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Screening for mental disorder comorbidity in Australian alcohol and other drug residential treatment settings

Kane Saxon Mortlock
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Screening for Mental Disorder Comorbidity in Australian Alcohol and Other Drug Residential Treatment Settings

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This thesis is presented as required for the conferral of the degree:

Doctor of Philosophy

The University of Wollongong
School of Psychology
March 2016

Certification

I, Kane Saxon Mortlock, declare that this thesis, submitted in partial fulfillment of the requirements for the conferral of the degree Doctor of Philosophy, in the Department of Social Sciences, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.

Kane Saxon Mortlock
March, 2016

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List of Abbreviations

AOD	Alcohol and Other Drug
ASI	Addiction Severity Index
ASI(5)	Addiction Severity Index 5 th Edition Psychiatric Status Domain
ASI-CF	Addiction Severity Index Clinical Factor
ASI-CS	Addition Severity Index Composite Score
ASI-EI	Addition Severity Index Evaluation Indices
ASI-ISR	Addition Severity Index Interviewer Severity Rating
ASI-PSYCS	Addiction Severity Index Psychiatric Status Composite Score
ASI-SR	ASI Self-Report Psychiatric Status Domain
AUC	Area Under the Curve
AUD\$	Australian Dollars
BDI	Beck Depression Inventory
CAMI	Chemically Abusing Mentally Ill or Chemically Addicted Mentally Ill
CIDI	Composite International Diagnostic Interview
COD	Co-occurring Disorders
CORR.ID	Number of Clients with COD Correctly Identified
COSIG	Co-occurring State Incentive Grant
DIP	Diagnostic Interview for Psychosis
DIS	Diagnostic Interview Schedule
DMHAS	Connecticut Department of Mental Health and Addiction Services
DSM-III	Diagnostic and Statistical Manual of Mental Disorders (3 rd Ed.)
DSM-III-R	Diagnostic and Statistical Manual of Mental Disorders (3 rd Ed. Re- vised)

DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders (4 th Ed. Text Revision)
DSM-5	Diagnostic and Statistical Manual of Mental Disorders (5 th Ed.)
ECA	Epidemiological Catchment Area Study
GAS	Global Assessment Scale
GHQ-12	General Health Questionnaire 12
GHQ-28	General Health Questionnaire 28
GHQ-R	General Health Questionnaire 28 Revised
GSS	Global Appraisal of Individual Needs Short Screener version 1.0
GSS-IDS	Global Appraisal of Individual Needs Short Screener – Internal Disorder Screener
HRSD	Hamilton Rating Scale for Depression
HSC-25	Hopkins Symptom Checklist 25
ICD-9	The International Classification of Diseases, Ninth Edition
ICD-9-CM	The International Classification of Diseases, Ninth Edition, Clinical Modification
ICD-10	The International Classification of Diseases, Tenth Edition
ICOPSD	Individuals with Co-occurring Psychiatric and Substance Use Disorders
IND.	Number of Participants Who Screened Positive as Requiring Further Assessment
K6	Kessler 6
MCS	Medical Outcomes Study Short Form 36 Mental Component Summary
MHSF	Mental Health Screening Form
MHSF-III	Mental Health Screening Form III

MICA	Mentally Ill Chemical Abuser
MICAA	Mentally Ill Chemical Abuser
MICD	Mentally Ill Chemically Dependent
MINI-M	Mini-International Neuropsychiatric Interview - Modified
MISA	Mentally Ill Substance User
MISU	Mentally Ill Substance Using
MMS	Modified Mini Screen
N.ODD	Negative Odds Ratio
NAP	Nonaffective Psychosis
NCS	National Comorbidity Survey
NIMH	National Institute for Mental Health
NPV	Negative Predictive Value
NSMHWB	National Survey of Mental Health and Well Being
P.ODD	Positive Odds Ratio
PCP	Phencyclidine
PCS	Medical Outcomes Study Short Form 36 Physical Component Summary
PDSQ	Psychiatric Diagnostic Screening Questionnaire
PPV	Positive Predictive Value
PS	Psychosis Screener
RDC	Research Diagnostic Criteria
ROC	Receiver Operating Characteristic
ROC-AUC	Receiver Operating Characteristic Area Under the Curve
SAMI	Substance Abusing Mentally Ill
SCID	Structured Clinical Interview for DSM Disorders

SCID-I/P	Structured Clinical Interview for DSM-IV-TR Axis I Disorders – Research Version, Patient Edition
SCL-90	Symptom Checklist 90
SCL-90R	Symptom Checklist 90 Revised
SD	Standard Deviation
SF-36	Medical Outcomes Study Short Form 36
SF-36V	Medical Outcomes Study Short Form 36 Veterans Modification
SF-36 MCS	Medical Outcomes Study Short Form 36 Mental Component Summary
SAMHSA	The United States Substance Abuse and Mental Health Services Administration
SRQ-20	Self Reporting Questionnaire 20
SRQ-20R	Self Reporting Questionnaire 20 Revised
SRQ-25	Self Reporting Questionnaire 25
SRQ-25R	Self Reporting Questionnaire 25 Revised
UCLA	University of California at Los Angeles
US\$	United States of America Dollars
WHO	World Health Organisation

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Abstract

Addiction treatment guidelines recommend routinely screening for co-occurring mental disorders. Improvement in the identification of clients with psychiatric comorbidity has been prioritized because of the negative consequences of failing to detect it. There is a lack of research on the prevalence of co-occurring mental disorders in residential alcohol and other drug treatment services. There is need for research that validates and compares the short screening measures used to identify co-occurring mental disorders in alcohol and other drug treatment participants. In Study 1, the mental disorder status of 278 participants resident in alcohol and other drug treatment settings in Australia was estimated using the Addiction Severity Index—Self Report (Cacciola, Pecoraro, & Alterman, 2008) and the Mental Health Screening Form III (Carroll & McGinley, 2001). The estimated rate of diagnosable Axis I mental disorder comorbidity varied from 64% to 71% depending upon the cutoff score used. Due to the high estimated rates of comorbid mental disorder the prevalence and taxonomy of mental disorder comorbidity in residential alcohol and other drug treatment services was then assessed in Study 2 using a semi-structured interview. Study 2 involved administration of five commonly used mental disorder screening instruments validated against the Structured Clinical Interview for DSM-IV-TR Axis I Disorders (First, Spitzer, Gibbon, & Williams, 2002). Participants were 124 randomly selected clients with alcohol and other drug problems attending residential recovery services of The Salvation Army. Presence of comorbid Axis I mental disorder(s), total scores on the Psychiatric Status domain of the Addiction Severity Index, the Mental Health Screening Form III, the Self-Reporting Questionnaire 20, the Self-Reporting Questionnaire 25 and the Modified Mini Screen were recorded. Lifetime prevalence of any comorbid Axis I disorder was 87.5% and 30-day prevalence was 73.3%. More than

19% of participants met full criteria for a psychotic disorder over the previous 30-days. Among the short screening measures validated the Modified Mini Screen and the Mental Health Screening Form III displayed high sensitivity, high negative predictive values and high area under the curve scores. Psychiatric comorbidity exists in almost eight-out-of-ten clients in residential alcohol and other drug treatment services. Psychotic disorders are particularly prevalent when compared to the general population (19% vs. 0.45%) (Morgan et al., 2011). The findings suggest a need for integrated treatment of comorbid disorders, strong linkages between alcohol and other drug treatment services and psychological services and training for alcohol and other drug treatment workers to better address comorbidity.

Chapter 1 Introduction

Screening for co-occurring mental disorders in alcohol and other drug treatment services is a formal process that assesses clients for symptoms of comorbid mental disorders. Screening does not determine a mental disorder diagnosis but indicates the need for further assessment (Connecticut Department of Mental Health and Addiction Services, 2007). Screening for co-occurring mental disorders is needed in alcohol and other drug treatment services because the prevalence of co-occurring mental disorders is high. Over a 25-year period, epidemiological and service utilization data have consistently shown that mental disorders and addictions co-occur at least as frequently as they exist independently of one another (Davidson & White, 2007). The successful identification of co-occurring mental disorders using validated screening measures is a first necessary step towards improving treatment for the co-occurring disorders population (Croton, 2005b; Ziedonis et al., 2005).

According to the US Surgeon General, 'Mental disorders are health conditions ... characterized by alterations in thinking, mood or behaviour ... associated with distress and/or impaired functioning' (US Department of Health and Human Services, 1999, p. 6). The *Diagnostic and Statistical Manual of Mental Disorders-IV-TR* nosologises 15 major categories of mental disorder including substance-related disorders (American Psychiatric Association, 2000). Substance-related disorders are divided into substance use disorders and substance-induced disorders. Substance use disorders are further taxonomized into substance abuse and substance dependence. Substance abuse is defined as a 'maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances' (American Psychiatric Association, 2000, p. 198). Substance dependence is seen as more serious than substance abuse and involves negative sequelae such as physical

dependence upon the substance, (tolerance to and/or withdrawal from use), and an almost obsessive continuation in using the substance despite negative life consequences (American Psychiatric Association, 2000). There are 11 categories of substance use disorder under these two heads corresponding to 11 categories of substance that can be abused and/or the subject of dependence: alcohol, amphetamines, caffeine, cannabis, cocaine, hallucinogens, inhalants, nicotine, opioids, phencyclidine (PCP) and sedatives, hypnotics or anxiolytics (American Psychiatric Association, 2000).

To be diagnosed with a substance-induced, as opposed to a substance use, disorder there must be evidence of substance intoxication or withdrawal temporally related to maladaptive behaviour and any of a wide variety of symptoms characteristic of other mental disorders. Symptoms such as, 'delirium, dementia, amnesia, psychosis, mood disturbance, anxiety, sleep disorders, and sexual dysfunction' (US Department of Health and Human Services, 2007, p. 2). Examples of substance-induced disorders include substance-induced depression being experienced by someone in cocaine withdrawal and substance-induced psychosis being experienced by someone intoxicated on crystal methamphetamine (ice).

Mental disorders that are not substance related include anxiety disorders, mood disorders, psychotic disorders and somatoform disorders (American Psychiatric Association, 2000). Anxiety disorders occur when people suffer the normal feelings experienced in response to danger or stress, but at extreme levels that disrupt daily functioning (Queensland Health, 2010). Anxiety disorders include panic disorder, generalised anxiety disorder, social anxiety disorder, posttraumatic stress disorder, obsessive compulsive disorder and specific phobias. Mood disorders are reported to be common among adults and occur when a person's mood is sufficiently extreme in pole and duration to cause clinical impairment in key areas of function such as social

or work performance (American Psychiatric Association, 2000; Australian Bureau of Statistics, 2007). Mood disorders include major depressive disorder, dysthymic disorder and bipolar disorder. Psychotic disorders involve disturbances to perception and/or thinking along with negative symptoms such as catatonia and flat emotion that result in a disconnection with reality, significant distress and impaired functioning (American Psychiatric Association, 2000). Psychotic disorders include schizophrenia, schizoaffective disorder, schizophreniform disorder and brief psychotic episode. Somatoform disorders are when a person experiences symptoms suggestive of a physical illness, but these symptoms cannot be fully explained by an identifiable medical condition or the direct effect of a substance, nor are they due to another mental disorder (American Psychiatric Association, 2000). Somatoform disorders include conversion disorder, somatization disorder, hypochondriasis, body dysmorphic disorder and pain disorder.

The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5, American Psychiatric Association, 2013), released during the period of this study, has approximately the same number of conditions as its predecessor (324 down from 374) (Grohol, 2013). Whilst there are some nosological changes and changes to form in DSM-5 (see tables 1-2 below and tables 23-24 in Appendix A), very little of substance changed that is relevant to this study.

Table 1. Changes from DSM-IV-TR to DSM-5 (Peele, Goldstein, & Crowel, 2013)

DSM-IV-TR	DSM-5
Multiaxial	No axes
Not otherwise specified (NOS)	Replaced with “other disorder” or “unspecified disorder”
Coded diagnosable conditions, 374	Coded diagnosable conditions, 324
Number of ICD-9-CM’s factors influencing health status, V-codes, 22	Number of ICD-9-CM’s factors influencing health status, V-codes listed, 88
Number of ICD-9-CM’s codes ex-	Number of ICD-9-CM’s codes explicating abuse

placating abuse (995.xx), 5 abuse codes

(995.xx), 44 abuse codes

DSM-IV-TR = *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (American Psychiatric Association, 2000), DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (American Psychiatric Association, 2013), ICD-9-CM = *The International Classification of Diseases*, Ninth Edition, Clinical Modification (National Center for Health Statistics & Centers for Medicare and Medicaid Services, 2010).

Table 2. DSM-IV-TR disorders combined in DSM-5 (Peele et al., 2013)

DSM-IV-TR	DSM-5
Expressive language disorder and mixed receptive expressive language disorder	Language disorder
Autistic disorder, Asperger disorder, childhood disintegrative disorder, and Rett disorder	Autism spectrum disorder
Shared psychotic disorder and delusional disorder	Delusional disorder
Catatonic schizophrenia, disorganized schizophrenia, paranoid schizophrenia, residual schizophrenia, undifferentiated schizophrenia	Schizophrenia
Bipolar disorder, most recent episode mixed	Bipolar disorder I or II (no unique code in DSM-5)
Panic disorder without agoraphobia and panic disorder with agoraphobia	Panic disorder
Dissociative fugue and dissociative amnesia	Dissociative amnesia
Somatization disorder, undifferentiated somatoform, pain disorder	Somatic symptom disorder
Primary insomnia and insomnia related to another mental disorder	Insomnia disorder
Primary hypersomnia and hypersomnia related to another mental disorder	Hypersomnia disorder
Sleepwalking disorder and sleep terror disorder	Non-rapid eye movement sleep arousal disorders
Vaginismus and dyspareunia	Genito-pelvic pain/penetration disorder
Sexual aversion	Not listed in DSM-5
Abuse disorder, dependent disorder (alcohol, cannabis, phencyclidine, hallucinogen, inhalant, opioid, stimulant, sedative/hypnotic/anxiolytic, and other use disorder	Use disorders (mild or moderate/severe)
Polysubstance dependence	Not listed in DSM-5

DSM-IV-TR = *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (American Psychiatric Association, 2000), DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (American Psychiatric Association, 2013).

The circumstance where a person is said to meet diagnostic criteria for both one or more substance use disorders and one or more mental disorders at the same time has been described using a variety of phrases including mentally ill chemical abuser (MICA or MICAA), mentally ill substance user (MISA), mentally ill substance using (MISU), chemically abusing mentally ill, or chemically addicted mentally ill (CAMI), substance abusing mentally ill (SAMI), mentally ill chemically dependent (MICD), dually diagnosed, dually disordered, co-morbidity, comorbidity, comorbid disorders, complex presentations, concurrent disorders, co-existing disorders and individuals with co-occurring psychiatric and substance misuse disorders (ICOPSD) (Center for Substance Abuse Treatment, 2005; Queensland Health, 2010). Many of these terms do not sit well with recovery-oriented approaches that seek to avoid labeling people and thereby reducing their human experience and identity to an often stigmatized mental and/or substance use disorder label. Some of the above terms have also been used to refer to different situations causing some confusion and necessitating a careful examination of the circumstance being described whenever one encounters any of these terms. For example “co-morbidity” as a neologism in medicine was first used by Feinstein in 1970 to describe any co-existing clinical entity to an index disease under study and “dual diagnosis” can refer to the co-occurrence of a mental disorder and a developmental disorder (Feinstein, 1970). Amongst these variations in terminology, according to Croton (2005a) the most longstanding and widely recognised term is ‘dual diagnosis.’ This term has been criticized for failing to acknowledge that there may be more than two diagnoses for an individual and for portraying individuals in this situation as more homogenous than they are (Drake et al., 2001; Howard, Stubbs, & Arcuri, 2007). The term ‘comorbidity’ has currency in Australia but has also been criticized by carer groups for its pathological overtones

(Croton, 2011). ‘Co-occurring disorders’ is the preferred term in the United States of America (Croton, 2005a). Most recently a new phrase, ‘mental health-substance use’ has appeared (Croton, 2011). This thesis will use the term ‘co-occurring disorders’ (COD), but other terms such as comorbid mental disorder(s) and comorbidity may be used synonymously where appropriate.

A concurrent diagnosis with at least one or more mental disorders and one or more substance use disorders is necessary for a person to be said to have “co-occurring disorders” (Center for Substance Abuse Treatment, 2005). It should be recognised, however, that whatever the descriptive term employed, it is being appended to a functionally and diagnostically heterogeneous group with a range of clinical needs (Ridgely, Goldman, & Willenbring, 1990).

In short, the term co-occurring disorder includes a multiplicity of diagnostic categories, a broad range of severities of disorder, and a potential for confounding between severity in one area and diagnosis in another (Flynn & Brown, 2008, p. 38).

The term “co-occurring disorders” therefore refers to the co-occurrence of all types of substance use and mental disorders at all levels of severity (Flynn & Brown, 2008).

A Note on Aetiology

An extensive literature has built up attesting to the strong association between substance use disorders and mental disorders and at least five different models have been proposed to explain possible aetiological mechanisms underlying this apparent association (Merikangas et al., 1998). These aetiological models may be categorised as secondary psychopathology models, secondary substance abuse models, bidirectional models, common-factor models, and a final type of model which proposes the two conditions are unrelated (Hall, 1996; Kay-Lambkin, Baker, & Lewin, 2004). Of the five, only the final model allows that the rate of co-occurrence could simply be a statistical phenomenon (Lehman, Myers, & Corty, 1989).

Secondary psychopathology models propose mental disorder problems are triggered (caused) by substance misuse in individuals who have an existing vulnerability to mental disorder (Dixon, Haas, Weiden, Sweeny, & Frances, 1991; Kay-Lambkin et al., 2004; Soar, 2003). According to Zubin and Spring who first elucidated the model, each human is endowed with a degree of vulnerability that under varying circumstances will express itself as an episode of mental disorder (1977). In the context of co-occurring substance misuse with psychosis, the vulnerability model posits substance use as causally related to the onset and relapse of mental disorder (Hides, Lubman, & Dawe, 2004). A large number of studies have demonstrated a simple association between substance misuse and psychosis (Degenhardt & Hall, 2001; Hall, 1998; Solowij & Michie, 2007; Tien & Anthony, 1990). In some research correlational, cross-sectional and prospective data has suggested causation when there is a temporal sequence involved (when substance use, predominantly cannabis, precedes the onset or relapse of psychosis cross-sectionally or prospectively) (Berglund & Ojehagen, 1998). According to Mueser, Drake and Wallach (1998), however, there are several reasons why the temporal order of onset does not clearly demonstrate causative aetiology. Firstly these authors note that onset is gradual for both mental disorders and substance use disorders with no clear demarcation of the moment of onset (Mueser et al., 1998). Further, attempts to find demographic or clinical differences based upon the order of onset have failed (Mueser et al., 1998). It may also be added that epidemiological data support an earlier median age of onset for mental disorders than substance use disorders and not the other way around. For example, during 2001-2003 83.5% of 9, 282 respondents with a lifetime history of comorbidity reported that the mental disorder arose before any abuse or dependence upon substances in the nationally representative National Comorbidity Survey Replication conducted in the

United States of America (Kessler, Berglund, Demler, Jin, & Walters, 2005; Kessler et al., 1996). Additionally, no aetiological mechanisms underlying any proposed causative process or processes have been elaborated by researchers who support this model. It would seem equally possible it is a common vulnerability underlying both the substance use and the mental disorder(s) as it is one disorder causing the other. Given that rates of mental disorder (including psychosis) have been relatively stable or perhaps even fallen in the general population while rates of substance misuse have increased significantly during the same time period, a directly causal relationship seems less likely (Degenhardt, Hall, & Lynskey, 2003; Der, Gupta, & Murray, 1990; Jablensky, 1995 for a review; Joyce, 1987). A number of reviews of the available evidence have been unable to reach any strong conclusions on causality (Hall, 1998; Hall, Degenhardt, & Teesson, 2004; Thornicroft, 1990).

Secondary substance misuse models posit that mental disorder increases a person's susceptibility to substance misuse or given an alternate formulation that mental disorder symptoms lead to substance misuse (Kay-Lambkin et al., 2004; Soar, 2003). Based upon psychodynamic work in the 1970s early formulations of this theory established a self-medication hypothesis whereby susceptible (mentally disordered) individuals were drawn to substance misuse by the specific psychotropic effects of substances intentionally chosen to alleviate the symptoms and general malaise of their mental disorder (Khantzian, 1985). In the context of psychosis and substance misuse, Hides and others refer to this theory as the self-medication (coping) model (2004). The basic premise of this model is that people with mental disorder symptoms self-medicate to provide relief from the accompanying general symptoms of dysphoria and therefore to help cope with the debilitating effects of chronic mental disorder (Hides et al., 2004). Relying upon correlational, time sequenced cross-sectional and prospec-

tive data, some researchers assert there is little evidence for the self-medicating/coping model (Hides et al., 2004; Mueser, Yarnold, & Bellack, 1992). Other researchers think there is evidence (Berglund & Ojehagen, 1998; Brady et al., 1990; Deykin, Levy, & Wells, 1986; Dixon et al., 1991) and argue the self-medication model is one of the most compelling reasons why people with a mental disorder use drugs (Khantzian, 1985).

Bidirectional models assert that mental disorders and substance misuse disorders interrelate. Thereby either or both disorders may influence the other(s) (Soar, 2003). According to this model multiple different factors may be involved in causing mental disorder problems and substance misuse problems (Kay-Lambkin et al., 2004). In 1998 commentators stated that despite intuitive appeal, bidirectional models remained largely untested and theoretical (Mueser et al., 1998). However, one example of a bidirectional model did find that personality traits are both influenced by, but also play a role in, the development of a lifetime history of alcohol dependence and abuse and also of anxiety and depression (Ostlund, Spak, & Sundh, 2004).

Common factor models involve one or more common factors thought to increase the risk of both mental and substance use disorders. Possible common factors include personality disorder(s), genetic factors, neurobiological problems and stressful events (Kay-Lambkin et al., 2004). There is moderately strong evidence Antisocial Personality Disorder is a common factor that contributes to increased rates of COD (Mueser et al., 1998). Other factors that have been proposed include socioenvironmental stress (e.g., poverty, unemployment), poor social competence (Soar, 2003) socioeconomic status and cognitive functioning (Mueser et al., 1998). A number of studies may be cited as evidence that shared genetic factors do not account for increased rates of comorbidity (Mueser et al., 1998), however, one example of a com-

mon factor model based upon genetics is provided by Wilhelm, Wedgwood, Niven and Kay-Lambkin (2006). In the case of smoking/nicotine dependence these authors opine that a common genetic vulnerability could increase both the likelihood of experiencing depression and the likelihood of experiencing the positive effects of nicotine (an elevation in mood, subjective increases in wellbeing and even anti-depressant properties through excitation of the serotonergic system) (Wilhelm et al., 2006).

Finally the unrelated model suggests mental disorders and substance use disorders may be unrelated (Kay-Lambkin et al., 2004). A personality model provides an example of one of these “unrelated” models (2004). This personality model proposes two different enduring personality characteristics as causative of substance misuse in those with mental disorder (psychosis). Neuroticism (habitually negative mood states, low stress tolerance and control of one’s mood) and impulsivity (sensation-seeking, risk taking and behavioural disinhibition) (Hides et al., 2004). Essentially the model suggests that people with high neuroticism and impulsivity do not deal well with stress when it is encountered, choosing harmful ways to deal with it (substance misuse). Although initially unrelated, disorders may still interact and exacerbate each other under the unrelated model (Lehman et al., 1989).

Comorbid psychiatric disturbance can arise prior to, concurrently with, or following the commencement of substance abuse. There is an additive effect, a cumulative interaction between the two disorder types, but there is no persuasive evidence to suggest one model should be adopted over others to explain any possible association between the aetiology of the two (Howard et al., 2007; Wilhelm et al., 2006). Instead researchers assume no single model accounts for all cases of comorbidity and allow both that different models may explain comorbidity in different COD subgroups and that more than one model may apply to an individual (Lehman et al., 1989; Mueser et

al., 1998; Wilhelm et al., 2006). It should be recognised that '[a]s in other areas of medicine, monolithic theories about etiology, coupled with simplistic approaches to treatment, spells disaster for patients with complicated problems' (Mirin, 1988, p. 154).

