis of the first ACT group as part of the larger research thesis project, a small sample size was used thereby limiting generalisability. This is a common limitation of the literature involving ACT as it is a growing body of research. Secondly, the sample demographics do not accurately reflect NZ populations as all participants were of European descent (NZ and Australian) therefore important cultural differences could not be assessed. As well as ethnicity, participants varied in their problematic substance use therefore this case study was limited to alcohol which was not the drug of choice for several participants. Inclusion of other drug measures is recommended to further evaluate the efficacy of ACT for SUDs as previous research that examined methadone (Hayes et al., 2004; Stotts et al., 2012), methamphetamine (Smout et al.,

2010), nicotine (Bricker et al., 2013; Brown et al., 2013; Gifford et al., 2004; Gifford et al., 2011; Hernandez-Lopez et al., 2009; Litvin et al., 2012; Russell, 2013) and cannabis (Twohig et al., 2007) all showed promising results. The lack of a comparison group also limits the strength of evaluation of an ACT-based group treatment programme.

This study also had important strengths; first the ACT intervention was delivered by a trained senior clinical psychologist and an intern psychologist who had developed the manual protocol specifically for this treatment population. Several reviews of ACT recommend group treatment is facilitated by two or more psychologists (Öst, 2014). Of note, this group had a 95% retention rate from pre to post, which may be a reflection of the engagement of the facilitators as well as the use of a transdiagnostic therapy, ACT. ACT can be conceptualised as a gentler or more realistic approach to managing aversive internal psychological experiences (Hayes et al., 2004) as the therapy works towards focusing on a person's values and actions rather than focussing on their unhelpful or dysfunctional thoughts. Overall, the results of this preliminary analysis add to the developing literature that suggests more transdiagnostic approaches such as ACT in a group format may be better suited to working with such complex cases and can lead to sustainable improvements in coexisting problems in NZ, Aotearoa. However, further studies utilising randomised trials with larger groups of coexisting problems are required to confirm these promising results, yet the positive trend of the current study should support such endeavours.

Reflections

My research involves clinical practice that can be directly applied to working with clients as a clinical psychology intern. I have been able to transfer my knowledge of ACT from group therapy and incorporate it into individual therapy sessions where appropriate. Taking such an integrated approach when working with complex comorbid problems such as SUDs and mental health problems has been recommended as the most effective way to elicit motivation and observe positive behaviour change. A core aspect of ACT includes mindfulness skills and I have found this incredibly helpful when working with clients who are anxious and depressed. A core part of working with anxiety is teaching clients calming and grounding techniques therefore mindfulness skills are a key component that I can now bring to session with individuals. Through the ACT group I have over ten mindfulness exercises that I can rely on and are now in my repertoire. Another core skill in ACT is the values work. This has also been a great tool to apply to individual sessions and help people clarify what they hold as deeply important to them. This has been helpful for many of my AOD clients who had lost touch with their values. Being a co-facilitator of the group therapy programme has been a welcome additional skill to acquire during my clinical training. Co-facilitating with an experienced senior clinical psychologist as a mentor has also influenced and improved my skills and knowledge base by observing how he interacts with clients or deals with difficult questions.

On a personal note because I had developed this group programme and devoted a lot of time into this research I found myself being anxious and worried if the group participants did not like the session material or if they did not show up, particularly after the first session. I found that in the first initial sessions my anxiety levels were elevated, and I stumbled on my words trying to explain concepts of the

therapy and how the group would be run. Talking in front of groups is not my strong point as I feel that I can present as overtly nervous. I was glad when this feeling subsided as the group sessions progressed and my nerves settled.

By the end of the group handing out certificates for those that completed the programme was a highlight for me. I was so proud of all the participants for their honesty and commitment to the group programme. One participant has completely counted off the methadone programme and another had maintained abstinence from alcohol. To hear their gratitude made me feel positive and hopeful about future groups helping more people in similar ways. One participant wrote a glowing review of the group to the MidCentral DHB AOD Service in the hopes of further groups like these running (see Appendix O). Another side to this was my own doubts about how much I had actually helped these people and wondering if it was more like a ceiling or Hawthorne effect (as my imposter syndrome kicked in at this point).

While this case study reflects on the first group I have since completed a second group in 2016 as well as run two further groups during my internship year. This will add to the strength of the results presented in the final thesis. I am very hopeful about the future of ACT treating complex comorbid problems in NZ.

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Appendix O: Participant Letter

OVERVIEW
ACT 10 WEEK PROGRAM

To : Guy Breakwell
Rachel Cotter

From : Andrew

The program that I have been a participant of for the last 10 weeks has been life changing for me and I would like to thank you for making this profound change possible.

It was clear from the outset that this project was being administered by high level professionals. There was obviously a tremendous amount of preparation for each weekly session. I also noticed a synergy or potentiation between the both of you, which was of clear benefit to the group.

The poignant, sensitive, empathy, helped us deal with certain realities that we had to not only work through but transcend. Teaching us to cope with life in a different way, you showed us a new path forward.
The humour at different times was a brief diversion and much welcomed, at the same time there was always a message. "The Bus"

This sounds childish, but sometimes since the progam started, I feel like I have two minds, I am learning to be aware that these two minds battle each other for supremacy. Not always, but often the mind that has my best interests at heart, wins the battle, and it is a battle.

It has been my experience that when a group get together and there is universal agreement of the value of the program, the benefits of the program wane if there isn't a means to come back and re-affirm the programs content as a group. Life eventually takes us back to where we started.
I have discussed my thoughts with other participants who agree with me and are enthusiastic about setting up a regular meeting somehow. I would suggest calling it something catchy, say "Meeting of the Minds" or some other name perhaps. Hopefully these meetings could take place once a month.

What we have is too valuable to let slide away.

Sincerely
Mindful Andrew
24/8/2016