Costs and Consequences of Co-occurring Disorders

Substance use disorders and mental disorders are significant personal and societal problems. Monetarily, estimates vary as to the exact annual cost to society of substance-related problems, but all the estimates agree that it is a huge amount of money. For example, whilst it has been asserted the annual estimated cost to society of substance-related problems worldwide is more than US\$200 billion (Fabricius, Langa, & Wilson, 2008), there are also estimates of US\$600 billion and more recently US\$700 billion that cover the United States alone (National Institute on Drug Abuse, 2012, 2015). The social cost of alcohol and drug abuse in Australia alone was estimated at AUD\$55.2 billion during the 2004/2005 financial year (July 1, 2004 to June 30, 2005) (Collins & Lapsley, 2008). Such figures suggest the worldwide US\$200 billion figure is likely to be a gross underestimation. The AUD\$55.2 billion total cost of alcohol and drug abuse in Australia during 2004/2005 consisted of AUD\$15.3 billion due to abuse of alcohol (27.3%), AUD\$31.5 billion due to tobacco (56.2%) and AUD\$8.2 billion due to the abuse of illicit drugs (14.6%) (Collins & Lapsley, 2008). Irrespective of the exact accuracy of what are very large figures, the monetary costs of alcohol and drug misuse are significant and they are on the rise, having risen by 23% in Australia from 1998/99 to 2004/05 in adjusted dollars (Collins & Lapsley, 2008).

Like substance use disorders, there is no question mental disorders in and of themselves are an enormous burden on the individual and society as a whole. Mental disorders caused more than 18% of disability worldwide according to the Global Bur-

den of Disease study conducted by the World Health Organization (Lopez & Murray, 1998). Measured by the number of years living with a disabling condition, depression has been reported as the leading cause of disability worldwide (Edward, Hearity, & Felstead, 2012; Murray & Lopez, 1996). The burden of mental disorders even exceeds the burden of disease caused by all cancers (Alonso et al., 2004). In Australia in 2004, mental disorders were the leading cause of the nonfatal burden of disease and injury and third only to cancer and cardiovascular disease as the leading overall cause of the burden of (fatal and nonfatal) disease and injury (Begg et al., 2007).

Comorbidity or suffering both substance use and mental disorders at the same time also has important consequences for society and the individual. Problems facing people with CODs include poorer treatment response (Grella & Stein, 2006; Hasin et al., 2002), increased incidence of relapse (Hasin et al., 2002; Mueser et al., 1998; Swofford, Kasckow, Scheller-Gilkey, & Inderbitzin, 1996), an inability to maintain functional stability (Ziedonis & Stern, 2001), family difficulties and limited social relationships (Ziedonis & Stern, 2001), increased unemployment (Ziedonis & Stern, 2001), victimization (Goodman, Rosenberg, Mueser, & Drake, 1997), incarceration (Abram & Teplin, 1991), violence (M. S. Swartz et al., 1998), depression, suicidal behaviour (Bartels, Drake, & McHugo, 1992), homelessness (Drake, Osher, & Wallach, 1991), hospitalization (Haywood et al., 1995), HIV (Adams, 2008; Brunette, Mueser, & Drake, 2004), and Hepatitis C (Rosenberg et al., 2001). On a systemic-basis undetected comorbidity leads to higher service utilization and costs (Dickey & Azeni, 1996). Combined data from 2010-2011 in the United States of America showed that 44.7% of past year emergency room visits in that country were from adults with co-occurring mental and substance use disorders (Substance Abuse and Mental Health Services Administration, 2013). In 2005, in most cases in Australia

where a mental or behavioral disorder was recorded as the underlying cause of death, the abuse of psychoactive substances such as alcohol and heroin was also involved (Australian Institute of Health and Welfare, 2008).

The Clinical Emergence of Co-Occurring Disorders

Internationally, the problem of co-occurring disorders was first highlighted by clinicians who identified “young mentally disordered vagrants” and “young adult chronic patients” in the mid 1970s to early 1980s (Bachrach, 1982; Bassuk & Gerson, 1980; Caton, 1981; Pepper, Kirshner, & Ryglewicz, 1981; Robbins, Stern, Robbins, & Margolin, 1978; Segal, Baumohl, & Johnson, 1976-1977; S. R. Swartz & Goldfinger, 1981). The young adult chronic patients, as opposed to older deinstitutionalized patients, were the first of the post-deinstitutionalization generation of people with chronic mental disorder who had never been institutionalised in asylums for a significant period of time (S. R. Swartz & Goldfinger, 1981). These quite quickly came to be described as ‘a problem of considerable dimension, one seriously compromising the operation of the mental health system’ (Galanter, Castaneda, & Ferman, 1988, p. 231). When the asylums were progressively closed from the 1950s onwards, people with chronic mental disorders were moved out of institutions into the world to face all the demands and pitfalls of daily living including access to substances of abuse. At the same time as these past institutionalised patients were being disinterred from the institutions, a new generation of people with serious mental disorder also arrived who twenty or thirty years previously would have been long-term asylum patients, but instead were now supposed to be managed in the community (Bachrach, 1982). According to some with the benefit of hindsight this era of deinstitutionalization into a society with high availability of substances set the scene for the co-occurrence of substance use and mental disorder becoming a serious social concern (Mueser et al., 1998). The

heavy patterns of ineffective service utilisation characteristic of this new population were of great concern to early commentators (Ridgely et al., 1990). These patients were quickly known as regulars at hospital emergency departments and psychiatric units and according to some authors it was particularly those with histories of drug abuse who evidenced a service utilisation pattern described as intensively ‘heavy, discontinuous, and episodic’ (Richardson, Craig, & Haugland, 1985, p. 104).

Segal and Baumohl (1980) and Prevost (1982) give two early summaries of the system-stressing characteristics of the co-occurring disorder population:

The chronically dysfunctional have long histories of unemployment and minimal occupational skills. They show consistently poor judgment in the management of their finances and social relationships and have long-standing psychological problems that have resulted in multiple hospitalizations and frequent minor entanglements with the law. They are often said to be drug or alcohol abusers and are described as “minimizing,” “denying,” and “projecting” responsibility for their problems. Characteristically they do not follow through on treatment plans (Segal & Baumohl, 1980, p. 359).

We do know that although these patients do not make up a diagnostically homogeneous population, they have certain characteristics in common. They have difficulty forming stable relationships and have little or no natural support systems. Socially and psychologically fragile, and often psychotic, they are acutely vulnerable to stress. They frustrate our treatment efforts, resist ongoing affiliation, and frequently choose a sporadic semi-involvement during recurring crisis periods in their lives (Prevost, 1982, p. 173).

In the thirty-five years since this description three research findings have consistently come out of studies into this population: 1) the co-occurrence of substance-related disorders and mental disorders is common, indeed in clinical settings co-occurring disorders are expected to be the rule, not the exception (Ridgely et al., 1990); 2) comorbidity is associated with a plethora of negative outcomes (already noted above), and 3) the parallel but separate mental disorder and substance misuse treatment systems have delivered fragmented and ineffective care to this population (Drake et al., 2001).

The Emergence of Co-Occurring Disorders in Research

Knowledge of co-occurring disorders originally emerged as an unexpected feature of research into the epidemiology of mental disorders in the United States of America. Internationally, epidemiological surveys of the population prevalence of CODs are dominated by two large studies done in the United States, the National Epidemiological Catchment Area (ECA) Study and the National Comorbidity Survey (NCS). Between them the Ecological Catchment Area Study and the National Comorbidity Survey established the methods of modern psychiatric epidemiology (Insel & Fenton, 2005). It was these population-based surveys, and others that subsequently mirrored them internationally, (including Australia's 1997 and 2007 National Surveys of Mental Health and Wellbeing), that brought to light the size and scope of the co-occurring disorders problem on an international, population-wide basis. It is because of these studies that we know the prevalence of CODs among the general population is high (Kessler et al., 1996).

The National Institute for Mental Health's multisite Ecological Catchment Area study (ECA) aimed to estimate the prevalence rates of mental disorders in the United States population. It became 'the largest, most comprehensive survey of mental disorders ever conducted in the United States' (Bourdon, Rae, Locke, Narrow, & Regier, 1992, p. 663). A collaborative research project, the ECA was conducted from 1980 to 1984 by five university research teams sponsored by the National Institute for Mental Health (NIMH): Yale University (New Haven), Johns Hopkins University (Baltimore), Washington University (St Louis), Duke University (North Carolina) and the University of California at Los Angeles (UCLA) (Los Angeles) (Bourdon et al., 1992; Regier et al., 1990). The five geographically-defined catchment areas had populations ranging from 270,000 to 420,000 (Regier et al., 1988). From these, the ECA

study originally surveyed a total of 18,571 household and 2,290 institutional residents personally or by proxy means (Bourdon et al., 1992). Whilst the ECA study was considered the largest and most comprehensive survey of mental disorders ever conducted at the time, the methodology the study employed involved surveying people from five distinct areas only – instead of surveying a nationally representative sample. This method has subsequently been criticized as being a significant flaw that resulted in the study not being generalizable (Helzer & Pryzbeck, (1988). The sample reported on and used for the prevalence rates cited below excludes the proxy interviews, leaving a total of 20,291 participants. These participants went through two interviews one-year apart with a telephone interview in between (Bourdon et al., 1992). They were assessed for current disorders according to the third edition of the *Diagnostic and Statistical Manual for Mental Disorders* (American Psychiatric Association, 1980) over the past month, past six-months, past year and over their entire lifetime using the NIMH Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) (Bourdon et al., 1992; Regier et al., 1990). The prevalence of mental disorders recorded by the ECA study is reported in Table 3 below.

Table 3. Ecological Catchment Area Survey Disorder Prevalence Rates (Regier et al., 1990).

Drug/Disorder Type	1 Month Prevalence	6 Months Prevalence	Lifetime Prevalence
Any Disorder	15.7%	19.5%	32.7%
Mental Disorders	13%	15.1%	22.5%
Anxiety	7.3%	8.9%	14.6%
Affect	5.2%	5.8%	8.3%
Schizophrenic	0.7%	0.9%	1.5%
Substance Use Disorders	3.8%	6.1%	16.7%
Alcohol	2.8%	4.8%	13.5%
Other Drug	1.3%	2%	6.1%

Substance use disorders accounted for a high proportion of the disorders detected by the ECA study. Alcohol disorders were the most frequently detected disorder

der and other drug disorders were the third most frequently detected disorder (Helzer & Pryzbeck, 1988). The median age of onset for disorders as a whole was 16 years, the median duration people experienced disorders as a whole 10.4 years and 75% of all disorders had their onset before 24 years of age (Hall, 1996). The median age of onset for anxiety disorders was 15 years, for drug disorders 19 years and for alcohol disorders 21 years (Christie et al., 1988).

The ECA study's figures on comorbidity concentrate on lifetime comorbidity, or the experience of a person having one or more disorders over the course of their lives, (not necessarily concurrently) (Regier et al., 1990). More than 60% of the 33% of ECA respondents with at least one lifetime disorder had two or more disorders (Kessler et al., 1994). Of the 22.5% who had a lifetime prevalence for a non-substance-related mental disorder, 16.2% had mental disorders only, 3.1% had mental and alcohol disorders, 1.5% had mental and other drug disorders and 1.7% had disorders from all three categories combined (Regier et al., 1990). Eighty percent of these respondents with multiple disorders reported onset before the age of 20 (Christie et al., 1988). Those with a lifetime history of alcohol disorder were almost twice as likely to have a (comorbid) mental disorder (37%) than the general population (Regier et al., 1990). Perhaps most significantly, 53% of those with a drug other than alcohol disorder also had a lifetime history of comorbid mental disorder, a rate more than double that found in the general population (Regier et al., 1990).

A methodological advantage that the ECA study enjoyed over predecessor community studies was its measurement of base-rates for positive and negative groups on a disorder-by-disorder basis (Regier et al., 1984; Weissman, Myers, & Harding, 1980). This allowed proper odds ratios to be calculated reporting on the increased risk of having a comorbid disorder given the presence of an initial disorder

(Regier et al., 1990). The adjusted odds ratios or increased risks of having a comorbid mental or alcohol and other drug disorder for those with, as opposed to those without specific disorders are reported in Table 4 below:

Table 4. Odds Ratios For Comorbidity On a Disorder-by-Disorder Basis (Regier et al., 1990)

Initial Disorder	Odds Ratio Comorbid Mental	Odds Ratio Comorbid Substance
Alcohol	2.3*	
Other Drug	4.5*	
Marijuana	3.8	
Cocaine	11.3	
Opiate	6.7	
Barbiturate	10.8	
Amphetamine	6.2	
Hallucinogen	8.0	
Mental		2.2
Anxiety		1.7
Schizophrenia		4.6

*Significant at $p < .001$

These figures revealed for the first time those with an alcohol disorder were 2.3 times more likely to have a comorbid mental disorder than those without an alcohol disorder. Those with a drug other than alcohol disorder were 4.5 times more likely to have a comorbid mental disorder than those without a drug other than alcohol disorder (Regier et al., 1990). These figures agreed with other studies conducted around the same time that reported when drug problem severity increases, likelihoods for comorbid disorders also increase (Flynn, Craddock, Luckey, Hubbard, & Duntelman, 1996; H. E. Ross, Glaser, & Germanson, 1988). On a disorder-by-disorder basis, some of the odds ratios of suffering a comorbid mental disorder given a certain substance use disorder were quite remarkable: for example those with cocaine disorders had 13.2 times as many schizophrenia disorders as those without cocaine disorders (Regier et al., 1990).

Examined from the reverse standpoint of those with a mental disorder, individuals with a lifetime history of a mental disorder were 2.2 times as likely to have a

substance use disorder (with a lifetime prevalence of substance use disorders of 28.9% against a general population rate of 16.7% and a rate of 13.2% among those who did not have a mental disorder) (Regier et al., 1990). Forty-seven percent of those with a schizophrenia disorder had a comorbid substance use disorder, 4.6 times as many as those without a schizophrenia disorder (Regier et al., 1990). Those with an anxiety disorder were 1.7 times more likely to have a substance use disorder as those without an anxiety disorder (Regier et al., 1990).

Finally, it was also notable that with alcohol use disorders, there was a strong association between alcohol disorders and gender (Hall, 1996). The lifetime prevalence of alcohol disorders was 24% for men and 5% for women while the 12-month prevalences were 12% for men and only 2% for women (Hall, 1996). Men also reported a significantly higher lifetime prevalence of mental, alcohol and other drug disorders overall (35.4% for men vs. 30.0% for women, $p < .01$) (Bourdon et al., 1992). The extent of comorbidity revealed by the landmark ECA study provided the impetus for a follow-up NIMH-supported National Comorbidity Survey (NCS) (Bourdon et al., 1992). The mental disorder screening measure used in the ECA, the Diagnostic Interview Schedule, was also developed by an international taskforce auspiced by the World Health Organisation into the Composite International Diagnostic Interview (CIDI) (Bourdon et al., 1992; Robins et al., 1988).

The National Comorbidity Survey (NCS) was a congressionally-mandated study into the comorbidity between substance-related mental disorders and non-substance-related mental disorders conducted between September 14, 1990 and February 6, 1992 (Kessler et al., 1994). The NCS was the first time a structured psychiatric interview had been administered to a nationally-representative sample (Kessler et al., 1994). For this collaborative, epidemiologic investigation, 8098 respondents com-

prised a ‘stratified, multistage area probability sample of persons aged 15 to 54 years in the noninstitutionalized civilian population in the 48 coterminous states’ (Kessler et al., 1994, p. 18).

The NCS had several advantages over the Ecological Catchment Area study: 1) countering some criticisms of the ECA study (e.g., made by Helzer and Pryzbeck (1988)), the NCS sample was a genuinely nationally representative sample; 2) NCS diagnoses were based upon the revised third edition of the *Diagnostic and Statistical Manual for Mental Disorders* (American Psychiatric Association, 1987), an update from the third edition; and 3) in addition to prevalence and incidence, the NCS focused in upon risk factors as well (Kessler et al., 1994).

The NCS used a modified version of the newly developed Composite International Diagnostic Interview (CIDI) (Robins et al., 1988) to report upon the lifetime prevalence and 12-month prevalence of 14 DSM-III-R disorders (Kessler et al., 1994). Major depression, mania, dysthymia, panic disorder, agoraphobia, social phobia, simple phobia, generalized anxiety disorder, alcohol abuse, alcohol dependence, drug abuse, drug dependence, antisocial personality disorder and nonaffective psychosis (NAP) were assessed. NAP was a summary category for schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder and atypical psychosis (Kessler et al., 1994). “Severe disorders” were defined as ‘(1) 12-month mania or NAP, (2) lifetime mania or NAP with 12-month treatment or role impairment, or (3) 12-month depression or panic disorder with severe impairment (hospitalization or use of antipsychotic medication)’ (Kessler et al., 1994, p. 9). Any respondent who reported psychotic symptoms was re-interviewed by experienced clinicians using an adapted version of the Structured Clinical Interview for DSM-III-R (Spitzer, Williams, Gibbon, & First, 1988, 1992) due to this instrument’s reliability in the di-

agnosis of schizophrenia (Kessler et al., 1994; Williams et al., 1992). NCS diagnoses of NAP were based upon these clinical re-interviews, not the CIDI (Kessler et al., 1994). Table 5 below contains the prevalence rates reported by the nationally representative National Comorbidity Survey and also notes the comparable ECA study lifetime prevalence.

Table 5. National Comorbidity Survey Disorder Prevalence Rates (Kessler et al., 1994; Regier et al., 1990)

Drug/Disorder Type	NCS 12-Month Prevalence	NCS Lifetime Prevalence	ECA Study Lifetime Prevalence
Any Disorder	29.5%	48%	32.7%
Substance Use Disorder	11.3%	26.6%	16.7%
Anxiety Disorders	17.2%	24.9%	14.6%
Affective Disorders	11.3%	19.3%	8.3%
Psychosis	0.5%	0.7%	1.5%

NCS = National Comorbidity Study, ECA = Ecological Catchment Area Survey.

The prevalence figures for substance use disorders reported by the NCS suggested slightly more than one-in-four Americans would experience a substance use disorder in their lifetime and that more than one-in-ten Americans were currently experiencing a substance use disorder at any given time. The retrospectively reported median age of onset for mental disorders was 11-years-old and for substance use disorders 21-years-old (Kessler et al., 1996). Anthony and colleagues published a report that included both the incidence and prevalence of any non-medical use of each substance as recorded by the NCS (Anthony, Warner, & Kessler, 1994). The figures are reported in Table 6.

Table 6. Prevalence of non-medical lifetime use and dependence on substances (Anthony et al., 1994)

Substance	Lifetime Use (%)	Dependence (%)
Alcohol	91.5%	14.1%
Cannabis	46.3%	4.2%
Cocaine	16.2%	2.7%
Stimulant (Amphetamine)	15.3%	1.7%
Anxiolytic/Sedative/Hypnotic	12.7%	1.2%
Analgesic	9.7%	0.7%
Psychedelic	10.6%	0.5%
Heroin	1.5%	0.4%
Inhalant	6.8%	0.3%

Notably for comorbidity; of the 48% of respondents who reported a lifetime history of disorder, 21% had one disorder, 13% had two disorders and 14% had three or more disorders (Kessler et al., 1994). These figures revealed for the first time on a population-wide basis that 56% (or more than half) of Americans who had a lifetime history of disorder, had more than one disorder in that lifetime (or that comorbidity was more likely than not) (Kessler et al., 1994). The rates of co-occurring mental disorders in those with a substance-related disorder were also high. Of those with a lifetime substance-related disorder 51.4% also had at least one lifetime mental disorder (Kessler et al., 1996). Of those with a 12-month substance-related disorder 42.7% also had at least one 12-month mental disorder (Kessler et al., 1996). Conversely among those with a lifetime mental disorder, 50.9% also had at least one lifetime substance-related disorder and among those with a 12-month mental disorder, 14.7% also had at least one 12-month substance-related disorder (Kessler et al., 1996). These figures revealed that at any given point in time (12-month prevalence) the rate of co-occurrence of mental disorders in those with a substance-related disorder was much higher than the co-occurrence of a substance-related disorder in those with a mental disorder (42.7% vs. 14.7%). That is, a co-occurring disorder of the other type was much more common among the substance-disordered than the mentally disordered (Kessler et al., 1996). Another interesting measurement relevant to comorbidity the NCS offered was a temporal analysis of which type of disorder occurred first in those with comorbidity. This analysis revealed that among respondents with a lifetime history of comorbidity 83.5% retrospectively reported that the mental disorder arose before any abuse or dependence upon substances (Kessler et al., 1996). Among the 12-month co-occurring disordered, 89.3% retrospectively reported the mental disorder arose before the substance use disorder (Kessler et al., 1996).

A major finding of the NCS was that the great majority of current (12-month) psychiatric burden in society was concentrated in a highly comorbid 14% of respondents who had a lifetime prevalence of three or more disorders (Kessler et al., 1994). This highly comorbid sixth of the population suffered six-of-every-ten (58%) 12-month disorders and nearly nine-of-every-ten (89%) severe 12-month disorders recorded in the survey (Kessler et al., 1994). It is to this highly comorbid sub-population this thesis will return when it examines co-occurring disorders among those in residential treatment.

The NCS figures on the population prevalence of mental disorders and the population prevalence of the co-occurrence of mental disorders and substance use disorders represented significant increases on those reported by the ECA study (Kessler et al., 1996). The figures on substance use disorders were generally similar, except for an increase in cocaine disorders (Anthony et al., 1994). The NCS found that 51% of those with a lifetime history of substance-related disorder also had a lifetime history of mental disorder compared to the Ecological Catchment Area study figure which was only 38% (Kessler et al., 1996). As a result of the NCS the lifetime prevalence of any disorder among the United States population was now estimated at just under one-in-two people and the 12-month prevalence for current disorder was nearly one-in-three Americans (Kessler et al., 1994). Fifty-one percent or one-in-two Americans had tried an illicit drug over their lifetime and the rate of drug dependence was the highest of any country on record (Anthony et al., 1994). Comorbidity of substance-related and non-substance-related disorders was also now known to be more likely than not on a population-wide basis (Kessler et al., 1994). For some commentators the implications of the NCS results were clear, Hall stated:

We need to improve our ability to treat people who have co-morbid mental and substance use disorders. Specialist mental health services need to be better at recognizing and treating co-morbid substance use disorders among their clients. ... Specialist

drug and alcohol staff have a similar responsibility to recognize mental health disorders among their clients (Hall, 1996, p. 168).

Kessler agreed, saying:

These results have a number of implications for treatment. Perhaps the most obvious is that special assessment and treatment procedures are needed for patients who present with co-occurring addictive and mental disorders. ... In addition, clinicians should routinely consider the possibility of a co-occurring disorder [and] [a]mong patients with only one type of disorder ... clinicians should be aware that these patients are at increased risk of the subsequent occurrence of later disorders ... making them prime candidates for preventive interventions (Kessler et al., 1996, p. 29).

The figures and findings reported by the nationally-representative NCS have subsequently been mirrored throughout the world in epidemiological studies conducted over the past two decades (Australian Bureau of Statistics, 2007; Merikangas et al., 1998; WHO International Consortium in Psychiatric Epidemiology, 2000). The National Institute of Mental Health Epidemiologic Catchment Area study and the National Comorbidity Survey were formative to the field of psychiatric epidemiology, but they are not without limitations and nor have they gone without criticism. Both studies (and subsequent epidemiological studies) have been criticised for not proceeding beyond merely describing a range of demographic correlates associated with mental disorder to clarifying how such factors may operate (Weissman, 1987). In this sense they were thought by some to present findings with little utility to the mental health of ill people (Weissman, 1987). The methodology the two studies employed has also been criticised for using a cross-sectional, single point in time retrieval of lifetime psychopathology approach that is heavily reliant upon long term recall (Anthony, Eaton, & Henderson, 1995; Giuffra & Risch, 1994). This methodology that relies upon memory has been criticised as severely underestimating the effects of forgetting and is therefore thought to underestimate the rates of lifetime prevalence (Giuffra & Risch, 1994; Simon & VonKorff, 1995). In this regard the ECA and NCS studies have been criticised for presuming the accuracy of long-term recall even though autobiographic memory is often affected in numerous psychiatric disorders

(Simon & VonKorff, 1995). Follow-up interviews conducted 12-months after the ECA study found significant discrepancies in the 12-month and lifetime psychiatric histories self-reported by respondents when both original and follow-up diagnostic information was considered. Twelve-month disorder rates rose from 20% to 28% and lifetime rates from 32% to 44% (Regier et al., 1998). A study that simulated an ECA/NCS type study but instituted a constant rate of forgetting among respondents produced the exact cohort effects seen in the ECA and NCS studies (where the rates of mental disorders were higher in younger cohorts than older cohorts who have had more time to forget earlier incidences of disorder in their lives). In the ECA study, for example, the 25-44 year old cohort had a higher lifetime prevalence than the 65-and-over cohort on 64 of 68 symptoms used to diagnose disorders (Giuffra & Risch, 1994). The authors involved in this study with simulated rates of forgetting stated forgetting could have a confounding role in producing cohort differences (Giuffra & Risch, 1994). Whether the results reported by the ECA and NCS studies represented genuine cohort effects or were due to the confounding effect of forgetting is therefore unknown due to the methodology used. The authors of the simulated study concluded the ECA/NCS results strongly suggest methodological flaws in data collection (Giuffra & Risch, 1994).

The two Australian versions of the ECA/NCS-type studies were completed in 1997 and 2007. Figures on population-wide comorbidity from the first Australian version of this study, the National Survey of Mental Health and Wellbeing were consistent with the rest of the world and are reported in Table 7 below with the NCS figures for comparison (Andrews, Slade, & Issakidis, 2002; Burns, Teesson, & Lynskey, 2001; Teesson & Burns, 2001; Teesson & Proudfoot, 2003).

Table 7. Epidemiology of Australian Mental Disorders with US Comparison (Henderson, Andrews, & Hall, 2000; Kessler et al., 1994; Teesson, Hall, Lynskey, & Degenhardt, 2000)

Drug/Disorder Type	NSMHWB 12-Month Prevalence (%)	NCS 12-Month Prevalence (%)
Any Disorder	17.7%	29.5%
Anxiety Disorder	9.7%	17.2%
Affective Disorder	5.8%	11.3%
Substance Use Disorder	7.7%	11.3%
Alcohol	6.5%	9.7%
Other Drugs	2.2%	3.6%

NSMHWB = National Survey of Mental Health and Wellbeing, NCS = National Comorbidity Study.

The second Australian epidemiological study, the National Survey of Mental Health and Wellbeing 2 conducted in 2007, also reported results similar to those reported all over the world (Slade et al., 2009). Nearly half (45.5%) of Australians aged 16-85 years had experienced a lifetime anxiety, affect and/or substance use disorder (Slade et al., 2009). One-in-five (20%) had experienced a disorder in the 12-months prior to the survey interview (Slade et al., 2009). These results are reported in Table 8 below with the first Australian national survey as a comparison:

Table 8. Epidemiology of Australian Mental Disorders in 1997 and 2007 (Henderson et al., 2000; Slade et al., 2009; Teesson et al., 2000)

Drug/Disorder Type	NSMHWB 1997 12-Month Prev.	NSMHWB 2007 12-Month Prev.
Any Disorder	17.7%	17.0%
Anxiety Disorder	9.7%	14.4%
Affective Disorder	5.8%	6.2%
Substance Use Disorder	7.7%	5.1%
Alcohol	6.5%	4.3%
Other Drugs	2.2%	1.5%

NSMHWB 1997 = National Survey of Mental Health and Wellbeing 1 conducted in 1997, NSMHWB 2007 = National Survey of Mental Health and Wellbeing 2 conducted in 2007, 12-Month Prev. = 12-month prevalence.

The Australian epidemiologic surveys utilised the same basic methodology as the ECA and NCS studies. They are therefore susceptible to the same criticisms of the limitations and possible flawed methodologies utilised by these studies. The Australian epidemiological surveys found, for example, cohort effects indicating the prevalence of mental disorder declines with age where this may not actually be the case.

The Prevalence of Co-Occurring Disorders in Treatment Populations

In the period between the Ecological Catchment Area study and the National Comorbidity Survey, commentators stated that, ‘Given the apparent magnitude of the dual diagnosis problem, it is notable that there are so few recent studies on the epidemiology of this syndrome’ (Galanter et al., 1988, p. 220). The epidemiology or population-wide prevalence of COD has been well studied and reported since this lament. At the same time as epidemiological research highlighted the population-wide prevalence of co-occurring disorders during the 1990s and 2000s, research into comorbidity among those seeking treatment for mental and alcohol and other drug disorders was also undertaken. This research noted the poorer treatment response and outcomes experienced by those who suffer COD in treatment settings compared to those diagnosed with one disorder alone in such settings, (as noted above). Researchers also investigated whether sequential, parallel or integrated treatment produced better outcomes for the COD population – a question still the subject of debate although commentators favour integrated treatment (Flynn & Brown, 2008). Twenty-five years of COD research in treatment populations later, what has not improved is research into the screening, prevalence and nature of comorbidity in the treatment/clinical population.

This is despite the realisation that,

While much is still to be learned about what constitutes effective treatment, there is general agreement that, in order to provide any treatment, it is first necessary for treating clinicians and agencies to recognize that a co-occurring disorder exists (Croton, 2007, p. 2).

In 2008 Flynn and Brown stated,

There is [still] a need to clarify the rates of COD and, more specifically, the rates of mental disorder among substance abuse treatment clinics. While prevalence for the general population can be seen as having obvious significance for national planning, prevalence in substance abuse treatment programs is the immediate concern of the substance abuse treatment field and constitutes the demand we are required to address (p. 37).

Among researchers it is recognised that, ‘Planning processes need to be informed by accurate estimates of the prevalence of co-occurring disorders and identification of best practice responses’ (Croton, 2005b, p. 3). It is generally accepted that the prevalence of COD in alcohol and other drug (AOD) “treatment-seeking” populations is even higher than that found in the population-wide epidemiological studies (H. E. Ross et al., 1988; Whiteford & Groves, 2009). Internationally, however, estimates of the proportion of AOD clients across all treatment modalities who also suffer from a comorbid mental disorder vary as widely as the methods used to obtain the information. One overview summarized the literature by suggesting that comorbid lifetime mental disorder prevalence in treatment populations is between 50% and 75% (Center for Substance Abuse Treatment, 2007). Figures from 35%-90% are common (Fabricius et al., 2008), with 42-60% estimated in Australia (Cole & Sacks, 2008), 57% in South Africa (Fabricius et al., 2008), just over 50% in the United States (Watkins et al., 2004) and 35%-53% in the United Kingdom (Weaver et al., 2001). The experimental variation used to obtain the above figures, however, renders the research base covering the prevalence of COD in treatment populations largely incomparable and inadequate. See Appendix B for detailed information on the database searches conducted to inform this thesis.

Perhaps the largest dataset that speaks to comorbidity in substance abuse treatment populations in general is the National Survey of Substance Abuse Treatment Facilities (N-SSATS) conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA) in the United States of America (Substance Abuse and Mental Health Services Administration, 2014). In the most recent example of this survey 14,148 of 14,630 treatment facilities responded. This provided a one-day census of 1,249,629 clients enrolled in substance abuse treatment on March 29,

2013. This survey estimates that 563,071 or 45.1% of those 1,249,629 consumers were suffering co-occurring mental disorders on that day (Substance Abuse and Mental Health Services Administration, 2014). Methodologically, however, this figure is based upon each of 14,148 treatment services across the United States of America “estimating” what proportion of their clientele suffered a co-occurring mental disorder without giving any information about how this “estimate” is reached at any of the system, service or individual levels. For example, the estimates of comorbidity in the survey could be made on the basis of existing official diagnoses only. The estimates could be made on the basis of completely different methodologies from one service to the next. Against this uncertain methodological background, variation between the estimated rates of comorbidity reported by the survey ranged from a low of 35.8% in “Other” US Federal Government treatment services to a high of 66.7% in “Department of Veterans Affairs” US Federal Government treatment services. Variation between different facility operations that contain different treatment modalities is to be expected (a topic that will be discussed in significant detail below). But variation across states from a low estimate of 27.6% of all clients in Hawaii to a high estimate of 73.1% of all clients in New Hampshire is unexpected and difficult to explain except through methodological variability. Given the lack of a consistent method of estimating comorbidity being prescribed by the study, such variation on an overall state-to-state basis is likely due to low reliability in the methods used for estimating comorbidity rates. As a result, the overall 45.1% figure is unreliable.

In the case of the residential alcohol and other drug treatment modality up-to-date research on the prevalence of co-occurring disorders in this treatment context simply does not exist. This is because much of the previous research into the prevalence of COD in “treatment” populations reports on collective samples sourced from

mixed treatment modalities. Compton and others (2000), for example, report on a sample aggregated from public outpatient methadone clinics, outpatient and inpatient drug-free programs, outpatient programs for drug-abusing prostitutes and residential recovery shelters for women. Ross and others (1988) and Rush and others (2013) also use a similar mixed-modality aggregated approach. This approach wrongly assumes comorbidity across different treatment modalities is monolithic and that co-occurring disorder sufferers are homogenous. The Committee for the Substance Abuse Coverage Study explains that:

The modalities, [however,] were designed for different types and severities of problems, and prospective clients often have very set ideas about what type of treatment they want. As a result, the profiles of clients admitted to the major modalities are quite different, and one cannot compare the performance or results of each modality with the others as if they were all simply interchangeable (Gerstein & Harwood, 1990, p. 12).

Residential treatment services, for example, are designed for clients ‘with major impairments and social deficits, including histories of serious criminal behaviour’ (Gerstein & Harwood, 1990, p. 188). The overall level of treatment intensity in different treatment modalities increases from a starting point in the outpatient treatment modality to its highest intensity in the residential treatment modality and in theory this should match the levels of problem severity or disability. Clients in different treatment modalities should not have homogenous comorbidity needs and research over a long period of time confirms this is the case (Gerstein & Harwood, 1990; J. Ross et al., 2005). In one large study that countenanced 30-years of research into substance abuse treatment populations using three large datasets that covered several million substance abuse treatment episodes, the authors found across-modality population differences that remained stable over decades (Craddock, Rounds-Bryant, Flynn, & Hubbard, 1997). Craddock and colleagues stated:

Perhaps most importantly, each modality ... [serves] distinctly different clients. [For example, c]ompared with the other clients in other treatment modalities, long-term residential clients... were most likely to be male, most likely to have illegal sources

as their major source of income, least likely to be employed full-time, and most likely to be involved in a criminal lifestyle in the year prior to treatment. ... These commonalities across decades indicate that the distinctiveness of client characteristics held up over time, thus supporting the importance of studying differences among clients in various treatment modalities. Outcomes from treatment must be interpreted within the context of these modality differences (1997, p. 56).

More recently, Ross and others (2005) examined heroin users not seeking treatment and heroin users seeking treatment across three different treatment modalities (detoxification units, residential rehabilitation facilities and outpatient methadone/buprenorphine maintenance agencies). These authors found heroin users in residential treatment services had significantly higher levels of psychological distress, suicide history, Axis I and Axis II disorders (J. Ross et al., 2005). It was concluded that heroin users in residential treatment represented a hard core compared with those in other treatment modalities (J. Ross et al., 2005). A comprehensive review approaching the topic of comorbidity from the reverse standpoint of the prevalence of comorbid alcohol and other drug disorders among those in mental health services also found that the prevalence of comorbidity differed across service settings and geographical areas (Carra & Johnson, 2009). In the light of such research, assuming all co-occurring disorder sufferers across all treatment modalities are homogenous is unjustified and likely to produce inaccurate results, especially where screening instrument validation is concerned, as we will read below. Treating clients from different modalities as an aggregate for the purposes of research does not adequately deal with across-modality client differences. Prevalence research needs to be service-modality-specific to accurately record the needs of clients in each service modality. The population should not be treated as a monolith and results from studies that employ this methodology should be viewed as suggestive only.

The dearth of contemporary data about mental disorder comorbidity in the residential AOD treatment modality is evident in recent reviews (Center for Substance

Abuse Treatment, 2007; Mills et al., 2010). Sources of prevalence rates for mental disorder comorbidity specifically in the residential AOD treatment modality cited in recent reviews are based on research conducted by Nancy Jainchill 30-to-40 years ago in the United States of America (Jainchill, 1994). This research conducted between 1974 and 1984 within therapeutic communities reported a lifetime COD rate of 82% and a 30-day prevalence of just 45% (Jainchill, 1994). But both mental disorder and AOD treatment environments, diagnostic systems and drugs of abuse have changed since this time. This research was also conducted before the emergence of pseudoephedrine-based amphetamines and the drug ice, as well as cannabis of far greater potency, all of which are thought to have a role in psychosis. Additionally, Jainchill's (1994) review identified a 10-year pattern of worsening psychiatric symptoms among those entering treatment for substance use disorders during 1974 to 1984. It is currently unknown whether this worsening trend has continued.

The little research that has been conducted in recent years has tended to focus on samples with specific drug-problem types. For example, research on heroin-taking populations that only investigated the co-occurrence of anxiety and depression (Darke & Ross, 1997) and outpatient clients on methadone maintenance (Callalay, Trauer, Munro, & Whelan, 2001). Or research into the psychological profile of people admitted to a methamphetamine detoxification program (Dyer & Cruickshank, 2005). In 2005 heroin users were again studied, but only depression and posttraumatic stress disorder were assessed (J. Ross et al., 2005). Such subpopulations specifically linked to opioid or amphetamine dependence alone are not generalizable to the broader substance use disorder treatment population.

More recently when Axis I mental disorder comorbidity has been assessed, it has either been among treatment modalities other than residential treatment or across

a multitude of modalities mistakenly treated as a monolith. For example, Axis I mental disorder comorbidity has been assessed, but only among outpatients and limited to youth (Hides, Lubman, Elkins, Catania, & Rogers, 2007). In a second study Axis I mental disorder comorbidity was again assessed, but this time across specialized assessment, withdrawal management (detox), residential and non-residential treatment modalities sourced from a teaching hospital, a general hospital and a community agency all treated as homogenous (Rush et al., 2013).

Despite several decades of research into co-occurring disorders significant gaps in the literature remain. Little is known about the prevalence or taxonomy of co-occurring disorders in the residential alcohol and other drug treatment modality. Experts have long opined that,

Plans at the national, state, treatment service and clinician levels need to be informed by accurate data on the prevalence, nature and harms of co-occurring disorders within each of the treatment systems. Such data will hone the planning of resource allocation, program design, policy needs, clinical practice needs, and competency needs (Croton, 2005b, p. 3).

In the absence of such data, treatment for those with CODs may be suboptimal resulting in higher service utilisation and costs as well as all the harms known to attend undetected, untreated CODs (Wilhelm et al., 2006). Study 1 of this thesis addresses this gap in the literature and aims to provide estimates of the prevalence of co-occurring mental disorders within the residential alcohol and other drug treatment modality in Australia. The questions investigated by Study 1 include: What is the prevalence of co-occurring Axis I mental disorders in residential AOD treatment services? Has mental disorder comorbidity worsened in those presenting to residential AOD treatment services since the last known figures taken from the 1970s and 1980s? Has the rate of psychotic-based disorders increased in residential AOD treatment services?

The Need for Validated Screening Instruments

As government, clinical and research awareness of CODs have increased so has the realisation the accurate identification of comorbidity is an important first step towards improving treatment and effectively managing this population (Ziedonis et al., 2005). One Australian expert put it succinctly in 2005 stating that, ‘The first, necessary step towards responding more effectively to co-occurring disorders is to improve the detection of any co-occurring disorder’ (Croton, 2005b, p. 6). Accordingly, both Australian and international guidelines have come to advocate routine screening for CODs (Center for Substance Abuse Treatment, 2005; Dawe, Loxton, Hides, Kavanagh, & Mattick, 2002; Gordon, 2008; Hawkings & Gilburt, 2004; Health Canada, 2002; Institute of Medicine, 2006; Mills et al., 2010; NSW Health, 2000; Substance Abuse and Mental Health Services Administration, 2002). Many government initiatives have also been aimed at improving the identification and treatment of those suffering both a substance use disorder and a mental disorder in treatment settings. In Australia, for example, the National Comorbidity Project 1998-2003 developed as a response to the National Strategic Drug Framework 1998-2003 and the Second National Mental Health Plan 1998-2003 (Croton, 2011). This project had a threefold aim: 1) to identify what comorbidity is; 2) to identify effective treatments for comorbidity; and 3) to identify how the overall response to the issue of comorbidity can be improved (Croton, 2011). The National Comorbidity Project was followed by the National Comorbidity Initiative 2003-2010 which aimed to: 1) raise awareness of comorbidity amongst health professionals; 2) promote examples of good practice; 3) support general practitioners and other health professionals to improve treatment outcomes; and 4) facilitate resources and information for individuals needing care (Croton, 2011). National Comorbidity Guidelines that advocated routine screening for

CODs released in 2010 were one facet of the National Comorbidity Initiative (Mills et al., 2010).

Despite the release of guidelines, government initiatives, and increasing awareness of the poor outcomes associated with COD, the ongoing failure to identify and thereafter treat co-occurring mental disorders in substance misuse treatment is well documented (Flynn & Brown, 2008). In one large 3-year study that assessed the rates of detection of CODs in the New Jersey addiction treatment system, CODs were only detected in 22% of actual cases (N = 47,379; Hu, Kline, Huang, & Ziedonis, 2006). In another significant study counselors failed to identify 32% of 2,128 clients who reported psychiatric symptoms as needing mental health services (Mericle, Martin, Carise, & Love, 2012). Clinicians often miss the co-occurrence of mental disorders and substance use disorders because of an absence of routine screening (Croton, 2007; Donald, Dower, & Kavanagh, 2005; Hu et al., 2006; Lubman, Hides, & Elkins, 2008; Watkins et al., 2004). A number of commentators assert that in the United States half of those with COD receive no treatment (Alexander, Haugland, Lin, Bertollo, & McCorry, 2008; Kessler et al., 1996). Among those who do receive treatment, both disorders are addressed for only 6% (Alexander et al., 2008), 19% (J. A. Swartz & Lurigio, 2006) or 50% (Watkins et al., 2004) of clients according to various commentators.

Over recent years it has been acknowledged that clients with COD have received poor care due to gaps in service provision (Adams, 2008; Harris & Edlund, 2005) and that the failure to detect (and therefore treat) mental disorder comorbidity ‘contributes to some of the most expensive and intractable social problems’ (Davis et al., 2006, p. 263). Put simply unrecognised and untreated comorbidity leads to high costs and poor outcomes. (Alexander et al., 2008). Yet serious under-identification of

COD continues, at least in part due to the use of diagnostic tools being ‘usually the exception rather than the rule’ (Mericle et al., 2012, p. 225). A number of barriers to the detection and treatment of COD have been identified by commentators including a lack of integration with and/or access to psychiatric support staff and services, a lack of routine mental health assessments and a relative dearth of screening measures available (Hides et al., 2007; Kavanagh, Baker, & Teesson, 2004; McGovern, Xie, Segal, Siembab, & Drake, 2006). A significant additional barrier to improving the identification of COD is the paucity of validation research into the various screening instruments that are currently available to detect COD in AOD treatment systems. Study 2 of this thesis addresses this latter barrier to the effective identification of CODs and validates a number of screening measures for use in this population.

Validation of Screening Instruments

Resources have been published that review the screening measures currently available to detect co-occurring mental disorders (Center for Substance Abuse Treatment, 2005; Croton, 2007; Dawe et al., 2002). Some measures, such as the Alcohol Use Disorders Identification Test (AUDIT) and the Drug Abuse Screening Test (DAST) are designed to detect alcohol and other drug use disorders (respectively) and may be used in psychiatric populations to identify co-occurring disorders. These are different to measures designed to detect psychological comorbidity. When selecting measures for review and recommendation, experts have been mindful that, ‘time, cost and effort [are] severe initial barriers to implementing anything new into a treatment service system’ (Center for Substance Abuse Treatment, 2005, p. 497). For that reason screening measures selected had to be widely used, ideally free and in the public domain, require no qualifications to possess or administer, cost nothing for instructions, reproduction or administration, be short in duration and be easy to use, requiring minimal

staff training (Center for Substance Abuse Treatment, 2005; Dawe et al., 2002). The same requirements were considered when selecting screening measures to be validated in the second study of this thesis. Measures had to be widely used, free and in the public domain, short and easy to administer with minimal staff training required of treatment services.

There are a number of measures available to the AOD treatment industry to screen for co-occurring mental disorders (Center for Substance Abuse Treatment, 2005; Dawe et al., 2002). What is not available is adequate validation research to guide treatment services in their choice of measure. Screening measures used to identify COD in AOD treatment systems have been recommended before psychometric validation research into the instruments' sensitivity, specificity and overall accuracy has been undertaken (e.g., the Mental Health Screening Form-III, Carroll & McGinley, 2001; recommended in Center for Substance Abuse Treatment, 2005; see also the Self-Reporting Questionnaire 20 before 2010, Lee & Jenner, 2010; recommended by Croton, 2007). Screening measures are often only validated once in a particular subpopulation by the measure's creators without further validation in other subpopulations despite evidence that rates of disorders and their severity likely vary between settings (Carra & Johnson, 2009; J. Ross et al., 2005) and that this variation reduces the appropriateness of validation data (Castel, Rush, & Scalco, 2008), (for e.g., see the Modified Mini Screen until 2008, Brandau, Alexander, & Haugland, 2005; Alexander, Haugland, Lin, Bertollo, & McCorry, 2008). It is preferable for screening instruments to be validated with data obtained from the population in which they will be used (Castel et al., 2008). This is necessary to guide treatment services in an appropriate choice as to the best measure for their service and to know at what cut-off score the measure should be used.

Currently there is an absence of adequate research evidence upon which treatment services can base and improve their practices to identify COD. Studies that compare the performance of multiple measures' are rare and have not been conducted within residential treatment services. Additionally, much of the research that has been done has involved instruments that cost money to possess and administer (for e.g., the Psychiatric Diagnostic Screening Questionnaire) or require administration by a registered psychologist (for e.g., the Symptom Checklist-90-R). Costs and/or qualification requirements often reduce the use of these measures amongst substance misuse treatment organisations that may have limited resources and/or staff who do not have the required level of training. Instead these organisations require freely available, easily administrable measures so no further cost or training burden is imposed.

Often research that has been conducted into the screening instruments available to detect CODs has involved instruments being 'tested against different reference standards, using samples drawn from different populations, and employing different procedures' (Rush et al., 2013, p. 375). The following literature review highlights the changes in method, criterion and population evident in the literature and the differing results these methodological variations have produced, sometimes with the same measure in a similar population.

Early research validated measures through correlational studies that evidenced a measure's concurrent validity with other measures. McLellan and others original (1980) validation of the Addiction Severity Index (ASI) "severity ratings" is an example of this early methodology. The initial version of the ASI covered six domains: chemical abuse, medical, psychological, legal, family/social, and employment support (McLellan et al., 1980). The severity ratings were an unanchored scale scored from 0-9 for each domain based upon a combination of objective questions including the

number, intensity and duration of problem symptoms and each participant's self-assessment of their need for additional treatment in the given domain (McLellan et al., 1980). The ratings cover the previous 30-days with the higher the number, the greater the impairment. The validity of the ASI psychological severity rating was determined by reporting its correlations with other like measures. Among 524 male veteran substance abuse clients the ASI psychological severity scale correlated .64 with the Maudsley Neuroticism scale, .61 with the Beck Depression Inventory, and .58 with the Hamilton Depression scale ($n = 111$) (McLellan et al., 1980). A cluster analysis was also performed on a random sample of 150 participants to determine whether the ASI could differentiate respondents into subgroups. This cluster analysis produced six clusters that significantly differed from one another, however, these clusters did not neatly cover the six domains proposed for the instrument, nor was there any one mentally disordered vs. not mentally disordered cluster. To the contrary there were several statistically different clusters with and without high expressed need for additional psychiatric treatment so this cluster analysis did not support the use of the ASI as a valid screen for mental disorder amongst a substance-abuse-treatment-seeking sample of veterans (McLellan et al., 1980).

Kosten and others' (1983) also tested the concurrent validity of the Addiction Severity Index but used a criterion-type measure. The Addiction Severity Index was administered to a sample of 204 male and female treatment-seeking opiate "addicts" (Kosten et al., 1983). A correlational and "categorical" analysis was undertaken, with the latter involving a comparison and then cluster analysis of ASI performance in three different pre-defined groups (anti-social personality, current depression and no disorder) based on the Research Diagnostic Criteria (RDC, Spitzer, Endicott, & Robins, 1978). Information for making RDC diagnoses was gathered using the

Schedule for Affective Disorders and Schizophrenia – Lifetime version (Endicott & Spitzer, 1978). Concurrent validity was reported with highly significant correlations between the Addiction Severity Index Psychiatric Severity scale and the Beck Depression Inventory (.51), the Global Assessment Scale (–.42) and the Maudsley Personality Inventory (.55) (all $p < .0001$) (Kosten et al., 1983). The ASI Psychiatric Severity scale and Beck Depression Inventory (BDI) scores were then compared for those with and without a current RDC depressive disorder. T-tests revealed significantly higher (more impaired) mean scores for those with, compared to those without, a depressive disorder for both the ASI ($t = 12.3$, $df = 101$, $p < .0001$) and the BDI ($t = 13.9$, $df = 101$, $p < .0001$) (Kosten et al., 1983). Kosten and others (1983) stated a sensitivity and specificity analysis was undertaken but no receiver operating characteristic curve analysis was provided. At a cut off score of 3, the ASI Psychiatric Severity scale was reported to have 89% sensitivity and 67% specificity (Kosten et al., 1983). A similar analysis was done with the ASI Psychiatric Severity scale and the Global Assessment Scale, but this time comparing means for those with and those without any non-substance abuse RDC mental disorder (not just depression) (Kosten et al., 1983). Respondents without any other psychiatric disorders had significantly lower mean ASI and GAS scores (less impaired) when compared to those with other psychiatric disorders (ASI: $t = 9.7$, $df = 101$, $p < .0001$, GAS: $t = 2.5$, $df = 101$, $p < .05$) (Kosten et al., 1983). Sensitivity (63%) and specificity (83%) scores were again reported at the same cut off score (Kosten et al., 1983). Lastly a cluster analysis of all the ASI domain scores was performed with the authors reporting four clusters; a normal cluster, an anti-social cluster, a depressed cluster and a medically impaired cluster (Kosten et al., 1983). From the dispersion of RDC diagnoses across these cluster

groups, the authors concluded the ASI was able to distinguish between these diagnostic groups (Kosten et al., 1983).

In 1989 Weiss and others (1989) compared the Beck Depression Inventory (BDI, Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the Hamilton Rating Scale for Depression and the depression subscale of the Symptom Checklist 90 (SCL-90, Derogatis, Meyer, & King, 1981) among 149 cocaine abusing private psychiatric hospital clients. These measures' abilities to identify major depression were tested by comparing their results with the independent diagnoses of two psychiatrists. One was a ward psychiatrist making discharge diagnoses on the basis of interviews and observations of ward behaviour (using DSM-III criteria (American Psychiatric Association, 1980)). The other was an independent psychiatrist. A consensus diagnosis was provided where the two were in disagreement. Thirteen of the clients, (9% of the sample), were diagnosed with major depression. Sensitivity and specificity were reported based upon data gathered at three different times: admission, 2 weeks after admission and 4 weeks after admission. Results are reported in Table 9 below.

Table 9. Sensitivity and specificity of three depression rating scales at three times in detecting major depression in 149 hospitalized cocaine abusers (Weis et al., 1989)

Scale	Sensitivity	Specificity
Beck Depression Inventory ≥ 12		
Admission	100%	35%
2 weeks	40%	77%
4 weeks	20%	91%
Hamilton Rating Scale for Depression ≥ 17		
Admission	85%	49%
2 weeks	69%	79%
4 weeks	38%	89%
Symptom Checklist 90 Depression Subscale ≥ 0.9		
Admission	100%	26%
2 weeks	70%	58%
4 weeks	70%	83%

The authors favoured the BDI's performance and noted it was shorter than the SCL-90 and did not require a trained person for administration like the HDRS. Two other

findings were of note. First the unacceptably low specificity scores of all the measures when used at cut off scores that gave acceptable sensitivity at admission. Second the rapid decline in sensitivity scores over time. These results led the authors to conclude these measures may be more useful at identifying clients without major depression than identifying those with the disorder. This conclusion was reached despite these authors expressly naming sensitivity the more important characteristic when the utility of a screening measure is being assessed on the grounds that a comprehensive psychiatric assessment following screening can provide the required specificity (Weiss et al., 1989).

A Dutch-translation version of the Addiction Severity Index (ASI) (Hendriks, Kaplan, Limbeek, & Geerlings, 1989) was also tested against the Beck Depression Inventory (BDI, Beck et al., 1961), the Symptom Checklist-90 (SCL-90, Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974) and DSM-III diagnoses of major depression made on the basis of the third version of the Diagnostic Interview Schedule (DIS, Robins et al., 1981). One hundred and forty-two detoxification clients at the Hague were administered these measures within two days of admission. Correlations of .55 with the BDI, .54 with the SCL-90 total score, (including .35 with the SCL-90 somatization sub-scale, .48 with the SCL-90 depression subscale, and .52 with the SCL-90 anxiety subscale), evidenced the concurrent validity of the ASI Psychiatric Status Severity scale (Hendriks, Kaplan, Limbeek, & Geerlings, 1989). Sensitivity and specificity figures were cited for the ASI Psychiatric Status Severity scale's ability to correctly identify those with and without DSM-III depression diagnoses according to the DIS in a subsample of 84 respondents. At a cut off score of 4, sensitivity was 86% and specificity 42%. At a cut off score of 5, sensitivity was 72% and specificity 56%. The statistical technique used to arrive at these figures was not specified, although the

authors did note that even at the more sensitive cut off score the ASI still failed to identify 14% of depression cases (Hendriks et al., 1989).

Different procedures, reference standards and population samples produced conflicting, as well as incomparable, results in another validation study on the Dutch version of the Addiction Severity Index (Eland-Goossensen, Goor, Garretsen, & Schudel, 1997). Three-hundred and twenty-seven heroin and methadone addicted individuals were researched in three treatment groups: a low threshold methadone program ($n = 91$), a clinical detoxification program where participants did not continue their treatment ($n=72$) and the same clinical detoxification program where participants continued their treatment in a therapeutic community ($n = 77$). Additionally 83 respondents were not in treatment and had not received treatment for more than two weeks over the past two years (Eland-Goossensen et al., 1997). The Addiction Severity Index Psychiatric Status Severity scale and the (still current) Addiction Severity Index Psychiatric Status Composite Score were validated against the Composite International Diagnostic Interview (CIDI, Robins et al., 1988). The authors did not use ROC curve analysis but stated, ‘cut-off points can be used to distinguish between respondents with and without ... problems. The choice of such a cut-off point is based more often on intuition than on empirical data’ (Eland-Goossensen et al., 1997, p. 587). Sensitivity scores (but not specificity scores) were reported for the Severity scales at cut off scores of 6, 5 and 4 among 99 respondents with anxiety, affect or psychotic disorders (sensitivity was 43%, 59%, and 73% respectively) (Eland-Goossensen et al., 1997). Eland-Goossensen and colleagues opined that a cut off score of 6 was optimal, (where only 43% of cases were identified), and stated ‘[t]hat the data ... are not totally compatible with the DSM-III-R data’ (Eland-Goossensen et al., 1997, p. 587). The Composite Score performed less well than the Severity scale, with

the largest number of respondents with disorders from all four categories, (affective disorder, anxiety disorder, psychotic disorder, anti-social personality disorder), scoring a middle-range Composite Score, not a high-range score as expected, bringing into question what was being measured and how, along with what cut off score truly best represented a positive result (Eland-Goossensen et al., 1997). Earlier researchers had warned against using arbitrary approaches to cut off score selection like “intuition”. Murphy and others (1987) had lamented a decade before that:

At the present time ... sensitivity and specificity are often reported as unalterable features of a test. A potential user must accept an a priori and often arbitrary decision about the criterion threshold that led to these values. ... While it has been appreciated that changing the threshold can affect the performance of a test, a standard method for assessing the complete information needed for a threshold decision has not yet become a regular part of the procedures used by psychological researchers for assessing diagnostic and screening tests (p. 551).

Both the Eland-Goossensen and others (1997) study and the Hendriks and others (1989) study that preceded it, tested Dutch-translation versions of the Addiction Severity Index. The results of the two studies, however, were significantly different and incomparable due to being set in different populations, using different reference measures and statistical techniques to generate their results. This experimental variation is representative of the early validation literature. The study by Eland-Goossensen and others (1997) was also an example of where more sophisticated statistical analyses were necessary to better analyze test performance across a range of cut off scores.

Receiver Operating Characteristic Curve Analysis

Described as new to psychiatry in 1989 (Hsiao, Bartko, & Potter, 1989), Receiver Operating Characteristic (ROC) curve analyses provide a number of statistics on a measure's performance at a certain cut off score including sensitivity, specificity, accuracy, positive and negative predictive values, and positive and negative odds ratios.

Additionally, ROC curve analyses provide an Area Under the Curve (AUC) score indicative of a measure's performance across all cut off scores.

The sensitivity of an instrument is a measure of an instrument's ability to identify illness among the ill (Murphy et al., 1987). Sensitivity is calculated by dividing the number of true-positives detected by the instrument by the number of all diseased participants (Schmitz, Kruse, Heckrath, Alberti, & Tress, 1999). The specificity of an instrument is a measure of an instrument's ability to correctly identify the absence of an illness or condition among those who do not have that illness or condition (Murphy et al., 1987). Specificity is calculated by dividing the number of true-negatives detected by the test by the number of all non-diseased participants (Schmitz et al., 1999). Both sensitivity and specificity are measured on the basis of a division of the test's score range by a criterion threshold or cut point (Murphy et al., 1987). When an instrument's sensitivity (in this case its ability to correctly identify those with a mental disorder) and its specificity (its ability to correctly identify those without a mental disorder) are combined, the result is described as the instrument's overall accuracy, also known as its efficiency (Harrington & Newman, 2007). By way of example, if in a population of 200 there were 100 participants with a certain condition and 100 participants without that condition and at a certain cut off score a measure correctly identified 80 of the 100 participants with that condition as having that condition and 70 of the 100 participants without the condition as not having the condition, the measure's sensitivity would be 80/100 (80%), its specificity 70/100 (70%) and its overall accuracy 75%.

The positive predictive accuracy or value is the proportion or percentage of cases screening positive that are truly positive for mental disorder (Sacks, 2008; Zimmerman, Sheeran, Chelminski, & Young, 2004). The negative predictive accura-

cy or value is the proportion or percentage of cases screening negative that are truly negative for mental disorder (Sacks, 2008; Zimmerman et al., 2004). If in the above example the measure actually screened 120 participants as positive for the condition (including the 80 who actually were), its positive predictive value would be $80/120$ (66%). That same example would see the measure having screened 80 participants as negative (including 70 who were truly negative), giving it a negative predictive value of $70/80$ (87.5%). Predictive accuracies or values are said to be clinically useful but like sensitivity, specificity and likelihood ratios they vary with the underlying prevalence rate of the population in which they are ascertained (Brenner & Gefeller, 1997; Schmitz et al., 1999). As the prevalence of a disorder in a population decreases, the sensitivity and positive predictive accuracy of the test also decrease while the specificity and negative predictive accuracy increase (Brenner & Gefeller, 1997). With higher population prevalences, the opposite occurs (Brenner & Gefeller, 1997). Thus where underlying population prevalence is high, statistically sensitivity and positive predictive accuracy are most important. Where underlying prevalence is low, statistically negative predictive accuracy and specificity are most important.

Positive and negative likelihood or odds ratios are an indication of the change in odds for a person having or not having a mental disorder given a positive or negative screen at a certain cut off score. Expressed another way, the positive odds ratio ($\text{sensitivity}/1\text{-specificity}$) and the negative odds ratio ($1\text{-sensitivity}/\text{specificity}$) express the odds that a person with and without a disorder respectively will score above the given cut off score on the measure in question (Neovius, Linne, Barkeling, & Rossner, 2004).

The receiver operating characteristic area under the curve score (ROC-AUC) is a measure of an instrument's overall performance across all possible cut off scores

(Swets, 1988). A graphical curve is constructed where at each cut off score the measure's true-positive rate (sensitivity) is plotted on the y-axis and its false-positive rate ($1 - \text{specificity}$) is plotted on the x-axis. Each point thus plotted for each cut off score is then joined to form a curve and the area under the curve is the measure's overall performance at correctly differentiating between a random participant with and without the given condition being screened for across all cut off scores. The closer to the upper left-hand corner of the graph the curve approaches, the better the performance of the measure (or the more true-positive cases it detects whilst producing less false-positive results). ROC-AUC results usually vary between 0.50 and 1.0. A ROC-AUC score of 0.50 represents a diagonal line with a slope of 1 and indicates a complete lack of predictive ability, (it is the equivalent of chance, a 50/50 result) (Bisoffi, Mazzi, & Dunn, 2000). A score of 1.0 would represent perfect prediction. Results between 0.70 and 0.80 represent good accuracy (Cacciola et al., 2008). Results greater than 0.80 represent reasonable to excellent accuracy and results above 0.90 excellent to outstanding accuracy (Cacciola et al., 2008; J. A. Swartz, 2007).

The ROC curve analysis technique and the analyses it afforded represented a significant improvement in screening instrument validation. What a ROC curve analysis still did not provide was an indication of how best to use a test in a given context or which cut off score was best for making a diagnosis (Hsiao et al., 1989). The pitfalls of blindly reporting a ROC curve analysis without considering the context of screening and the implications of choosing different cut off scores are discussed below.

Validation Studies That Use A ROC Curve Analysis

Subsequent to ROC curve analysis adoption as a statistical technique, for some years validation studies continued to be largely incomparable due to other variations in ex-

perimental methodology such as the criterion measure used. Comparative performance of German language versions of the Symptom Checklist 90 Revised (SCL-90-R, Derogatis et al., 1981) and the General Health Questionnaire 12 (GHQ-12, Goldberg et al., 1997) was conducted on 572 adult German primary care outpatients in 1999 (Schmitz et al.). Participants were administered these two screening measures which were validated against German language versions of the Structured Clinical Interview for the Diagnostic Manual of Mental Disorders – Third Edition Revised (SCID-III-R) (past 30-days) and the Impairment Score measure of psychological impairment (score 5+ = disordered). The SCID-III-R and the Impairment Score measure represented movement to a different (as well as) joint criteria for caseness (Schmitz et al., 1999). A ROC curve analysis revealed that at each instrument's best cut off score the SCL-90-R was slightly more sensitive to the detection of mental disorder (64% vs. 60% for the GHQ-12), both measures had the same specificity (74%) and therefore the SCL-90-R was slightly more accurate at the screening task (75% vs. 73% for the GHQ-12). The positive predictive values were .58 for the SCL-90-R and .57 for the GHQ-12 meaning both measures were only right about a positive screen about half the time. Negative predictive values were .77 and .76 respectively (Schmitz et al., 1999). The Area Under the Curve (AUC) scores were also slightly in favour of the SCL-90-R (.75 vs. .73), a small difference that was not statistically significant (Schmitz et al., 1999). This research was conducted in a primary care population where the SCID-III-R put the prevalence of mental disorder at 37% of those tested (Schmitz et al., 1999).

In 2001 Franken and Hendriks validated the SCL-90 and the Addiction Severity Index Psychiatric Status Composite Score (ASI-PSYCS) against CIDI (DSM-III-R) anxiety and affective disorder diagnoses only (Franken & Hendriks, 2001). Partici-

pants were 116 consecutively admitted substance abuse treatment inpatients in the Netherlands (Franken & Hendriks, 2001). Three ROC analyses were undertaken: SCL-90 and ASI-PSYCS administration prior to detoxification and SCL-90 administration post detoxification (an average of 19 days later when the CIDI was also administered) (Franken & Hendriks, 2001). The study did not report whether these instruments were compared to current or lifetime CIDI prevalence. Lifetime CIDI prevalence of anxiety or affective disorders (only) was 69.8%. Current CIDI prevalence of anxiety or affective disorders (only) was 46.6% (Franken & Hendriks, 2001). Cut off scores were chosen that reported at least 90% sensitivity, suggesting that the authors appreciated the importance of detecting COD in this population. The results were as follows in Table 10.

Table 10. ROC Analyses for SCL-90 and ASI-PSYCS (Franken & Hendriks, 2001).

Measure	Sensitivity (%)	Specificity (%)	Accuracy (%)	AUC Score
ASI-PSYCS (pre-detox)	91.3	24.1	57.7	.52
SCL-90 (pre-detox)	92.7	19.7	56.2	.64
SLC-90 (post-detox)	90.9	49.2	70.1	.75

ASI-PSYCS (pre-detox) = the Addiction Severity Index Psychiatric Status Composite Score administered pre-detoxification, SCL-90 (pre-detox) = the Symptom Checklist 90 administered pre-detoxification, SCL-90 (post-detox) = the Symptom Checklist 90 administered post detoxification, AUC Score = Area under the curve score.

The authors rightly concluded that only the post-detoxification SCL-90 could be recommended as a screen for anxiety and affect disorder psychiatric comorbidity among inpatient substance abuse treatment participants (Franken & Hendriks, 2001). This study highlighted the importance of the time between admission of screening instruments and the criterion they are to be judged against. The pre-detoxification SCL-90 and the pre-detoxification ASI-PSYCS, barely performed at a level better than chance, but this may have been largely due to the measures being administered on average nearly 20-days prior to the CIDI criterion they were measured against. The amount of time between administrations made the results effectively incomparable.

In 2004 Calsyn and others validated the Addiction Severity Index Psychiatric Status Domain Composite Score (ASI-PSYCS) against a veterans' version of the

Medical Outcomes Study Short Form- 36 (SF-36V). The Medical Outcomes Study Short Form – 36 (SF-36, Ware & Sherbourne, 1992), of which the veterans version is a minor modification, is a frequently used assessment of health-related quality of life in medical conditions. It is a self-report instrument that measures eight constructs over a 4-week period: physical functioning, physical role limitations, bodily pain, social functioning, emotional role limitations, general mental health, vitality and general health perceptions (Calsyn et al., 2004). When assessing mental health the latter four components are aggregated and labeled the Mental Component Summary (MCS). The former four components are aggregated to constitute the Physical Component Summary (PCS) – a measure of physical health (Calsyn et al., 2004). The Mental Component Summary was used as the criterion measure to assess the validity of the ASI-PSYCS with participants categorised as impaired if they scored below the 25th percentile of US population norms on the SF-36 MCS (Calsyn et al., 2004). This study was conducted among 674 veterans entering various substance abuse treatment modalities in Washington (detox unit, outpatient with beds provided for the homeless and intensive outpatient) (Calsyn et al., 2004). Five hundred and twenty-six of these participants (78% of the sample) fell within the impaired category (Calsyn et al., 2004). A mean of 20-days after admission to treatment participants were administered the ASI-PSYSCS and the SF-36V (Calsyn et al., 2004). Correlations and ROC analyses were undertaken. The ASI-PSYCS correlated highly significantly not only with the SF-36V Mental Component Summary aggregate and each of its individual components, but also with all of the components of the Physical Component Summary as well ($p < .001$) (Calsyn et al., 2004). These results provided evidence of concurrent but not discriminant validity for the ASI-PSYCS when compared with the SF-36V (Calsyn et al., 2004). The ROC-AUC score for the ASI-PSYCS was .90 (Calsyn et al., 2004). At

a cut off score of .22 the ASI-PSYCS demonstrated 90% sensitivity, 71% specificity and 80.5% accuracy (Calsyn et al., 2004). The construct validity of the criterion measure itself (the SF-36V) is another question, an issue that came to the fore in a study by Degenhardt and others (2005) examined below. Certainly there is a strong relationship and concurrent validity between the ASI-PSYCS and the SF-36V Mental Component Summary, the latter representing yet another measure used as a criterion in this line of research.

The potentially confounding effect of using different “gold standard” criterion measures was emphasized in a validation study on a brief 7-item Psychosis Screener (PS) (Degenhardt et al., 2005). The study was conducted in two samples, the first consisted of 87 inpatient participants whose Psychosis Screener responses were compared to International Classification of Diseases version 9 (ICD-9) diagnoses obtained from hospital discharge records. Sample 2 consisted of 259 persons whose responses to the seven screener items were compared to International Classification of Diseases version 10 (ICD-10) and DSM-III-R diagnoses derived using the Diagnostic Interview for Psychosis (DIP). According to the criterion measures used, sample 1 had 51.3% ICD-9 affective psychosis, 16% schizophrenia and 31.3% some other (non-psychotic) disorder (Degenhardt et al., 2005). Sample 2 consisted of just under half (47.1% and 46.4%) schizophrenia according to DSM-III-R and ICD-10 criterion measures respectively, almost 10% schizoaffective disorder (9.3% and 9.8% DSM-III-R and ICD-10 respectively), around one-quarter affective psychosis (DSM-III-R 23.9%, ICD-10 25.5%), and the remaining fifth either a different diagnosis (DSM-III-R 15.8%, ICD-10 13.7%) or no diagnosis (DSM-III-R 3.9%, ICD-10 5.0%) (Degenhardt et al., 2005). The authors concentrated upon psychotic disorders because even though lower in prevalence than other mental disorders, psychotic disorders ‘uti-

lise a disproportionately high segment of health services ... [and] ... impose a considerable public health burden because of their impact on sufferers and their families [citation omitted]’ (Degenhardt et al., 2005, p. v). Narrow and broad definitions of psychosis were used for the analysis; the narrow definition was limited to diagnoses of either schizophrenia or schizoaffective disorder. The broad definition also included diagnoses of affective psychosis. The very high population prevalences of the disorders in question meant that sensitivity, positive predictive values and likelihood ratios should be influenced by this underlying population prevalence to be high (Brenner & Gefeller, 1997). Even so, the ROC analysis of sample 1 (testing the PS against ICD-9 diagnoses of psychosis that included affective psychoses) produced an area under the curve score barely better than chance (.55) (Degenhardt et al., 2005). See Table 11 below for full results:

Table 11. ROC Analysis for Broad and Narrow Definition of Psychosis (Degenhardt et al., 2005)

Sample	Criterion	Cut	Sens	Spec	PPV	NPV	AUC
Sample 1 Broad (N=87)	ICD-9	3	25.4	85.7	68.4	82.4	.55
Sample 2 Broad (N=259)	ICD-10	1	98.1	39.6	87.7	82.6	.79
Sample 2 Broad (N=259)	DSM-III-R	1	97.6	35.3	86.0	78.3	.77
Sample 1 Narrow (N=87)	ICD-9	3	57.1	84.9	42.1	91.2	.78
Sample 2 Narrow (N=259)	ICD-10	3	82.1	57.0	70.8	71.4	.73
Sample 2 Narrow (N=259)	DSM-III-R	3	81.5	56.6	70.8	70.3	.74

Sens = Sensitivity, Spec = Specificity, PPV = Positive Predictive Value, NPV = Negative Predictive Value, AUC = Area Under the Curve Score, ICD-9 = International Classification of Diseases – 9, ICD-10 = International Classification of Diseases – 10, DSM-III-R = Diagnostic and Statistical Manual for Mental Disorders III – Revised.

The authors hypothesized the barely better than chance result with sample 1 was possibly due to a discrepancy in the “gold standard” used to categorize these patients. In the words of the authors the poor results may have been ‘due to discrepancies between ICD-9 and ICD-9-CM codes, particularly for affective psychoses’ (Degenhardt et al., 2005, p. 13). Degenhardt and others thought this possibility was supported by the fact the PS was able to discriminate between cases and non-cases using the two other diagnostic systems as “gold standards” (ICD-10 and DSM-III-R) (Degenhardt et al., 2005). Even in the same sample and being interviewed with the same Diagnostic

Interview for Psychosis (DIP), however, results for sample 2 still differed slightly depending upon whether ICD-10 or DSM-III-R classification systems were used (Degenhardt et al., 2005). The different operationalisation of disorders used by the three different “gold standard” criterion measures in the study caused the authors to note:

This highlights another issue in the use of “gold standards”: they are assumed to be valid and accurate. Any limitations in the ability of these diagnostic systems to discriminate between actual cases and non-cases necessarily attenuates the distinction between true cases and non-cases used in ROC analyses, and hence reduces the ability of the analysis to estimate the true discriminant power of the screener [citation omitted] (Degenhardt et al., 2005, p. 14).

Recent studies have increased the methodological standardization of this area of research by settling upon the Structured Clinical Interview for DSM disorders and/or the Composite International Neuropsychiatric Interview as the criterion measures against which screening instruments should be validated. Other methodological problems have remained, however, such as using aggregated populations drawn from multiple different settings and failing to report all the statistics necessary to understand instrument performance. In 2007 more than 150 screening measures then available were comprehensively reviewed with regard to cost (public domain), brevity (less than 20 minutes), ease of administration (no specific mental health training needed) and existing psychometric validation work (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007; Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007). Three measures were chosen by an expert panel to be validated against the Structured Clinical Interview for DSM-IV in a prison substance abuse population; the Global Appraisal of Individual Needs Short Screener version 1.0 (GSS, Dennis, Chan, & Funk, 2006), the Mental Health Screening Form (MHSF, Carroll & McGinley, 2000) and the Mini-International Neuropsychiatric Interview - Modified (MINI-M, Sheehan et al., 1998). A pilot study was conducted among 100 participants with an

actual rate of mental disorders of 60%. The authors reported in this population the latter two measures, the MHSF and the MINI-M, performed the best when these three measures were run head-to-head against one another. The MHSF had the highest sensitivity (90%) and the highest overall accuracy score (73%) at a cut-off score of three. The MINI-M produced the highest specificity score (52.5%) or was the best at identifying cases that did not have a co-occurring mental disorder at a cut-off score of five (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007). ROC curve area under the curve scores for correctly determining whether any co-occurring mental disorder was present or not across all cut off scores also favoured the MHSF and MINI-M as outperforming the GSS (.805, .741 and .731 for the MHSF, the MINI-M and the GSS respectively) (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007). ROC curve areas for determining the presence of any “severe” mental disorder, (defined as major depression, schizophrenia and bipolar disorders), were also calculated and ranked the instruments the same way (.659, .642 and .639 for the MHSF, the MINI-M and the GSS respectively) (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007). Finally in the pilot study a correlation then regression analysis was performed to determine which items from each screener correlated with and explained the variance in positive SCID diagnoses of mental disorder and severe mental disorder respectively. For mental disorders the authors found that six items were highly correlated with/explained the variance in SCID diagnoses: four items from the MHSF, one item from the MINI-M and one item from the GSS. For severe mental disorder, (major depression, schizophrenia and bipolar disorders), three items were identified, two from the MHSF and one from the MINI-M (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007).

A subsequent validation study was conducted among 180 participants again drawn from prison substance abuse settings, this time with an actual rate of mental disorder of 78.3% (Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007). Table 12 notes the results of this study for determining the presence or absence of any disorder weighted for gender along with the test-retest reliability of each measure.

Table 12. Sensitivity, Specificity, Accuracy and Test-Retest Reliability of Three Measures Detecting Any Mental Disorder Weighted for Gender (Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007)

Measure	Cutoff	Sensitivity	Specificity	Accuracy	Test/Re-test
GSS	2	81.6%	47.1%	72.6%	K = 0.381
MHSF	3	80.9%	47.5%	72.1%	K = 0.625
MINI-M	5	71.3%	60.7%	68.5%	K = 0.618

Note. MHSF = Mental Health Screening Form, GSS = Global Appraisal of Individual Needs Short Screener, MINI-M = Mini-International Neuropsychiatric Interview – Modified.

It should be noted the GSS performed better than in the pilot study as the most accurate instrument, but also returned a much lower test-retest reliability score on the important task of consistently indicating the same respondents as needing further assessment for any disorder (Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007). Expressed as a percentage of the time each measure agreed with itself about the need to refer a participant for further assessment, the scores were: MHSF (85.0%), MINI-M (81.7%) and GSS (76.7%). Otherwise the scores were quite similar and the importance of sensitivity given the high prevalence of disorder can be noted by observing the MINI-M result. Regrettably positive and negative predictive values and odds ratios were not reported so only a partial picture of instrument performance could be gained. For detecting severe mental disorders the results are reported in Table 13 below.

Table 13. Sensitivity, Specificity, Accuracy and Test-Retest Reliability of Three Measures Detecting Severe Mental Disorders Weighted for Gender (Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007)

Measure	Cutoff	Sensitivity	Specificity	Accuracy	Test/Re-test
GSS-IDS	5	37.5%	95.9%	76.7%	K = 0.487
MHSF	11	35.4%	93.3%	74.5%	K = 0.761
MINI-M	10	41.8%	60.7%	68.5%	K = 0.682

Note. MHSF = Mental Health Screening Form, GSS-IDS = Global Appraisal of Individual Needs Short Screener – Internal Disorder Screener, MINI-M = Mini-International Neuropsychiatric Interview – Modified.

The GSS again performed the most accurately in detecting severe mental disorder, but again did so less reliably/consistently than the other measures. Expressed as a percentage of the time each measure agreed with itself about the need to refer a participant with severe mental disorder for further assessment, the scores were: MHSF (91.7%), MINI-M (88.3%) and GSS (83.3%) (Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007). The other notable aspect of the above results was the very low sensitivity demonstrated by all the measures at their statistically most accurate cut off scores. The cut off scores reported may have been the statistically most accurate, but measures failing to detect far more than half of the cases of serious mental disorder present in a population obviates the purpose of screening. The important context of screening, a desire to practically identify a maximum number of clients with mental disorder comorbidity, reveals these statistically generated cut off scores as clinically inappropriate. The importance of considering the context of screening is highlighted and in this instance would have led to lower cut off scores being recommended despite a slight reduction in accuracy so that cases of comorbidity did not slip through the net of screening. At the conclusion of this otherwise excellent comparison study, Sacks and others rightly warned that the instruments concerned could be expected to perform differently in different populations and that the results reported should not be generalised beyond the prison populations in which they were found (Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007).

In 2008 Cacciola, Pecoraro and Alterman conducted an archive analysis to validate the many indices of the Addiction Severity Index Psychiatric Status domain (Cacciola et al., 2008). The Addiction Severity Index is mandated for use in licensed substance abuse treatment programs in a majority of states in the United States of America (Cacciola et al., 2008). Some of the psychiatric summary scores produced by the ASI had been validated using straight correlations with pen and paper measures, but a ROC curve analysis validating the measure against a full structured clinical interview had not been previously undertaken (Cacciola et al., 2008). In a mixed inpatient, residential and outpatient sample of 672 respondents all four ASI Psychiatric summary scores were included in the analysis (Interviewer Severity Rating, ISR; Composite Score, CS; Clinical Factor, CF; and Evaluation Indices, EI). Results of the ROC curve analysis against the SCID-III-R are in Table 14 below.

Table 14. ROC curve analysis of four ASI Psychiatric scales (Cacciola et al., 2008)

ASI Scale	AUC	Cut off	Sensitivity	Specificity	Accuracy
ISR	.73	3	81.19%	52.89%	67.04%
CS	.76	.22	80.07%	60.11%	70.09%
CF	.78	53	84.98%	54.93%	69.96%
EI	.75	52	79.73%	59.66%	69.70%

ASI Scale = Addiction Severity Index Psychiatric Status scale, AUC = Area Under the Curve score, ISR = Interviewer Severity Rating, CS = Composite Score, CF = Clinical Factor, EI = Evaluation Indices.

In the same year Alexander and others (2008) validated a version of the Mini International Neuropsychiatric Interview - Modified, called the Modified Mini Screen (MMS, Brandau et al., 2005). The study was conducted in a mixed population of 476 individuals in chemical dependency treatment across 23 different settings in jails, shelters and street community outreach programs (Alexander et al., 2008). Forty-six percent of this population met criteria for anxiety, mood or psychotic disorders according to the Structured Clinical Interview for DSM-IV (Alexander et al., 2008). Eighty percent of the interviews were conducted by telephone and SCID interviews took place within 2 weeks of the screening interview (Alexander et al., 2008). Three

indices of reliability were reported, internal consistency (Chronbach's Alpha = 0.92), inter-rater reliability (92%), and test-retest reliability (based upon 42 screens = 79%) (Alexander et al., 2008). A full ROC curve analysis was undertaken and importantly, these authors reported not only the usual sensitivity, specificity and overall accuracy values, but also positive and negative predictive values, the proportion of participants that were indicated as needing further assessment at each cut off score and the number of true cases that were missed at that cut off score. These last two figures, (number of cases indicated as needing further assessment and number of true cases missed at a given cut off score), are particularly helpful for understanding the practical implications of using a screen at a given cut off score and should always be reported by validation studies. Table 15 contains these results. The overall area under the curve score was 0.81, indicating a high probability the MMS would correctly differentiate a random disordered participant from a random not disordered participant across all cut off scores (Alexander et al., 2008).

Table 15. Modified Mini Screen (MMS) Validation Results (Alexander et al., 2008)

Cut Off Score	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Overall Accuracy	% Sent Further Assess. [†]	% of True Cases Missed
6	81.9	61.4	61.4	81.9	70.2	57.1	18.1
7	75.0	69.5	64.8	78.8	71.8	49.6	25.0
8	69.6	78.3	70.7	77.5	74.6	42.2	30.4
9	62.8	82.7	73.1	74.8	74.2	36.8	37.2

Based on a SCID-interview prevalence of 42.9% for current anxiety, mood or psychotic disorder.

These authors attempted to compare the MMS results they obtained with results other authors had obtained using other screening measures in other populations published in other studies. Attempting such a cross study comparison is of questionable value because the studies were completed in different populations with different underlying prevalences of disorder using different methodologies, criterion measures, etc. Different underlying population prevalences, among other things, effect sensitivity, specificity, positive and negative predictive values and positive and negative odds ratios

(Brenner & Gefeller, 1997). Cut off scores are unlikely to be the same and instrument performance will not be as reported in one population or setting when used in another (Brenner & Gefeller, 1997; Castel et al., 2008). Irrespective in the population in question the MMS performed equally well across gender and ethnic groups. It should be noted, however, that even when the most sensitive cut off score of 6 on the MMS was used a full 18% of disordered cases in this study were missed. This is an undesirable result where the aim of screening is not to let anyone with COD slip through the screening net. This result again highlights the importance of using a cut off score that affords high sensitivity to the detection of COD.

Two-years after the study conducted by Alexander and others (Alexander et al., 2008), two measures were validated for possible use in the Psycheck screening package. Unfortunately 117 individuals were sourced from mixed treatment modalities for this validation study, a recurrent methodological limitation in the recent literature to be dealt with below (Lee & Jenner, 2010). An amended version of the Self Reporting Questionnaire 20, the Self Reporting Questionnaire 20 – Revised (SRQ-20R) and the General Health Questionnaire 28 (GHQ-28) were validated against the mental health module of the Composite International Diagnostic Interview – Auto, a computerized 1997 version of the CIDI that applied DSM-III-R and ICD-10 diagnostic criteria (Lee & Jenner, 2010). The General Health Questionnaire 28 data was collected using the usual Likert scoring system and this data was then converted to dichotomous score data (GHQ-R; symptoms vs. no symptoms) to facilitate comparison with the dichotomous SRQ-20R. The Self Reporting Questionnaire was first designed by the World Health Organisation to screen for psychiatric disturbance in primary health care settings, especially in developing countries (Beusenbergh & Orley, 1994). Originally, the Self Reporting Questionnaire contained 25 questions, 20 related to neurotic

symptoms, four concerning psychotic symptoms and one question asking about epileptic-type fits or convulsions (Beusenberg & Orley, 1994). This measure is known as the Self Reporting Questionnaire 25. Lee and Jenner’s (2010) adaptation of this measure used only the 20 questions related to neurotic symptoms. These questions were adapted to the AOD treatment environment by the addition of an extra column that asked respondents to indicate whether the problem they had reported had also occurred at a time when they were not using drugs or alcohol. The resultant measure was called the Self Reporting Questionnaire 20 – Revised (SRQ-20R). Participants were recruited from four outpatient counselling clinics, an acute assessment clinic, ambulatory detoxification services and two pharmacotherapy clinics. Some had already been in treatment for up to three-months at the time of recruitment. This is a long time frame for the validation of a measure presumably intended to be administered shortly after admission. Clients with a serious medical illness, active suicidal ideation, acute psychosis, and those in acute drug withdrawal were not eligible to participate (Lee & Jenner, 2010). In what the authors describe as the first validation study of the Self Reporting Questionnaire 20 in a clinical drug treatment setting, the following results were reported, see Table 16:

Table 16. Self Reporting Questionnaire Amended and Normal Versions Validation Results (Lee & Jenner, 2010).

Measure	Cut Off	Sensitivity	Specificity
SRQ-20R	3.5	0.897	0.755
	4.5	0.809	0.837
	5.5	0.765	0.918
SRQ-20	7.5	0.838	0.653
	8.5	0.765	0.735
	9.5	0.706	0.796

SRQ-20R = the amended version of the Self Reporting Questionnaire 20, SRQ-20 = the Self Reporting Questionnaire 20.

Sensitivity and specificity scores for the General Health Questionnaire 28 were not reported, making comparison of the two measures at specific cut off scores impossible. Area under the curve scores were reported as follows: SQR-20R (0.895), SRQ-20

(0.839), GHQ-28 (0.797) and GHQ-R (0.780) (Lee & Jenner, 2010). The authors concluded the SRQ-20R was most successful at identifying non-psychotic mental health disorders and incorporated it into the Psycheck screening toolkit at a recommended cut off score of 5 (Lee & Jenner, 2010).

Rush and others (2013) published a promising validation study that compared four screening measures against the Structured Clinical Interview for DSM-IV-TR Axis I Disorders – Research Version (First, Spitzer, et al., 2002). Unfortunately there were some methodological issues with this study. Firstly, the study was conducted across a mixed modality population and only reported results aggregated across all the modalities. In this regard Rush and others (2013) stated their sites were intentionally chosen to include a heterogenous mix of services and clients, but by treating these heterogenous groups as a monolith for the purposes of screening instrument validation these authors produced results that would not generalize to any specific treatment modality individually. As far back as 1982 Hanley and McNeil noted that, ‘ROC curves have been plotted and evaluated qualitatively with relatively little attention paid to their statistical characteristics’ (p. 29). Castel, Rush and Scalco (2008) explain that:

Validity has been referred to as a property of the screening test but is better conceptualized as a property of a procedure, i.e., the use of a screening test, in a given context, for a specific purpose (Streiner and Norman 2006). Thus, on screening for mental disorders among clients in treatment for substance use disorders, the question is to find screening tools that have been validated with samples drawn from the target population, within the treatment context (p. 65).

If a measure is validated across two or more different settings with different populations in each, (for e.g., an outpatient setting and a residential setting), the different settings will likely have different prevalences and types of comorbidity at different levels of severity (Ries, 2008). For example, a very large study (N = 1,814,830) conducted by Lai and Sitharthan (2012), found different hospital settings had different rates

of comorbidity. If sensitivity, specificity and AUC scores are calculated from both settings combined, the measure is unlikely to perform as reported in either of those settings individually (Brenner & Gefeller, 1997). The question asked by studies that aggregate different treatment populations in this way might not be specific enough (for e.g., “Is this screening test valid among clients in treatment for substance use disorder?” or “Is this screening test valid?”). It is preferable to ask, “Is this screening test valid among clients in this treatment modality?” Ideally, measures should be validated in the population or setting in which they will be used because ‘validity is not a property of a screening instrument that remains stable across different populations’ (Castel et al., 2008, p. 70). Sensitivity, specificity, ROC-AUC scores, positive and negative predictive values and odds ratios all vary with the underlying prevalence and taxonomy of disorders in the population in which they are used (Brenner & Gefeller, 1997). Research suggests the populations and the prevalence of COD varies across different treatment modalities (Carra & Johnson, 2009; Craddock et al., 1997; Gerstein & Harwood, 1990; J. Ross et al., 2005). These differences preclude across-modality aggregation or comparisons (Craddock et al., 1997). Screening measure performance including appropriate cut off scores will not be the same in different populations. ‘Thus, the validity of a screening instrument has to be reassessed in accordance with the intended use in studies that will also inform the choice of cutoff scores’ (Castel et al., 2008, p. 70). As advised by Brenner and Gefeller:

The validity of diagnostic tests can typically be quantified only in relation to a defined distribution of the underlying traits. As a consequence, estimates of sensitivity and specificity of various diagnostic tests cannot be compared, unless they are derived from populations in which this distribution is comparable. ... These findings ... require careful consideration by public health professionals in the design of screening programs ... [which] may be considerably improved by taking the variability of performance of diagnostic tests between patient subgroups into account (1997, p. 989).

Another limitation of Rush and other’s (2013) study was its relevance to an AOD treatment industry in need of screening instruments that have no costs associat-

ed with their use. Two of the four screening measures validated in the study have costs associated with either their purchase and/or administration, making them less viable as screening options for much of the addiction treatment industry. Rush and others administered the GAIN Short Screener – Internalizing Disorder Screener (GSS-IDS, Dennis et al., 2006 a user license costs \$100 per site) and the Psychiatric Diagnostic Screening Questionnaire (PDSQ, Zimmerman & Mattia, 2001, the test manual costs US\$55 + on average US\$2.10 per administration for summary scoring sheets and test booklets). These two measures along with the Psychiatric subscale of the Addiction Severity Index (McLellan et al., 1992) and the K6 (Kessler et al., 2002) were administered to 544 clients across three treatment centers, (a teaching hospital, a normal hospital and a community agency), involved in the provision of a number of treatment modalities (specialized assessment, withdrawal management, residential and non-residential services) (Rush et al., 2013). The overall prevalence of Axis I disorders across all these modalities taken as a whole was 69.9% (Rush et al., 2013). The performance of the four screening measures in this mixed population is summarized below in Table 17. Note: for reporting purposes the highest aggregate of sensitivity and specificity for each measure was chosen as the cut off score reported and then the positive and negative predictive values at that cut off score are also reported.

Table 17. AUC, Sensitivity, Specificity, Positive Predictive Value and Negative Predictive Value of Four Screening Measures (Rush et al., 2013)

Measure	AUC	Cut Off	Sensitivity	Specificity	PPV	NPV
GSS-IDS	.78	3	71	72	81	62
K6	.78	9	76	70	86	56
ASI(5)	.77	61-70	51	86	90	43
PDSQ	.82	35-39	74	74	87	55

AUC = Area Under the Curve score, PPV = Positive Predictive Value, NPV = Negative Predictive Value, GAIN-SS-IDScr = GAIN Short Screener - Internalizing Disorder Screener, ASI (5) = Addiction Severity Index 5th Edition Psychiatric Status Domain, PDSQ = Psychiatric Diagnostic Screening Questionnaire.

A thorough literature review of the validation studies completed to date reveals the lack of research to compare popular, freely available, easily administrable screening measures in a residential AOD treatment population. The available

measures have not been validated and compared in this population. Study 2 of this thesis addresses this gap in the literature and aims to provide evidence upon which residential AOD treatment services can base and improve their practices. There is a need to conduct validation studies that provide comparative data amongst screening measures to help identify those that might perform best for particular treatment settings. If treatment services are to improve the identification and (thereafter) treatment of clients with co-occurring disorders, an evidence-base must be provided to inform these services which screening instrument(s) to use and at what cut-off score(s). Study 2 validates and compares five commonly used screening measures against a Structured Clinical Interview as a criterion for caseness. Research questions answered by Study 2 will include:

1. What is the rate and taxonomy of mental disorder comorbidity in residential AOD treatment services as determined by a standardized semi-structured clinical interview?
2. How do commonly used screening measures compare in detecting comorbid mental disorders?
3. What are the optimal cut-off scores to be used in this population?

Chapter 2 Study 1¹

1. Introduction

Currently, internationally and in Australia, there are limited data regarding the extent of mental disorder comorbidity in AOD residential treatment services. Little is known about contemporary residential AOD treatment populations specifically. This is likely to hamper the appropriate development of treatments and services to address comorbidity. This study aims to fill this gap by using standardized, widely used screening measures to estimate the prevalence of co-occurring Axis I mental disorders in Australian AOD residential treatment services.

2. Materials and methods

2.1. Participants

The study was conducted across eight of The Salvation Army's AOD recovery service centers located throughout New South Wales, the Australian Capital Territory and Queensland during 2008-2009. The Salvation Army residential recovery services provide up to 10-months of residential alcohol and other drug treatment. Participants were 278 AOD residential recovery service clients. The Salvation Army Bridge Program uses the 12-Step recovery model based upon a disease perspective of addiction and aims for abstinence. University of Wollongong Human Research and Ethics Committee approval was gained for the study and all participation followed an informed consent process with participants. There were 233 (84%) males and 44 (16%) females (one participant failed to enter their gender). Ages ranged from 18 to 68-years, averaging 37-years old ($SD = 10.90$). Participants had been in the programs for

¹ This chapter is based on Mortlock, K. S., Deane, F. P., & Crowe, T. P. (2011). Screening for mental disorder comorbidity in Australian alcohol and other drug residential treatment settings. *Journal of Substance Abuse Treatment*, 40(4), 397-404. doi: 10.1016/j.jsat.2011.01.002

an average of 16-weeks ($SD = 17.05$) and indicated they had alcohol or other drug problems for an average of 17-years ($SD = 9.59$). Alcohol was the primary drug of concern for 155 participants (55.8%), followed by amphetamines for 41 participants (14.8%), cannabis for 29 participants (10.4%) and heroin for 16 participants (5.8%). Most participants (63%) had sought drug or alcohol treatment previously and almost half (48%) indicated they had sought treatment for a mental disorder previously. Fifty-seven percent of clients reported at least one historical mental disorder diagnosis. Sixty-eight participants (24%) were resident in a recovery service that included an identified dual disorder program for some (less than 50%) of its clients. However, the overall rate of mental disorder at this service was actually lower than the rate of mental disorder in the rest of the sample so this did not positively skew the estimates.

2.2. Materials

The rate of CODs in The Salvation Army AOD recovery service centers was estimated by administering two widely used mental disorder screening instruments as part of a larger cross-sectional study:

Addiction Severity Index—Self-Report Psychiatric Status Domain

The Addiction Severity Index (ASI; McLellan et al., 1992; McLellan et al., 1980) is the most used measure in research of substance abuse outcomes (Doub, 2001). It has been extensively validated, including within COD populations (Hodgins & El-Guebaly, 1992). The full ASI is a structured clinical interview that usually takes approximately 40 minutes to complete. It covers seven domains: medical condition, employment, drug use, alcohol use, legal status, family/social relations and psychiatric condition (McLellan et al., 1992). ASI composite scores in each domain are arithmetically derived indices based upon items that examine problem severity over the last 30

days. Scores range from 0 (no significant problem) to 1 (extreme problem) (Clark & Young, 2009).

In this study, a self-report version of the ASI Psychiatric Status domain was used (ASI-SR; Rosen, Henson, Finney, & Moos, 2000). Cacciola, Pecoraro, and Alterman (2008) reported that at a cutoff score of 0.22 the ASI Psychiatric Status Composite Score had a sensitivity of 80.07% and a specificity of 60.11%, giving the instrument an overall accuracy of about 70% in their sample where it predicted 58% of the sample was positive for mental disorder and the actual overall prevalence as measured by a SCID-III-R diagnostic interview was 45.3%.

Rosen et al. (2000) compared the full interview version with the self-administered version of the ASI and concluded the two formats had similar internal consistency and were strongly correlated in the Psychiatric scale (0.67). The mean endorsement of psychiatric symptoms was significantly higher on the self-administered version (0.36) than in the interview (0.27), $p < .01$, in line with a general tendency to endorse more problems on the pencil-and-paper questionnaire (Rosen et al., 2000). The authors speculated this difference may reflect social desirability concerns with respondents more willing to endorse psychiatric symptoms on a pencil-and-paper measure than when face to face with an interviewer (Rosen et al., 2000). Given the negative consequences associated with unidentified comorbidity, the tendency of the ASI Self-Report Psychiatric Status Domain (ASI-SR) to act in a more sensitive manner was viewed as desirable in our population.

The ASI is considered adequate as a screening instrument for CODs, but the individual ASI domains examined singly have been criticized for not providing enough descriptive detail and depth of coverage (Doub, 2001). It has been recommended that the Psychiatric Status section of the ASI be supplemented with more de-

tailed, domain-specific measures and that validity with respect to DSM-IV diagnostic criteria could be ‘improved through the addition of expanded descriptors of clinical symptomatology [sic]’ (Doub, 2001, p. 104). We followed this recommendation in this study by adding an additional measure detailed below:

Mental Health Screening Form III

The Mental Health Screening Form III (MHSF-III; Carroll & McGinley, 2001) is a screening instrument designed to detect mental disorder comorbidity in drug and alcohol taking populations. The first four questions on the MHSF-III are not unique to any particular mental disorder diagnosis. Questions 5 through 17 reflect symptoms associated with specific diagnoses/diagnostic categories (for example, Q5, schizophrenia; see Table 19 for others). Each MHSF-III question is answered with either “yes” or “no.” All questions reflect the respondent's life history; therefore, all questions begin with the phrase “Have you ever...”. A total score is calculated by adding the total number of “yes” responses. The maximum possible score on the MHSF-III is 18 (question 6 has two parts).

The MHSF-III was first validated within a long-term, residential, therapeutic, AOD treatment community in the Bronx, New York ($r = .74$ for test– retest; Cronbach's $\alpha = .83$ and $.89$ at Time 1 and Time 2, respectively; 87% of participants marked items “ yes” that corresponded with their primary mental health diagnosis; Carroll & McGinley, 2001). The original recommendation made by the creators of the MHSF-III was that specialist consultation should be arranged if any of Items 5 through 17 were endorsed with a “yes” response (Carroll & McGinley, 2000). In a subsequent review of more than 150 screening measures, the MHSF-III was identified as one of the three best-performing measures when the MHSF-III total score was used

as an indication of overall need for follow-up (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007).

2.3. Procedure

Questionnaires were handed out to participants in large group meetings at each of The Salvation Army recovery service centers. Participation was voluntary, and those who chose not to participate could return incomplete measures in an envelope without being identified. Participants were given as much time as they required to complete the questionnaires. Literacy problems were overcome by reading questions to participants where necessary, although this was rarely required. The data were entered into SPSS v. 21 for analysis.

3. Results

Almost half (47.6%) of the respondents reported seeking psychological treatment previously and 56.8% self-reported being diagnosed with a mental disorder previously. Table 18 displays the breakdown of these historical self-reported diagnoses. A historical affect disorder diagnosis was self-reported by 48% of participants, followed by 14% reporting some form of anxiety disorder. Nine percent of self-reported historical mental disorder diagnoses were schizophrenia or psychosis-related disorders.

Table 18. Percentage of Self-Reported Previous Mental Disorder Diagnoses

Historical Mental Disorder Diagnosis	Proportion of Historical Diagnoses
Depression	35%
Bipolar Disorder	13%
Anxiety	9%
Post Traumatic Stress Disorder	5%
Schizophrenia	5%
Psychosis	4%
Borderline Personality Disorder	3%

On the MHSF-III (N = 259) using the first cutoff score of 3, 253 of the 259 (97.68%) participants in our residential AOD treatment sample screened positive for

mental disorder. Using psychometric validation figures from previous research (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007), it is suggested that if semi-structured clinical interviews were conducted upon the sample it would be found that the MHSF-III accurately identified 73% of these 253 respondents who screened positive, meaning the best estimate is that 185 of the 259 (71.31%) respondents who completed the full measure actually have a fully diagnosable mental disorder.

On the MHSF-III (N = 259) using the cutoff score of 6, 229 of the 259 (88.4%) participants screened positive for mental disorder. Again, previous psychometric validation research using semi-structured clinical interviews as the criterion suggests at this cutoff score, it would be found that the MHSF-III accurately identified 72% of these 229 respondents who screened positive. This returns the estimate that 165 of 259 (63.66%) respondents actually have a diagnosable mental disorder.

Lastly, on the MHSF-III (N = 259) at the cutoff score of 11 previously recommended for detecting severe mental disorder only (major depression, bipolar disorder and schizophrenia), 137 of the 259 (52.90%) participants screened positive, and using previous research that reports 76% accuracy, 104 of the 259 (40.20%) clients in our sample are estimated to have a severe mental disorder.

The mean MHSF-III total score (N = 259) in our sample was 10.60 (SD = 4.07), which indicated clients reported an average of 10.60 symptoms of mental disorder. The breakdown of these positive responses to the different symptom questions contained within the MHSF-III was as follows in Table 19.

Table 19. MHSF-III Symptom-Question Response Prevalence

Question Number/Disorder Symptom Queried	Frequency	Percentage
Q5 Schizophrenia symptom	97/272	35.7%
Q6a Depressive disorder symptom	215/271	79.3%
Q6b Depressive suicide attempt symptom	120/262	45.8%
Q7 Post traumatic stress disorder symptom	160/272	58.8%
Q8 Phobias symptom	201/272	73.9%
Q9 Intermittent explosive disorder symptom	174/270	64.4%
Q10 Delusional disorder symptom	191/271	70.5%
Q11 Sexual & gender identity disorder symptom	136/270	50.4%
Q12 Eating disorders symptom	93/270	34.4%
Q13 Manic episode symptom	169/269	62.8%
Q14 Panic disorder symptom	209/276	75.7%
Q15 Obsessive compulsive disorder symptom	143/276	51.8%
Q16 Pathological gambling symptom	138/275	50.2%
Q17 Learning disorder & mental retardation	64/275	23.3%
Q6a & Q13 Bipolar disorder symptoms	143/269	53.1%

On the ASI-SR ($n = 164$) using a cutoff composite score of .22, 107 of the 164 (65.2%) participants who validly completed the measure in our sample screened positive for mental disorder. Using previous psychometric validation figures derived from comparing the ASI Psychiatric Status score to a SCID-III-R interview (Cacciola et al., 2008), it is suggested the ASI-SR accurately identified 70% of these 107 respondents who screened positive, with the result that the ASI-SR estimate is that 75 of the 164 (45.67%) respondents who completed the full ASI-SR measure have a diagnosable mental disorder. The mean ASI-SR Psychiatric Composite score ($n = 164$) was .41 ($SD = .38$). For the reasons to be discussed below, these ASI-SR results should be considered preliminary.

3.1 Comparison of MHSF-III and ASI-SR estimates

Of those who did screen positive for mental disorder on the ASI-SR, 92.52% (99/107) validly completed the MHSFIII. At a cutoff score of 3 on the MHSF-III, all of those 99 (100%) who screened positive for current mental disorder when asked about the last 30 days on the ASI-SR also screened positive for current mental disorder when asked about their entire lifetime on the MHSF-III (as would be expected). At a cutoff score of 6 on the MHSF-III, 95.96% (95/99) of those who screened positive for men-

tal disorder when asked about the last 30 days on the ASI-SR also screened positive on the MHSF-III. This means four participants who screened positive for mental disorder in the last 30 days on the ASI-SR did not also screen positive for mental disorder when asked about their lifetime experience on the MHSF-III at this higher cutoff score of 6. At a cutoff score of 11 on the MHSF-III, 69.70% (69/99) of those who screened positive for mental disorder when asked about the last 30 days on the ASI-SR also screened positive for severe mental disorder on the MHSF-III. Of those who screened negative for mental disorder on the ASI-SR, 96.49% (55/57) validly responded to the MHSF-III. At a cutoff score of 3 on the MHSF-III, 98.18% (54/55) of those who screened negative for mental disorder on the ASI-SR screened positive on the MHSF-III. At a cutoff score of 6 on the MHSF-III, 83.64% (46/55) of those who screened negative for mental disorder on the ASI-SR screened positive on the MHSF-III. Even at a cutoff score of 11 on the MHSF-III, 38.18% (21/55) of those who screened negative for mental disorder on the ASI-SR screened positive for severe mental disorder on the MHSF-III.

Of the significant number of participants who failed to validly complete the ASI-SR, 91% managed to validly complete the MHSF-III. Using a cutoff score of 3 on the MHSF-III, 95% of participants who failed to validly complete the ASI-SR screened positive for mental disorder on the MHSF-III. Using a cutoff score of 6, it was 84%, and with a cutoff score of 11, 44% of those who failed to validly complete the ASI-SR screened positive for severe mental disorder on the MHSF-III.

4. Discussion

My results suggest there are very high levels of mental disorder comorbidity in Australian AOD residential treatment services. Sixty-five percent to 98% of participants

screened positive to the presence of mental disorder using two screening instruments. Before discussing these results in greater detail it should be noted a problem emerged with using the ASI-SR in this population. The scoring methodology used with the ASI-SR requires all items on the form to be completed for a composite score to be generated. One missing item means the score cannot be generated. In our sample, only 164 of 278 (59%) respondents managed to complete every part of the ASI-SR to enable a score to be generated. This compares to the MHSF-III, where 259 of 278 (93.2%) respondents successfully completed the MHSF-III measure. The relatively high frequency of missing data on the ASI-SR measure combined with the limitation of any missing data to generating a score emerged as a major constraint with using a self-report version of the ASI with COD populations in my study. As a consequence of this limitation and the smaller sample size using the ASI-SR measure as a result, the mental disorder estimates from the ASI-SR should be viewed as preliminary only, and the mental disorder estimates from the MHSF-III are to be preferred. It is recommended that the ASI should be administered in its interview format to this population in the future.

Estimates based upon previous psychometric validation research conducted upon the MHSF-III suggest that diagnosable general Axis I mental disorder comorbidity exists in between 64% and 71% of clients in residential AOD services run by the Salvation Army in Australia. Severe mental disorder is estimated to be present in 40% of residential clients. These estimates represent a significant increase in psychological comorbidity compared with the figure (45%) reported 30-years ago in a United States of America therapeutic community population (Jainchill, 1994).

Previous research on the MHSF-III reported three different cutoff scores at which general and severe mental disorder may be indicated (Sacks, Melnick, Coen,

Banks, Friedmann, Grella, & Knight, 2007). AOD treatment services must weigh up the relative costs and benefits related to correctly identifying the maximum number of clients with mental disorder comorbidity with the increased costs from initiating further assessment of the false positives that a more sensitive cutoff score also returns. This issue is discussed in greater detail later in this thesis, but if the overall true prevalence of mental disorder in a sample is high, then a low cutoff score that provides the highest sensitivity (for example, at a cutoff score of 3, 90%) will provide the most accurate estimate of mental disorder (71% in our study; Gordis, 2004). Accordingly, my results suggest a cutoff score of 3 on the MHSF-III is most appropriate for AOD services unwilling to allow clients with current COD to fall through the cracks of screening given the serious consequences that correlate with untreated COD. This is because previous psychometric validation research indicates a cutoff score of 3 affords maximum (90%) sensitivity and is most unlikely to miss mentally disordered cases. If true prevalence is not that high and/or services wish to limit false positives for cost or other reasons such as limited access to further mental disorder assessment and follow-up, then a cutoff score of 6 may be preferred with its increased ability to rule out false positives (with a higher specificity of 67.5%) at the expense of lesser sensitivity (75%). In our sample, this cutoff score provided an estimate that 64% of participants had a COD. The higher cutoff score used to generate this estimate is likely to result in fewer false positives but lower overall accuracy due to a lower sensitivity that could see disordered cases missed. At the other end of the scale is the cutoff score of 11 recommended as indicating severe mental disorder, such as major depression, bipolar disorder and schizophrenia. Services that are interested in identifying the most severe mental disorder may choose this cutoff score. In our sample, this reduced the number of participants identified to 40%.

A significant number of participants screened negative for mental disorder on the ASI-SR but screened positive on the MHSF-III: 95%, 84%, and 44% respectively at cutoff scores of 3, 6, and 11 on the MHSF-III. These results could be interpreted in two ways. The difference in estimated prevalence based upon lifetime (MHSF-III) and 30-day (ASI-SR) information may reflect the fact that some individuals made a recovery from mental disorder. Alternatively, the discrepancy may suggest that the ASI-SR with its truncated taxonomy of mental disorder symptoms lacks sensitivity to detect a broad spectrum of mental disorders in this population, as suggested by previous research (Doub, 2001). A further complication was the low valid response rate returned on the ASI-SR. It appears that the self-report format of the ASI-SR may be a limitation that could see significant comorbidity missed in this population. Unlike the MHSF-III, which is consistent in its simple “Yes/No” format throughout its (effectively) 18 questions, the ASI-SR varies the format of answers it requires. Some questions ask how many days in the past 30-days the respondent has experienced psychological or emotional problems (requiring a numerical 0-30 response). Other questions are in a “Yes/No” format. And still other questions ask for a check-box rating according to a rating scale with the following options: not at all, slightly, moderately, considerably, extremely. It is possible this variation in the format of required answers is a problem for the self-report version of this measure. The interview version of the ASI needs to be tested in conjunction with the MHSF-III to confirm whether it is the self-report version or something inherent in the items that raises the risk of missing comorbidity.

Another notable finding was the high frequency of symptom endorsement. Participants across the entire valid sample of MHSF-III responses (N = 259) reported experiencing more than 10 symptoms of mental disorder on average. This high fre-

quency of symptoms represents a significant departure from previous research using this measure. The original validation study conducted upon the MHSF-III in a long-term residential therapeutic community program for substance abuse in New York reported a mean MHSF-III total score of just 5.1 ($SD = 4.0$; Carroll & McGinley, 2001). More recently, in a prison substance abuse setting, the average MHSF-III total symptom endorsement score was again only 4.2 ($SD = 4.3$; Ruiz, Peters, Sanchez, & Bates, 2009). Our mean MHSF-III total symptom endorsement score (10.60) is double these previously reported figures. This result suggests clients in residential AOD treatment services in Australia may be presenting with much higher rates of psychological comorbidity than clients in other settings. It could also represent a continuation of the trend towards worsening comorbidity reported in therapeutic communities in the United States of America by Jainchill over the ten-year period from the 1974 to 1984 (Jainchill, 1994). The clients in this study definitely endorsed a higher number of psychological symptoms when queried with a short survey. Whether this high symptom endorsement represents high rates of full-blown mental disorder presenting to Australian residential alcohol and other drug treatment can only be investigated by administering a full diagnostic interview that enquires into all the criteria of each disorder.

The breakdown of symptoms experienced by clients in Australian residential AOD treatment services was very different from epidemiological surveys in the general population. Lending weight to Grella and Stein's (2006) findings that 36% of residential substance abuse treatment clients with identified comorbidity had a psychotic disorder, in the present study more than 35% of participants indicated that they had heard voices no one else could hear or had seen objects or things that others could not see. Seventy percent of participants endorsed the delusional disorder symptom ques-

tion, indicating they had felt that people may have something against them without them necessarily saying so or that some person or group may be influencing their thoughts or behavior. It is unclear whether these are positive symptoms associated with a psychotic disorder or secondary to drug use. A semi-structured clinical interview would be needed to clarify this issue further, but the potential that psychotic disorders are much more prevalent than previously thought in this population is clearly indicated. Many screening measures fail to screen for “lower prevalence” disorders and may fail to identify these clients in need of further assessment (for e.g., the GAIN Short Screener, Dennis et al., 2006; the General Health Questionnaire, Goldberg et al., 1997; the K6 or K10, Kessler et al., 2002; or the Self Reporting Questionnaire 20, Lee et al., 2007).

When high-prevalence affect and anxiety disorders are considered, they too may be much more prevalent in my Australian residential AOD treatment sample than in the general population (Slade et al., 2009). Almost 80% of participants indicated they had major symptoms of depression, and almost half (45.8%) of the participants indicated they had attempted to commit suicide previously. Symptoms of a manic episode had been experienced by 62.8% of participants, and when combined with positive responses to the depressive disorders symptom question, 53.1% or more than half of participants screened positive for possible bipolar disorder. Three quarters (75.5%) of Australian AOD residential treatment clients endorsed experiencing symptoms of panic disorder. All of these results represent a significant potential increase in psychiatric comorbidity when compared with the United States of America therapeutic community studies of the 1970s and 1980s reported on by Nancy Jainchill (1994).

It has previously been noted that chemically dependent persons present with a variety of disorders across a wide spectrum of diagnoses (Carroll & McGinley, 1998).

Ross and others (2005) found that those with heroin substance use disorder in residential treatment represented a hard core with significantly greater levels of psychiatric comorbidity even when compared with heroin users in other treatment modalities. My results accord with this previous research and suggest the same may well be true for a broader range of substance-disordered clients in residential treatment. Clearly, more research using semi-structured clinical interviews is needed in this area to definitively identify the needs of this population.

5. Conclusions

Axis I mental disorder comorbidity is estimated to exist at high rates (64%-71%) in the Salvation Army Australian residential AOD treatment populations. Much higher than the rate reported in the United States of America 30-years ago (45%; Jainchill, 1994). The Salvation Army Australian residential AOD treatment populations endorse a large number of mental disorder symptoms from a wide spectrum of mental disorders when surveyed with short screening instruments. Psychotic disorders may be present in this population at a much higher rate than reported previously in either treatment or non-treatment populations (Jainchill, 1994; Morgan et al., 2011). Comprehensive mental disorder assessment with semi-structured clinical interviews is necessary to accurately ascertain the identity and needs of this population.

Chapter 3 Study 2

1. Introduction

Study 2 is predominantly a psychometric validation study. It is aimed at validating and comparing the ability of five commonly used screening instruments to detect co-occurring mental disorders in residential alcohol and other drug program participants. This will provide much-needed evidence for residential alcohol and other drug treatment services to base their screening practices, assisting with both instrument selection and cut off score decisions. Several of the results from Study 1, however, warranted follow up and thus there is also an additional prevalence/taxonomy aspect to Study 2 that was aimed at clarifying the results of Study 1.

In residential alcohol and other drug treatment the prevalence of mental disorder comorbidity was until recently unknown. Study 1 suggested comorbidity might be present at rates even higher than that found across treatment modalities taken together (64-71%) (Mortlock, Deane, & Crowe, 2011; J. Ross et al., 2005). If accurate, the estimates from Study 1 represent a significant increase in comorbid psychopathology since studies conducted into the residential AOD treatment population nearly forty-years ago (when the rate was 45% in an American therapeutic community population, Jainchill, 1994). In Study 1 participants in residential AOD treatment in Australia endorsed experiencing on average more than 10 symptoms of mental disorder when administered a short survey (Mortlock et al., 2011). This is double the rate of symptom endorsement found in either an American therapeutic community setting (5.1) or an American prison setting (4.2) using the same measure. It is also possible that psychotic disorders exist in this subpopulation at rates many times those found in the general population (up to 35%) (Grella & Stein, 2006; Mortlock et al., 2011).

If found to be accurate, the prevalence and taxonomy of mental disorder comorbidity estimated in Study 1 would have marked implications for services. It is possible that the 35% of clients in Study 1 who reported “seeing things no one else could see and/or hearing things no one else could hear” could be reporting these symptoms as secondary to substance use disorders. However, even if half of these reports were due to primary psychosis that would still represent 17.5% of residential AOD clients suffering a current comorbid psychotic disorder. It has been thought previously that clients with such severe mental disorders only presented to – and certainly should only be treated by – specialist mental health services, not AOD services (see, for e.g., the four quadrants of care conceptualisation that classifies clients of the AOD and mental health systems into four categories based upon symptom severity in Center for Substance Abuse Treatment, 2005). If clients with psychosis are frequently presenting to residential AOD treatment services serious thought needs to be given to the training needs of the workers in those services and additionally the need to improve and standardize service access to specialist psychiatric consultants.

The figures in Study 1, however, are only estimates based upon short screening measures. Short screening measures lack the ability, for example, to tease out and discriminate between symptoms representative of primary psychoses and those secondary to substance use disorders. They also don’t determine whether all criteria for a disorder are met, or make an assessment of functional impairment to determine how relevant to treatment the comorbidity is. In order to clarify the prevalence and taxonomy of comorbidity in residential treatment services – and the identity and needs of the population within these services – a study that utilizes a full diagnostic interview is necessary.

It has been known for some time that successful early identification of mental disorder comorbidity is the first step in achieving better outcomes for the co-occurring disorder population (Croton, 2005b; Ziedonis et al., 2005). This has led to government funding and guidelines aimed at improving the identification of those with both a mental disorder and a substance use disorder in treatment settings. Resources have been published that review the screening measures currently available to detect co-occurring mental disorders (Center for Substance Abuse Treatment, 2005; Croton, 2007; Dawe et al., 2002). Guidelines have been published both nationally and internationally that advocate routine screening for mental disorder comorbidity. (Center for Substance Abuse Treatment, 2005; Dawe et al., 2002; Gordon, 2008; Hawkings & Gilbert, 2004; Health Canada, 2002; Institute of Medicine, 2006; Mills et al., 2010; NSW Health, 2000; Substance Abuse and Mental Health Services Administration, 2002). Yet despite the guidelines, reviews, and increasing awareness of the prevalence and harms associated with undetected COD, the ongoing failure of substance misuse treatment systems to recognize co-occurring mental disorders is well documented (Croton, 2007; Donald et al., 2005; Hu et al., 2006; Lubman et al., 2008). Various reasons have been proposed why substance misuse treatment systems are continuing to fail to recognize co-occurring mental disorders. One major barrier to improving the identification of clients with co-occurring disorders in these systems to date has been a lack of appropriate research aimed at validating and comparing the various screening instruments available to detect co-occurring disorders. A review of the validation research conducted to date revealed a dearth of applicable research and significant methodological issues and inconsistencies among the studies that have been conducted. Comparative studies that compare multiple measures' performance against a recognized criterion measure are rare and they have not been conducted

within residential alcohol and other drug services. The studies that have been conducted at best reported a truncated set of statistical analyses inadequate to properly ascertain screening instrument performance, and at worst utilised methodologies that invalidated their results and revealed a significant lack of understanding of the underlying statistical analyses involved.

As noted previously, it is highly preferable that screening measures are validated within the treatment modality in which they will be used (Castel et al., 2008). Measures validated in a different treatment modality or in several different treatment modalities aggregated as a whole simply will not perform as indicated and cannot be generalized beyond the study conducted. The underlying prevalence and taxonomy of disorder in a population affects the performance of screening measures, including the sensitivity, specificity, positive and negative predictive values and odds ratios and the area under the curve score. Cut off scores may not be the same in different populations. Therefore validation results produced by jumbling settings/populations together will not apply accurately to any one setting/population disaggregated from such a mistakenly homogenized whole (Brenner & Gefeller, 1997). As a result, there is a need for studies that validate and compare commonly available screening measures in each of the various treatment modalities that exist within substance misuse treatment systems.

In the current study the treatment modality is residential alcohol and other drug treatment. A detailed description of the sample demographic information allows further clarity about the context in which these results can be applied.

2. Methods

2.1 Participants

Figure 1. Study 2 Recruitment and Participation Rate.

The study was conducted across four of The Salvation Army's alcohol and other drug recovery service centers located in New South Wales and the Australian Capital Territory, Australia during 2010-2011. Participants were randomly selected from among all AOD service clients within four weeks of their admission date using a random number generator (<http://www.random.org>). All participants had already gone through withdrawal management previous to admission to the program. The only inclusion criterion was that potential participants were within four weeks of admission and all had an equal chance of being included in the study. Sample size and power calculation were determined in accordance with the procedure described by Hajian-Tilaki (2011) under the "Sample size in estimating the proportion of binary outcome – descriptive study" subheading. Using an estimated prevalence of 70% (based upon study 1 results), 90% power may be achieved with 95% confidence with a minimum sample size of 80.67 (to two decimal places). One-hundred and twenty-four participants agreed to participate in the study out of 144 clients approached, easily meeting this

requirement and giving a participation rate of 86%. Of the 124 alcohol and other drug, residential, recovery service clients who agreed to participate, 121 participants completed four screening instruments, 120 participants completed SCID-I/P interviews and 117 participants completed both the four screening instruments and a SCID-I/P interview. Of the four participants who did not complete a SCID-I/P interview, two participants stopped participating due to emotional difficulties experienced during the interview or active psychosis, one participant had to be sedated by the service at the time the interview was to be conducted and one participant went to the gym. One screening measure, the Addiction Severity Index Psychiatric Status Domain, was collected by caseworkers at the services and unfortunately valid data was only available for 65 of the above participants on this measure, of which 63 had also completed a SCID-I/P interview. This was due mainly to staff failing to enter data into the data management system or failing to administer the measure. University of Wollongong Human Research and Ethics Committee approval was gained for the study and all participation followed an informed consent process with participants.

The 124 participants who took part in the study were 84% male and 16% female. Ages ranged from 18.25 to 63.75 years, averaging 36.56 years old ($SD = 10.03$). Alcohol was the primary drug of concern for 77 participants (62%), followed by amphetamines for 18 participants (14.5%), cannabis for 6 participants (5%) and heroin/methadone/other opiates for 7 participants (5.6%).

2.2 Materials

The following interview and self-report mental disorder screening instruments were administered:

Structured Clinical Interview for DSM-IV-TR Axis I Disorders - Research Version, Patient Edition (SCID-I/P)

The SCID-I/P was used as a criterion measure to establish the rate and taxonomy of co-occurring Axis I mental disorders (SCID-I/P, 1/2007 Revision, First, Spitzer, et al., 2002). The SCID-I/P is considered the gold standard in diagnosing mental disorders, a large number of studies testify to its reliability and validity (First, Gibbon, Spitzer, & Williams, 2002). Structured clinical interviews such as the SCID-I/P have been reported to be more sensitive to the presence of comorbid mental disorders than unstructured clinical interviews (Grove & Meehl, 1996; Zimmerman & Mattia, 1999). The SCID-I/P (First, Spitzer, et al., 2002) was administered and rated by a doctoral psychology student who had received intensive training in conducting SCID-I/P interviews.

Addiction Severity Index – Psychiatric Status Domain (ASI).

The Addiction Severity Index is a semi-structured interview and was administered by trained caseworkers at the recovery services within 1-2 weeks of participant admission to treatment as part of a routine intake assessment. As mentioned previously the Addiction Severity Index (McLellan et al., 1992; McLellan et al., 1980) is the most used measure in research into substance abuse outcomes (Doub, 2001). It has been extensively validated, including within COD populations generally (Hodgins & El-Guebaly, 1992). In the present study only the Psychiatric Status domain of the interview version of the fifth edition of the Addiction Severity Index is reported.

Mental Health Screening Form III (MHSF-III).

The MHSF-III (Carroll & McGinley, 2001) is the same instrument as was used in Study 1.

Self Reporting Questionnaire 20 Revised (SRQ-20R) and the Self Reporting Questionnaire 25 Revised (SRQ-25R).

The Self Reporting Questionnaire was designed by the World Health Organisation to screen for psychiatric disturbance in primary health care settings, especially in developing countries (Beusenberg & Orley, 1994). As mentioned previously, originally, the Self Reporting Questionnaire contained 25 questions, 20 related to neurotic symptoms, four concerning psychotic symptoms and one question asking about epileptic-type fits or convulsions (Beusenberg & Orley, 1994). This measure is known as the Self Reporting Questionnaire 25 (SRQ-25). An adaptation of the SRQ-25 that used only the 20 questions related to neurotic symptoms was used by Lee et al., (2007) as part of the Psycheck mental disorder screening package. In this version, known as the Self Reporting Questionnaire 20 – Revised (SRQ-20R), questions were adapted to the AOD treatment environment by the addition of an extra column that asks respondents to indicate whether the problem they have reported has also occurred at a time when they were not using drugs or alcohol. In the present study, the SRQ-20R and the five additional questions covering psychosis and epilepsy that together constitute the SRQ-25 and modified in the same way were administered separately to facilitate a comparison of the performance of the SRQ-20R and what effectively became the Self Reporting Questionnaire 25 – Revised (SRQ-25R) measures in the population of interest.

Modified Mini-Screen (MMS).

The Modified Mini Screen (MMS) was created by the New York State Office of Mental Health and the New York State Office of Alcohol and Substance Abuse Services, (with expert consultation), to remedy the lack of validated measures available to base a systemic decision rule to refer people with substance use problems in public sector settings for further mental health assessment (Alexander et al., 2008). The MMS is a combination of gateway questions taken from the Diagnostic and Statistical

Manual for Mental Disorders–IV–TR (American Psychiatric Association, 2000), the Structured Clinical Interview for DSM–III–R Non-Patient Edition (Spitzer et al., 1988), and the Mini International Neuropsychiatric Interview (Sheehan et al., 1998). There are 22 self-report items designed to identify persons in need of further assessment for mood, anxiety and/or psychotic disorders in a variety of settings including research studies (Brandau et al., 2005; Connecticut Department of Mental Health and Addiction Services, 2007). The MMS has been validated in a combined addiction, social services and corrections population and demonstrated good internal consistency (Cronbach's alpha 0.92), inter-rater agreement (92%) and one-week, test-retest reliability (79%) (Alexander et al., 2008).

2.3 Procedure

Participants were administered the ASI within 1-2 weeks of admission to treatment as part of a routine intake assessment. Within four-weeks of admission to treatment diagnostic and self-report data were collected as part of a larger study assessing the psychometric validity of measures of mental disorder and mental health in a residential AOD treatment population. Randomly selected participants participated in two research sessions two-days apart. In a diagnostic interview session participants were administered the SCID-I/P (First, Spitzer, et al., 2002). In the other session participants were administered the MHSF-III (Carroll & McGinley, 2001), the MMS (Brandau et al., 2005), the Psycheck version of the SRQ-20R (Lee et al., 2007) and the five additional questions that with the SRQ-20R combine to form the SRQ-25R (Beusenbergh & Orley, 1994). Information from one session was not consulted when conducting the other session. The data was entered into SPSS v. 21 for analysis.

2.4 Data Analysis

A Receiver Operating Characteristic (ROC) curve analysis was conducted on all of the short screening instruments to determine their diagnostic validity using the SCID-I/P as a criterion measure for caseness. Sensitivity, specificity, accuracy, positive and negative predictive values and positive and negative odds ratios were calculated for each measure across a range of different cut off scores along with an area under the curve (AUC) score that goes across all cut off scores. The number of clients indicated for further assessment and the number of disordered cases correctly identified by each measure at each cut off score is also noted to facilitate a proper analysis of the real world results of screening with each measure at each cut off score.

ROC-AUC results usually vary between 0.50 and 1.0. A ROC-AUC score of 0.50 represents a line with a slope of 1 and indicates a complete lack of predictive ability, (it is the equivalent of chance, a 50/50 result) (Bisoffi et al., 2000). Results between 0.70 and 0.80 represent good accuracy (Cacciola et al., 2008). Greater than 0.80 represent reasonable to excellent accuracy and results above .90 excellent to outstanding accuracy (Cacciola et al., 2008; J. A. Swartz, 2007).

Inter-rater reliability was established by an independent clinical and research psychologist reviewing audiotape recordings of ten randomly selected SCID-I/P interviews. Ten was a modest sample but the overall rate of agreement on whether a current diagnosis was present was substantial at 90%, Kappa = 0.78 ($p = .011$). The rates for specific categories of disorder were, affective disorder 90%, Kappa = 0.80 ($p = .01$); anxiety disorder 80%, Kappa = 0.615 ($p = .035$); and a current psychotic disorder 100%, Kappa = 1.00 ($p = .002$) (all within past 30 days).

3. Results

According to the Structured Clinical Interview for DSM-IV-TR Axis I Disorders - Research Version, Patient Edition (First, Spitzer, et al., 2002), 105 of the 120 participants (87.5%) who answered the SCID/IP had a lifetime comorbid Axis I mental disorder. Eighty-eight of 120 participants (73.33%) had a current (30-day prevalent) comorbid Axis I mental disorder. Among the 73.3% of participants who had a current comorbid disorder, 1.67 comorbid mental disorders were present for each participant on average (in addition to their substance use disorder(s)). The taxonomy of these 30-day prevalent comorbid Axis I mental disorders is listed in Table 20 below:

Table 20. Comorbid Axis I Mental Disorder Prevalence.

Disorder	Valid N	Percentage
Major Depressive Disorder	38/120	31.67%
Dysthymic Disorder	18/120	15.00%
Bipolar I Disorder	10/120	8.33%
Other Bipolar Disorders	10/120	8.33%
Other Mood Disorders	2/120	1.67%
ANY MOOD DISORDER	67/120	55.83%
Generalized Anxiety Disorder	28/120	23.33%
Posttraumatic Stress Disorder	21/120	17.50%
Panic Disorder	12/120	10.00%
Agoraphobia w/o History Panic	4/120	3.33%
Social Phobia	12/120	10.00%
Specific Phobia	10/120	8.33%
Obsessive Compulsive Disorder	4/120	3.33%
Other Anxiety Disorder	4/120	3.33%
ANY ANXIETY DISORDER	55/120	45.83%
Schizoaffective Disorder	10/120	8.33%
Schizophrenia	7/120	5.83%
Other Psychotic Disorder	6/120	5.00%
ANY PSYCHOTIC DISORDER	23/120	19.17%
Binge Eating Disorder	2/120	1.67%
Anorexia Nervosa	2/120	1.67%
Hyperchondriasis	1/120	0.83%
ANY OTHER DISORDER	5/120	4.17%

The mean total scores, minimum scores, maximum scores and standard deviations for the five screening instruments validated in this study are listed in Table 21 below:

Table 21. Mean Total Scores, Range and Standard Deviations for Five Screening Instruments.

Measure	N	Min.	Max.	Mean	SD
Mental Health Screening Form III	121	0	17	9.14	3.65
Modified Mini Screen	121	0	20	8.74	5.16
Self Reporting Questionnaire 20 Revised	121	0	20	7.15	5.05
Self Reporting Questionnaire 25 Revised	121	0	21	8.05	5.47
Addiction Severity Index	65	0	.88	0.41	0.22

Note. N = number of participants who validly completed the measure, Min = minimum score, Max = maximum score, SD = Standard deviation.

The performance of the five short screening measures with reference to a SCID-I/P diagnosis as the criterion for caseness is reported in Table 22 below. The measure, sample and cut off score used are listed, followed by the sensitivity, specificity, accuracy, positive and negative predictive values, positive and negative odds ratios, the number of participants the measure indicated required further assessment and how many of the truly disordered cases the measure correctly identified at each cut off score. The rows with bold font indicate each measure's most accurate cut off score or the highest aggregate of sensitivity and specificity scores. As will be discussed, although this accuracy statistic is traditionally relied upon, it does not necessarily indicate the best cut off score to use with a measure, or which is the best measure to use, as it is merely a statistic that fails to consider the context of screening or the real world results of each measure at each cut off score.

Table 22. Performance of Five Short Screening Measures with Reference to SCID-I/P.

Measure/Cut Score	Sensitivity	Specificity	Accuracy	PPV.	NPV.	P.ODD	N.ODD	Ind.	Corr.ID
MHSFIII (N=117)									
Cut Off 3	100.0	16.1	58.1	76.8	100.0	1.19	0.00	112/117	86/86
Cut Off 6	96.5	38.7	67.6	81.4	80.0	1.57	0.09	102/117	83/86
Cut Off 9	61.6	71.0	66.3	85.5	40.0	2.12	0.54	62/117	53/86
Cut Off 11	41.9	87.1	64.5	90.0	35.1	3.25	0.67	40/117	36/86
Cut Off 12	34.9	93.5	64.2	93.8	34.1	5.37	0.70	32/117	30/86
MMS (N=117)									
Cut off 3	97.7	38.7	68.2	82.4	85.7	1.59	0.06	102/117	84/86
Cut Off 5	93.0	61.3	77.15	86.95	76.0	2.40	0.11	92/117	80/86
Cut Off 6	84.9	61.3	73.1	85.9	59.4	2.19	0.25	85/117	73/86
Cut Off 7	77.9	71.0	74.45	88.2	53.7	2.69	0.31	76/117	67/86
Cut Off 8	72.1	74.2	73.15	88.6	48.9	2.79	0.38	70/117	62/86
Cut Off 9	61.6	83.9	72.75	91.4	44.1	3.83	0.46	58/117	53/86
Cut Off 10	53.5	90.3	71.9	93.9	41.2	5.52	0.51	49/117	46/86
SRQ20-R (N=117)									
Cut Off 2	90.7	41.9	66.3	81.3	61.9	1.56	0.22	96/117	78/86
Cut Off 3	87.2	54.8	71.0	84.3	60.7	1.93	0.23	89/117	75/86
Cut Off 4	82.6	64.5	73.55	86.6	57.1	2.33	0.27	82/117	71/86
Cut Off 5	77.9	77.4	77.65	90.5	55.8	3.45	0.29	74/117	67/86
Cut Off 6	73.3	83.9	78.6	92.6	53.1	4.55	0.32	68/117	63/86
Cut Off 7	67.4	87.1	77.25	93.5	49.1	5.22	0.37	62/117	58/86
Cut Off 9	50.0	90.3	70.15	93.5	39.4	5.15	0.55	46/117	43/86
SRQ25-R (N=117)									
Cut off 2	90.7	29.0	59.85	78.0	52.9	1.28	0.32	100/117	78/86
Cut Off 3	89.5	38.7	64.1	80.2	57.1	1.46	0.27	96/117	77/86
Cut Off 4	86.0	54.8	70.4	84.1	58.6	1.90	0.26	88/117	74/86
Cut Off 5	80.2	71.0	75.6	88.5	56.4	2.77	0.28	78/117	69/86
Cut Off 6	76.7	83.9	80.3	92.95	56.5	4.76	0.28	71/117	66/86

Table 22 Con'd. Performance of Five Short Screening Measures with Reference to SCID-I/P.

Measure/Cut Score	Sensitivity	Specificity	Accuracy	PPV.	NPV.	P.ODD	N.ODD	Ind.	Corr.ID
Cut Off 7	73.3	83.9	78.6	92.6	53.1	4.55	0.32	68/117	63/86
Cut Off 9	55.8	90.3	73.05	94.1	42.4	5.75	0.49	51/117	48/86
ASI (N=62)									
Cut Off .1636	91.3	29.4	60.35	77.8	55.6	1.29	0.29	53/62	41/45
Cut Off .2371	89.1	52.9	66.43	83.7	64.3	1.89	0.21	48/62	40/45
Cut Off .3477	67.4	64.7	66.05	83.8	42.3	1.91	0.50	36/62	30/45
Cut Off .3788	63.0	76.5	69.75	87.9	43.3	2.68	0.48	32/62	28/45
Cut Off .4008	60.9	82.4	71.65	90.3	43.75	3.46	0.47	30/62	27/45
Cut Off .6348	23.9	94.1	59.0	91.7	31.4	4.05	0.81	11/62	10/45

Note. PPV. = Positive Predictive Value, NPV. = Negative Predictive Value, P.ODD. = Positive Odds Ratio, N.ODD. = Negative Odds Ratio, Ind. = number of participants who screened positive as requiring further assessment, Corr.ID = number of clients with COD correctly identified, MHSF-III = Mental Health Screening Form III, MMS = Modified Mini Screen, SRQ-20R = Self-Reporting Questionnaire 20 Revised, SRQ-25R = Self-Reporting Questionnaire 25 Revised, ASI = Addiction Severity Index Psychiatric Status Domain Composite Score, The most accurate cut off score for each instrument is highlighted in bold font.

The receiver operating characteristic curve comparing four of the five measures is below in Figure 2, (this excludes the ASI Psychiatric Status Domain because it had a significantly smaller valid N).

Figure 2. Receiver operating characteristic curves for four screening measures directly compared in the same residential alcohol and other drug service population.

The Receiver Operating Characteristic Area Under the Curve (ROC-AUC) scores for those four measures are in Table 23.

Table 23. Directly Compared Area Under the Curve Scores for Four Screening Instruments.

Measure	AUC (N=117)
MHSF-III	.754
MMS	.837
SRQ-20R	.814
SRQ-25R	.815

AUC = Area Under the Curve Score, MHSF-III = Mental Health Screening Form III, MMS = Modified Mini Screen, SRQ-20R = Self Reporting Questionnaire 20 Revised, SRQ-25R = Self Reporting Questionnaire 25 Revised.

4. Discussion

There are very high levels of psychiatric comorbidity and psychiatric severity in the Salvation Army Australian, AOD residential treatment services. Eighty-seven point five percent of participants received a lifetime comorbid Axis I mental disorder diagnosis on the SCID-I/P and 73.3% met criteria for the current (30-day) period. Current mood disorders were most prevalent (56%) followed by current anxiety disorders (46%) and current psychotic disorders (19%). The prevalence and taxonomy of comorbid mental disorders discovered in this residential treatment population with a semi-structured clinical interview confirms earlier research into this population utilizing short screening measures (see Study 1, and Mortlock et al., 2011). Mental disorder comorbidity appears worse in Australian, the Salvation Army residential alcohol and other drug treatment centres when compared with the last prevalence studies conducted in therapeutic communities in the United States of America during the 1970s and 1980s (Jainchill, 1994). Current psychotic disorders are also present in a significantly higher proportion of the population in this residential treatment modality (19%) than was previously reported to be the case elsewhere (2.51%, Jainchill, 1994). Psychotic disorders constituted more than one-in-four disorders detected (26.14%), a startling result similar to that reported by Grella and Stein (36%) (2006). Whether this increase in the reported prevalence of psychotic disorders in residential alcohol and other drug treatment services is

due to the emergence of pseudoephedrine-based amphetamines and the drug ice, as well as cannabis of far greater potency, is a question of aetiology. As already noted in the aetiology section above, methodologically sound evidence of a causal relationship between substance abuse and mental disorders does not exist at the current time.

When compared with previous research, the current study's population endorsed a notably higher mean total number of psychiatric symptoms on several of the short screening measures. Previous validation research on the Modified Mini Screen across a spectrum of settings returned a mean total score of 7.48 (SD=5.77) (Alexander et al., 2008). The mean total MMS score in the current study was 8.74 (SD=5.16). Previous research using the Mental Health Screening Form-III reported mean total scores of 5.1 (SD=4.0) (Carroll & McGinley, 2001) and 4.2 (SD=4.3) (Ruiz et al., 2009) in therapeutic community and prison substance abuse populations respectively. The mean total MHSF-III score in the current study was 9.14 (SD=3.65), roughly double those previously reported rates and close to results reported in Study 1 (10.60, SD=4.07, Mortlock et al., 2011). The Salvation Army recovery services in Australia have an open door policy for individuals with comorbidity and do not attempt to exclude people unless they are too disruptive or unwell to be satisfactorily treated in their centers. In addition there is evidence that the Salvation Army residential recovery services have individuals with more severe levels of need for treatment across the range of domains measured by the Addiction Severity Index compared to participants in other residential services who completed the standardized ASI (Deane, Kelly, Crowe, Coulson, & Lyons, 2013). Results of the present study, however, are similar to those that have focused on heroin users (J. Ross et al., 2005), and suggest that in residential AOD treatment there is significantly higher rates of mental disorder comorbidity and severity than in other treatment modalities. To some extent this is a positive since it indicates that those with the highest need are accessing more intensive treatment. The ability of residential alcohol and other drug ser-

vices to adequately treat a population with the needs indicated by the prevalence and taxonomy of mental disorder comorbidity reported above is another question, to be discussed below.

There was sufficient variation in the performance of the five screening measures to suggest some might be more effective in residential treatment settings than others depending upon the goals of screening. Accuracy across the measures varied by more than 12% at each measure's statistically most accurate cut off score and ranged from 67.6% to 80.3%. Area under the receiver operating characteristic curve scores ranged from .73 to .84. Importantly, in real world terms the number of clients with current co-occurring mental disorders missed by each screening measure at its most accurate cut off score varied widely from just three missed cases of comorbidity to 23 missed cases. This latter figure not only represented a failure to detect 26.74% of comorbid clients, but one that occurred at the measure in question's statistically most accurate cut off score, the score usually reported and relied upon uncritically by validation studies.

The need to consider all of the indicators of instrument performance provided by the analysis in the context of screening is highlighted by this study's findings. Too much screening instrument validation research simply reports the sensitivity, specificity and overall accuracy figures without adequate analysis, and without reporting and analyzing the additional statistics that reveal how the screening instrument achieved this performance. Typically nor do screening instrument validation studies examine how these statistics translate into real world performance via the screening task in question. Such a truncated analysis, decontextualized from the screening task, in the current study would suggest the Self Reporting Questionnaire 20 Revised and Self Reporting Questionnaire 25 Revised had the highest accuracy figures (78.6% & 80.3%) and therefore must be the best measures for the task at hand. How-

ever, it was these two measures that failed to detect the most cases of comorbidity in the study, failing to identify 26.74% and 23.27% of cases respectively.

A cursory analysis of only the usual statistics divorced from the context of the screening task at hand could conclude the Self Reporting Questionnaire measures were good at ruling out cases that did not have COD, (that these measures achieved their accuracy through high specificity), and that they were optimal. However, when the aim of the actual task of screening for co-occurring mental disorders is brought into view, (detecting as many clients with COD as is reasonably practiceable), it should immediately be noted these measures were not sensitive to detecting clients that did have COD at their statistically most accurate cut off scores, (scores that delivered sensitivity of only 73.3% & 76.7% respectively). Commentators have rightly opined that the most important characteristics of a mental disorder screening measure are sensitivity and negative predictive value, (the latter often not even reported by validation studies, its crucial importance to not missing clients with comorbidity apparently not being understood). The value of sensitivity (detecting true cases) over specificity in the context of screening for co-occurring mental disorders has been recognized for many years. In 1979 Rounsaville and others wrote (p. 226):

The purpose of screening instruments is to detect those clients... [who warrant] further extensive clinical evaluation... Sensitivity is vital to insure [sic] that clients who have depression are adequately treated while specificity is less crucial, being important mainly to reduce the number of unnecessary evaluations that will be performed on clients without the disorder.

Sensitivity should always be preferred over specificity when analyzing screening instrument performance when the task is detecting cases of mental disorder comorbidity. If a screening instrument achieves its statistical maximum accuracy at a low sensitivity score, this figure should be disregarded and the instrument's accuracy at an acceptable (90%+) sensitivity be examined.

The negative predictive value is the proportion of cases indicated by a measure as negative for mental disorder that actually are truly negative for mental disorder. Zimmerman and others (2004) explain with regard to negative predictive value that:

From a clinical perspective it is most important that the diagnostic aid have good sensitivity, and corresponding high negative predictive value. With high negative predictive value, the clinician can be confident that when the test indicates that the disorder is not present there is little need to inquire about that disorder's symptoms (p. 185).

In addition to lacking sensitivity for detecting those with a COD, a close analysis of the negative predictive value scores for the SRQ-20R and SRQ-25R revealed that despite high specificity scores, these measures actually were not very efficient at identifying those without a comorbid mental disorder either, they just (over) identified so many respondents as being negative that they also managed to pick up a lot who were truly negative. The SRQ-20R was only correct about a client's negative status 61.9% of the time and the SRQ-25R was only correct 52.9% of the time. This means these measures falsely screened a client as negative for comorbid mental disorder and not needing any further investigation when that client was actually positive for comorbid mental disorder nearly 40% and 50% of the time respectively.

What the above results demonstrate for research studies validating screening instruments is the importance of reporting more than just the sensitivity, the specificity, the accuracy (aggregate) and area under the curve score. Unless the additional indicators of instrument performance such as negative predictive values are also reported, a proper picture of how an instrument has performed the way it has cannot be gained.

In this study a similarly cautionary tale is told against taking an under-analyzed, truncated set of statistics at face value by two additional pieces of information that are critical to report when undertaking a screening instrument validation. These two additional scores are the proportion of clients indicated for further assessment by a measure at a given cut off score and the number of true cases actually detected (and missed) at that cut off score. These real world results of how the screening instruments in question actually performed at the task

at hand are critical to report because they reveal how the statistics translate to real world clinical utility. They are an aid to not being deceived by statistical performance that does not translate to real world clinical utility. An aid that is important in this study.

An analysis of the performance of the Modified Mini Screen (MMS) and the Mental Health Screening Form III (MHSF-III) measures as compared to the two Self Reporting Questionnaire (SRQ-20R & SRQ-25R) measures is illustrative. At face value, the MMS and the MHSF-III were statistically less accurate than the two Self Reporting Questionnaire measures. Yet when the real world results are examined, the Modified Mini Screen only missed six cases out of 86 present (a 6.98% failure rate). The Mental Health Screening Form III only missed three cases out of 86 present (a 3.49% failure rate). This is possible because the MMS, whilst only returning the third highest accuracy figure of the measures behind the two Self Reporting Questionnaire measures (77.15%), did so with the second highest sensitivity to the detection of COD (93.0%) and the second highest negative predictive value of any of the measures (76%). The MHSF-III returned the smallest “accuracy” statistic (67.6%), but it did so whilst displaying the highest sensitivity (96.5%), the highest negative predictive value (80%), the highest negative odds ratio (0.09) and thereby it correctly identified the highest number of true cases (83/86). In contrast to the Self Reporting Questionnaire measures that achieved their statistical accuracy through over-identifying clients as negative for disorder (which afforded high specificity at the expense of many false negatives and low sensitivity), the MMS and MHSF-III achieved their greatest accuracy through high sensitivity and high negative predictive value. This means the MMS and MHSF-III were accurate because they were sensitive enough to identify most cases of comorbidity and when they actually indicated a client as negative for disorder, they were right more than three-quarters of the time. In this study’s sample, the above figures and the importance of sensitivity and negative predictive value translated to real world performance where the SRQ-25R actually

missed 20 disordered cases out of 86 present, (a 23.26% failure rate) whilst being statistically the “most accurate” measure. The SRQ-20R failed to detect 23 of 86 disordered cases present, (a 26.74% failure rate) whilst statistically being the second “most accurate”.

The question of whether the MMS or the MHSF-III is a better measure becomes a question of resource allocation. The MHSF-III did perform more sensitively at each measure’s most accurate cut off score, but at the expense of referring nearly every client for further assessment (102 of 117). The MMS achieved its performance while only referring 92 of 117 clients for further assessment. When compared with the MHSF-III it also had a higher positive odds ratio (2.40 vs. 1.57) and higher ROC-AUC score (.837 vs. .754). As noted by Castel and others (2008):

... a screening instrument is needed to help to select those clients who would benefit from a comprehensive psychiatric assessment and those for which it is not needed. Logically, the final decision should be based not only on the results of a screening instrument, but also on the available resources for subsequent assessment for diagnostic verification (p. 65).

Previous research on the MMS recommended a cut off score of six and suggested that when a score equal to or less than five was obtained, no further action or assessment is needed (Frieden, Plapinger, Tom, & King, 2007). This paper validates the MMS as best able to detect the need for further assessment in residential alcohol and other drug treatment populations using a cut off score of five or more, a reduction in the cut off score of one point that increases sensitivity and accuracy. The MHSF-III performed best at a cut off score of six in the current study. It has been recommended at this cut off score and a cut off score of three previously (Sacks, Melnick, Coen, Banks, Friedmann, Grella, & Knight, 2007; Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight, et al., 2007).

If sheer sensitivity was the most important requirement, reducing the cut off score on the MMS from five to three would see the MMS correctly identify one more case than the MHSF-III whilst referring the same number of clients for further assessment (102 of 117). In fact, lowering the cut off score on the MMS from five to three would see the MMS out-

perform the MHSF-III on every statistic except specificity where they would be tied (at 38.7%). However, that would be at the expense of referring nearly every client for assessment. In a substance treatment screening context where access to follow up psychiatric services and funding can be difficult and limited, the MMS seems the more preferable measure at a cut off score of five due to its greater efficiency at this cut off score. Either of these highly sensitive measures, however, could be used.

These results provide a cautionary tale to those conducting and interpreting psychometric validation study results. In this instance a cursory view of only the usual statistics would completely mislead the reader to believe that the SRQ-20R and SRQ-25R are the more accurate measures. A full analysis of all the indicators of instrument performance and their real world clinical utility, however, tells a very different story. The Self Reporting Questionnaire measures missed around one-in-four disordered cases because they lacked sensitivity and negative predictive value. They were clearly outperformed at the task of screening by the more sensitive measures. This highlights the importance of reporting all of the available parameters and carefully considering the statistics with regard to the real world clinical utility and performance of the measures.

Given the high rate of current (30-day) psychotic disorders found in this population (>19%), it came as no surprise the SRQ-25R performed better than the SRQ-20R. The reinstatement of the five questions aimed at detecting psychoticism and epilepsy in the SRQ-25R increased the sensitivity of this measure without detracting from its specificity compared to the SRQ-20R. The SRQ-20R and SRQ-25R performed exactly the same in detecting single affective disorders and single anxiety disorders. Where the two measures differed was in detecting those with multiple affect and anxiety disorders, (where the SRQ-25R picked up one additional case missed by the SRQ-20R), and in detecting those with psychotic disorders (where the SRQ-25R picked up twice as many true cases as the SRQ-20R). Generally it

should be noted that the two Self Reporting Questionnaire measures were the only measures that failed to detect a psychotic disorder in the study and they were also the only two measures that failed to detect a client with multiple comorbid axis I disorders (with the SRQ-20R failing to detect up to four disorders in a single case). The failure of the Self Reporting Questionnaire measures to detect psychotic disorders cannot be attributed to the SRQ-20R's lack of items designed to probe this type of psychopathology alone. This is because the SRQ-25R also missed two psychotic disorder cases despite having four questions specifically aimed at detecting them. This lack of sensitivity to psychotic disorders combined with these measures' failure to detect multiple, multiply-disordered comorbid cases indicates something additional may be contributing to their poorer performance. It is possible that the method, which requires clients to first indicate whether they have experienced a particular problem and then additionally to go back over their answers once they have gotten to the end of the measure to further indicate if they have experienced that problem at time when they were not using alcohol or other drugs, might be problematic. Whilst the aim of differentiating between symptoms that are primary in nature or secondary and due to alcohol and/or drug use is clear in theory, in practice it confused a lot of clients and required frequent explanation, sometimes multiple times. As a result, whilst clearly there is a problem with the SRQ-20R lacking any items that probe for psychotic disorders, there may also be an additional problem with the clinical utility of both the SRQ-20R and the SRQ-25R measures as they appear difficult for clients to understand. Given the very serious nature and consequences of failing to detect either a co-occurring psychotic disorder or clients with multiple disorders of several different types, the SRQ-20R, the SRQ-25R and other screening measures that do not screen for psychotic disorders, or that lack sensitivity, cannot be recommended for use in residential alcohol and other drug treatment settings.

Unfortunately after Study 1 where a self-report version of the Addiction Severity Index Psychiatric Status domain suffered from a poor completion rate, (raising doubts about the utility of this measure in this population), we again had trouble with the interview version of this measure in Study 2. This time the nature of the measure itself cannot be blamed. Recovery service staff was expected to complete full Addiction Severity Index interviews with all incoming clients as part of the service's routine intake procedures. However, in the current sample they failed to complete this task about 50% of the time. Anecdotal reports indicated that this was occasionally due to some interviews occurring outside of the time frame for the research (i.e., too late). As a result, it is still unknown whether there is a problem with the nature of the ASI measure or other organizational issues. Consequently, the validation results we have for the ASI come from a much smaller sample. The smaller sample is effectively different to the sample used to validate the other four screening measures and so the figures reported for the ASI are preliminary and although similar, they are not directly comparable.

4.1 Limitations

There were several limitations to Study 2. Firstly, diagnostic interviews were conducted by a single interviewer. Despite excellent inter-rater reliability when validated, the single interviewer design may subtly effect the reliability and validity of the results (Horowitz, Siegelman, & Inouye, 1979). Secondly, only Axis I disorders were assessed. None of the self-report questionnaires are designed to detect personality disorders. As a result Axis II comorbidity is unknown. Thirdly, the study was conducted in four residential alcohol and other drug treatment services in New South Wales and the Australian Capital Territory. Although participants were selected randomly the sample may not generalize to all residential alcohol and other drug treatment participants nationally or internationally. Lastly, there was a relatively small sample size in both the not mentally disordered group and in groups with

specific diagnoses. A larger study would strengthen the results, particularly on a disorder-by-disorder basis.

Implications & Future Directions

Comorbid mental disorders are highly prevalent in residential alcohol and other drug treatment services. More than seven-in-ten clients (73.33%) entering residential alcohol and other drug treatment had a current comorbid axis I mental disorder. Many of the remaining one-in-four clients who did not meet all criteria for a current disorder satisfied criteria for a past disorder and/or had a current subclinical disorder that was clinically relevant and justified treatment intervention (Haver, 1997). Psychotic disorders were currently present in more than 19% of participants according to a semi-structured clinical interview where all criteria were met and time was taken to carefully tease out and exclude cases that could be drug-related or that were in remission. Nineteen percent was a conservative estimate for current comorbid psychotic disorders and that is almost one-in-five clients presenting to residential recovery services for treatment.

Both the prevalence and taxonomy of comorbid mental disorders revealed in this thesis have a number of implications for residential alcohol and other drug treatment services and for future co-occurring disorder research. It has previously been noted by researchers that chemically dependent persons present with a variety of disorders across a wide spectrum of diagnoses (Carroll & McGinley, 1998). In the 2007 guidelines for the Victorian Dual Diagnosis Initiative it was argued that a criteria of screening instrument selection is that the instrument must screen for the gamut of possible disorders and it was also noted that many screening instruments fail to screen for psychotic disorders (Croton, 2007). The prevalence and taxonomy of co-occurring mental disorders reported in this thesis strongly demonstrate the need to use screening measures that screen for “lower prevalence” disorders, such as psychotic disorders in this population. These disorders may be low prevalence in the general population at large, (0.45%, Morgan et al., 2011), but the results in this thesis support earlier research (Grella & Stein, 2006; Mortlock et al., 2011) and demonstrate psychotic disorders

are highly prevalent in the residential alcohol and other drugs treatment population (>19%).

As noted by Degenhardt and others (2005):

Psychotic disorders have a lower prevalence than other forms of mental illness such as depression and anxiety disorders, yet they impose a considerable public health burden because of their impact on sufferers and their families (Keith, Regier, & Rae, 1991). Persons with psychotic disorders also utilise a disproportionately high segment of health services (p. v).

Screening instruments that fail to screen for psychotic disorders cannot be recommended for use to detect co-occurring mental disorders in residential alcohol and other drug program participants.

A connected implication flowing from the results reported in this thesis is that the accuracy of conceptualisations, such as the four quadrants of care model, is in question (Center for Substance Abuse Treatment, 2005; Ries, 2008). The four quadrants of care model proposes clients with more severe psychopathology (should) only present to and are treated by specialist mental health services whereas alcohol and other drug services (should) only receive clients with “high prevalence” disorders such as depression and anxiety. In Study 1 more than 35% and 70% of 278 residential substance abuse treatment clients endorsed questions indicating they had suffered hallucinations and delusions respectively. Nine percent of those participants in Study 1 also indicated they had previously been diagnosed with schizophrenia or psychosis. In Study 2 19.33% of 120 different clients met all criteria for diagnosis of a current psychotic disorder according to a standardized, semi-structured clinical interview. These studies and earlier research, such as that conducted by Grella and Stein (2006) and Ross and others (J. Ross et al., 2005), are evidence that clients with severe psychopathology are presenting to residential AOD services in significant numbers. Prevalence and taxonomy studies need to be conducted in other treatment modalities to ascertain whether this is the case across the substance misuse treatment system or is particular to the residential alcohol and other drug treatment modality, (as current evidence suggests it may be). The findings in Study 1 and Study 2, taken together with previous research, suggest that tradi-

tional thinking about what sort of clients present to which parts of the mental health and substance misuse treatment systems may be erroneous. If found to be the case, this has significant implications for the alcohol and other drug treatment industry. The need for a significant increase in access to specialist mental disorder service providers, a significant increase in mental disorder qualifications and greater mental disorder training among alcohol and other drug treatment workers may be warranted.

In a review of a number of studies that surveyed current access to specialised psychiatric staff in the substance misuse treatment services in America, Flynn and Brown (2008) conclude that although evidence exists for an association between on site psychiatric staff and better treatment outcomes, such as retention and reduced substance use, the utility of such staff is moot because of their limited availability to public treatment programs. The research relied upon by these authors included research that reported a current dearth of post-graduate specialist mental health staff in the industry, a level of staff turnover so high that it jeopardized treatment program stability, and an inability to fill existing positions with staff competent to fill them due to an inability to offer appropriate remuneration. These authors reported results indicating that substance misuse treatment services do not have adequate access to specialised mental health services (Flynn & Brown, 2008). Flynn and Brown conclude:

In brief, there is the suggestion that the level of staff, often seen as the most critical resource needed for the implementation of intensive and complex interventions for clients manifesting COD, is in short supply in substance abuse treatment programs. Moreover, there appears little reason for optimism that this situation will change any time soon (Flynn & Brown, 2008, p. 41).

Thankfully, direct employment of specialised psychiatric staff by substance misuse treatment providers is not the only means of securing access to specialised psychiatric services. Edward and others (2012) showed the importance of networking between the AOD and mental health treatment systems as a means of providing integrated treatment for co-occurring disorders in Australia. These authors advocated collaboration and clear channels of

communication between alcohol and other drug treatment services and mental disorder treatment services so that opportunities for secondary consultation are taken advantage of and “dual diagnosis capability” becomes part of the core business of both services. Whilst reporting some success in this endeavour, these authors noted that:

as illustrated by the case studies presented here, it appears that the structure and constraints of current mental health service provision mean that it is not always possible for mental health services to respond to invitations of shared care of dually diagnosed clients. Additionally, AOD services face similar barriers to integrated care. This requires something of a cultural shift on the part of AOD and mental health clinicians. This cultural shift needs to be articulated in organisational policy directions and funding agreements that support the shift from segregated, stand-alone services to fully integrated dual diagnosis care for clients, families and carers (Edward et al., 2012, p. 21).

An inability to attract and retain access to appropriately qualified and specialised psychiatric staff is a major concern for substance misuse treatment services. The results of this thesis demonstrate there is also a need for greater AOD treatment staff training in mental disorders to maximize the utility of existing staff. In one study of 3,972 clients entering outpatient substance misuse treatment, counselors under-rated the need for mental health services in 32% of clients who reported psychiatric problems (Mericle et al., 2012). Thirty-six percent of these (essentially) unidentified co-occurring disorder clients had also indicated the importance of obtaining treatment for their mental health problems (Mericle et al., 2012). The authors hypothesized that the failure to recognize client concerns as symptoms of comorbid mental disorders may have been due to the lack of personnel with clinical backgrounds and advanced degrees in substance abuse treatment settings (Mericle et al., 2012). The speculative association by these authors of staff qualification/training levels with the problem of under-identification of comorbidity warrants future research. The need to upskill existing staff with higher qualifications and training in the area of mental disorder in the AOD treatment system is apparent, but the real question is, “How much more training?” Is it enough to upskill existing staff with diploma-level qualifications or are degree-qualified staff needed in much greater numbers than industry funding currently supports? To answer this important question first research needs to determine what the current qualification levels are

in the substance abuse treatment industry in Australia. Then the existence of any demonstrable link between these levels of staff qualification/training and the identification and treatment of comorbidity should be investigated. There are already studies that suggest increasing the qualification levels and training of staff may increase the efficacy of treatment (Alterman et al., 2001; Grella & Stein, 2006).

Significant mental disorder demands are being placed upon residential alcohol and other drug treatment services. The studies in this thesis provide data to indicate the importance of screening as a necessary efficient means of allocating scarce mental disorder resources in this context. Several studies have demonstrated individuals manifesting low to moderate levels of mental disorder comorbidity appear to respond positively to the nonspecialized treatment provided by AOD services (Flynn & Brown, 2008). The same studies, however, show that those with moderate to severe mental disorder comorbidity do not respond positively and require specialized treatment (Flynn & Brown, 2008). One of the tasks of screening is to differentiate between these two groups so that treatment services can identify the COD clients who require specialized treatment resources. These resources are scarce at the current time and screening is therefore 'a single, critical step in the provision of quality care for co-occurring mental health and substance use disorders, and must be integrated into treatment settings with an eye to the constraints and pressures on clients, staff and agencies' (Alexander et al., 2008, p. 115).

From a statistical/methodological standpoint, nearly 25-years ago Hsiao and others wrote that (1989, p. 667):

Receiver operating characteristic methods are descriptive graphic tools that provide a way to assess and compare the performances of different diagnostic techniques. They are, if appropriately used, a potentially powerful tool for examining how biological and psychological measures relate to diagnosis. These methods can never be better than the data to which they are applied, and they can be of no use at all if those data are not available. In the future, if ROC is to fulfill its promise, researchers will have to present the full range of their data rather than just means, SDs, and sensitivity and specificity at a single cutoff point. Presentation of an ROC curve, assessment of sensitivity and specificity at multiple cutoff points, or, better yet, the actual data themselves, will be essential.

Twenty-five years later studies are still reporting a truncated array of statistics on screening measure performance. There is a need for psychometric validation studies to be conducted in different treatment modalities to compare the popular and freely available screening measures in different substance using populations. But these validation studies must report a full array of statistics about each measure and they must include a report of the real world performance, the actual clinical utility of each measure. It is only when treatment services are possessed of all this information that they will be able to make a properly informed decision about which screening measure is the best for them and at what cut off score.

In summary, future research must concentrate upon improving the evidence-base for alcohol and other drug treatment services so they have proper research evidence upon which to base their screening and treating practices. Future research should survey the prevalence and taxonomy of co-occurring disorders in different treatment modalities. Future research should assess the performance of popular and freely available screening instruments in different treatment modalities. The current availability of specialised mental disorder services must be ascertained and when known, the potential efficacy of improved access to such services, along with different levels of improved mental disorder qualifications and training for existing AOD treatment staff, should all be tested. Lastly, future research must evaluate the effects of better identifying and meeting the mental disorder needs of those seeking treatment for alcohol and other drugs.

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Appendix A

Table 24. Nomenclature changes in DSM-5 (Peele et al., 2013)

DSM-IV-TR	DSM-5
Dementia	Neurocognitive disorder
Alcohol-induced persistent amnesic disorder	Alcohol-induced major cognitive disorder, amnesic confabulatory type
“Mood” in the title of many disorders	“Depressive” or “Bipolar”
Nicotine	Tobacco
General medical condition	Another medical condition
(Does not have the word “Probably” in the name of any Disorders)	“Probably” added to the name of some neurocognitive disorders
(Does not have the word “Possible” in the name of any Disorder)	“Possible” added to the name of some neurocognitive disorders
Autistic disorder	Autism spectrum disorder
Dissociative fugue	Dissociative amnesia with dissociative fugue
Social phobia	Social anxiety disorder
Dysthymia	Persistent depressive disorder
Hypochondriasis	Illness anxiety disorder
Pedophilia	Pedophilic disorder
Transvestic fetishism	Transvestic disorder
Exhibitionism	Exhibitionistic disorder
Female sexual arousal disorder	Female sexual interest/arousal disorder
Male orgasmic disorder	Delayed ejaculation
Dyspareunia	Genito-pelvic pain/penetration disorder
Frotteurism	Frotteuristic disorder
Stuttering	Fluency disorder
Transient tic disorder	Provisional tic disorder
Chronic motor or vocal tic disorder	Persistent motor or tic disorder
Sleep terror disorder	Non-rapid eye movement sleep arousal disorder, sleep terror type
Sleepwalking disorder	Non-rapid eye movement sleep arousal disorder, sleepwalking type
Feeding disorder of infancy or early childhood	Avoidant/restrictive food intake disorder
Reading disorder	Specific learning disorder, with impairment in reading
Mathematics disorder	Specific learning disorder, with impairment in mathematics
Disorder of written expression	Specific learning disorder, with impairment in written expression
Phonology disorder	Speech sound disorder
Narcolepsy	Five types: autosomal dominant cerebellar ataxia and narcolepsy; autosomal dominant narcolepsy, obesity, and type 2 diabetes; narcolepsy without cataplexy but with hypocretin deficiency; narcolepsy with cataplexy but without hypocretin deficiency; narcolepsy secondary to another medical condition
Breathing-related sleep disorder	Central sleep apnea

DSM-IV-TR = *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (American Psychiatric Association, 2000), DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (American Psychiatric Association, 2013).

Table 25. New Disorders in DSM-5 (Peele et al., 2013)

New Disorder
Social communication
Disruptive mood dysregulation
Premenstrual dysphoric
Hoarding
Excoriation
Disinhibited social engagement
Binge eating
Central sleep apnea
Sleep-related hypoventilation
Rapid eye movement sleep behaviour
Restless legs
Caffeine withdrawal
Cannabis withdrawal
Neurocognitive disorder with Lewy body disease, major and mild
Ten “mild” neurocognitive disorders
Thirty-eight “other disorders” ^a
Thirty “unspecified disorders” ^a

^a “Other disorder” and “unspecified disorder” in DSM-5 replace “Not Otherwise Specified” in DSM-IV-TR.

Appendix B

CINAHL Plus with Full Text

(screen* + psychology 1957-2014: 126; screen* + alcohol and other drug 1957-2014: 82; screen* + substance use 1957-2014: 588; prevalence + psychology 1957-2014: 111; prevalence + alcohol and other drug 1957-2014: 126; prevalence + substance use 1957-2014: 853; co-occurring disorders 1957-2014: 366; dual diagnosis 1957-2014: 483; alcohol and other drug 1957-2014: 282; substance use + psychology 1957-2014: 98; mental health + substance use 1957-2014: 1103; comorbidity + psychology 1957-2014: 14; comorbidity + alcohol and other drug 1957-2014: 31; comorbidity + substance use 1957-2014: 292; psychometric + psychology 1957-2014: 127; psychometric + alcohol and other drug 1957-2014: 14; psychometric + substance use 1957-2014: 85; receiver 1957-2014: 199; roc 1957-2014: 174; cut off 1957-2014: 291).

PsycINFO

(screen* + psychology 1860-2014: 301; screen* + alcohol and other drug 1860-2014: 63; screen* + substance 1860-2014: 694; prevalence + psychology 1860-2014: 173; prevalence + alcohol and other drug 1860-2014: 43; prevalence + substance 1860-2014: 1006; co-occurring disorders 1860-2014: 802; dual diagnosis 1860-2014: 2737; alcohol and other drug 1860-2014: 2528; substance + psychology 1860-2014: 3135; mental health + substance 1860-2014: 9753; comorbidity + psychology 1860-2014: 624; comorbidity + alcohol and other drug 1860-2014: 171; comorbidity + substance 1860-2014: 5783; psychometric + psychology 1860-2014: 2444; psychometric + alcohol and other drug 1860-2014: 37; psychometric + substance 1860-2014: 703; receiver 1860-2014: 292; roc 1860-2014: 145; cut off 1860-2014: 113).

PsycARTICLES

(screen* + psychology 1860-2014: 175; screen* + alcohol and other drug 1860-2014: 36; screen* + substance 1860-2014: 87; prevalence + psychology 1860-2014: 125; prevalence + alcohol and other drug 1860-2014: 65; prevalence + substance 1860-2014: 80; co-occurring disorders 1860-2014: 183; dual diagnosis 1860-2014: 274; alcohol and other drug 1860-2014: 7965; substance + psychology 1860-2014: 340; mental health + substance 1860-2014: 479; comorbidity + psychology 1860-2014: 43; comorbidity + alcohol and other drug 1860-2014: 41; comorbidity + substance 1860-2014: 60; psychometric + psychology 1860-2014: 319; psychometric + alcohol and other drug 1860-2014: 47; psychometric + substance 1860-2014: 94; receiver 1860-2014: 20; roc 1860-2014: 9; cut off 1860-2014: 2).

MEDLINE with Full Text

(screen* + psychology 1946-2014: 7768; screen* + alcohol and other drug 1946-2014: 185; screen* + substance 1946-2014: 2052; prevalence + psychology 1946-2014: 6595; prevalence + alcohol and other drug 1946-2014: 325; prevalence + substance 1946-2014: 2639; co-occurring disorders 1946-2014: 378; dual diagnosis 1946-2014: 643; alcohol and other drug 1946-2014: 388; substance + psychology 1946-2014: 6854; mental health + substance 1946-2014: 2395; comorbidity + psychology 1946-2014: 1835; comorbidity + alcohol and other drug 1946-2014: 96; comorbidity + substance 1946-2014: 896; psychometric + psychology 1946-2014: 4151; psychometric + alcohol and other drug 1946-2014: 20; psychometric + substance 1946-2014: 215; receiver 1946-2014: 1417; roc 1946-2014: 994; cut off 1946-2014: 1091).

ScienceDirect

(screen* + psychology 1822-2014: 946; screen* + alcohol and other drug 1822-2014: 1460; screen* + substance 1822-2014: 3935; prevalence + psychology 1822-2014: 785; prevalence + alcohol and other drug 1822-2014: 1647; prevalence + substance 1822-2014: 1869; co-occurring disorders 1822-2014: 133; dual diagnosis 1822-2014: 216; alcohol and other drug 1822-2014: 130; substance + psychology 1822-2014: 1372; mental health + substance 1822-2014: 1784; comorbidity + psychology 1822-2014: 337; comorbidity + alcohol and other drug 1822-2014: 571; comorbidity + substance 1822-2014: 839; psychometric + psychology 1822-2014: 933; psychometric + alcohol and other drug 1822-2014: 210; psychometric + substance 1822-2014: 324; receiver 1822-2014: 1800; roc 1822-2014: 454; cut off 1822-2014: 1486).

Web of Science

(screen* + psychology 1965-2014: 142; screen* + alcohol and other drug 1965-2014: 210; screen* + substance 1965-2014: 2143; prevalence + psychology 1965-2014: 94; prevalence + alcohol and other drug 1965-2014: 382; prevalence + substance 1965-2014: 1630; co-occurring disorders 1965-2014: 608; dual diagnosis 1965-2014: 1007; alcohol and other drug 1965-2014: 869; substance + psychology 1965-2014: 131; mental health + substance 1965-2014: 2003; comorbidity + psychology 1965-2014: 19; comorbidity + alcohol and other drug 1965-2014: 150; comorbidity + substance 1965-2014: 1073; psychometric + psychology 1965-2014: 241; psychometric + alcohol and other drug 1965-2014: 31; psychometric + substance 1965-2014: 181; receiver 1965-2014: 25,681; roc 1965-2014: 2062; cut off 1965-2014: 2859).

Scopus

(screen* + psychology 1960-2014: 1625; screen* + alcohol and other drug 1960-2014: 376; screen* + substance 1960-2014: 3821; prevalence + psychology 1960-2014: 1322; prevalence + alcohol and other drug 1960-2014: 549; prevalence + substance 1960-2014: 3240; co-occurring disorders 1960-2014: 640; dual diagnosis 1960-2014: 1173; alcohol and other drug 1960-2014: 970; substance + psychology 1960-2014: 1867; mental health + substance 1960-2014: 3199; comorbidity + psychology 1960-2014: 312; comorbidity + alcohol and other drug 1960-2014: 176; comorbidity + substance 1960-2014: 1188; psychometric + psychology 1960-2014: 1190; psychometric + alcohol and other drug 1960-2014: 32; psychometric + substance 1960-2014: 265; receiver 1960-2014: 34,178; roc 1960-2014: 1872; cut off 1960-2014: 3212).

Many individual searches were also done in various databases including on individual screening instruments, major prevalence studies such as the ECA, NCS and Australian MHWB 1& 2. Additionally “seminal” sources were often forwards searched as well with all sources that had cited such works also researched.

Appendix C

Research Office use only

HE 08/297

UNIVERSITY OF WOLLONGONG/ILLAWARRA AREA HEALTH SERVICE

Human Research Ethics Committee

INITIAL APPLICATION FOR APPROVAL TO UNDERTAKE RESEARCH INVOLVING HUMAN PARTICIPANTS

(A separate application is required for each project)

Please answer questions in terms understandable to the layperson.

1. Descriptive Title of Project:

Mental health screening within residential drug and alcohol rehabilitation.

2. 7 line summary of project aims:

This project will examine the relationship between a series of screening measures used within residential drug and alcohol treatment. It will include screens for mental health, Alexithymia, emotional control and wellness. The relationship between the screening measures and individual reactions to music will also be examined. Results will be used to inform assessment, treatment planning and treatment services (e.g. cue exposure) within substance abuse treatment facilities.

**3. Name Position/Appointment Institution Qualifications
Chief Investigator(s) (Academic or Professional)**

Dr Peter Kelly (PhD Clin. Psych, BSc)
Research Assistant
Illawarra Institute for Mental Health
University of Wollongong

Prof Frank Deane (PhD, Dip. Clin. Psych)
Director
Illawarra Institute for Mental Health
School of Psychology
University of Wollongong

Kane Mortlock (BA, LLB, BPsyc)
PhD candidate
Illawarra Institute for Mental Health
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Address for Correspondence (1st named investigator):

Illawarra Institute for Mental Health
Building 22
University of Wollongong

Wollongong, NSW 2522

Contact Phone Number: 0403 541 306 **Fax:** (02) 4221 5585 **Email:** pkelly@uow.edu.au

4. Where will potential participants be approached by the researchers to seek their participation in the research and where will research activities involving participants be conducted:

Caseworkers of the Salvation Army Bridge program will be informed of the proposed study by the researchers via a presentation at their team meetings. Clients will be informed of the study in their house meeting where the study will be conducted. A participant information sheet (Appendix A) will be provided along with contact details so that the clients can contact the researcher if there are any further questions. Researchers will be on site at the time of distributing the questionnaires and they will be the only other people present in the room at the time of the questionnaires' completion. This allows the opportunity for the client to refuse to participate outside of direct contact with his/her caseworker. The Salvation Army will not provide the researcher with any confidential information regarding the potential participant. The research team will distribute the survey on site. Once the survey is completed, all clients will be instructed to put it into a sealed envelope. That way, clients can either refuse to participate or put the incomplete survey in the envelope.

Purpose and Funding of Project

5.a Is this: Yes **Staff Research (University of Wollongong)**

 Staff Research (Illawarra Area Health Service)

Yes **Student Research (Post grad. degree or subject)**

Course undertaken PhD (Psychology)

Unit/ Faculty/Department School of Psychology HBS

Supervisor Prof Frank Deane & Dr. Trevor Crowe

 Other (Please specify e.g. for external people who want to research Uni students or IAHS clients)

5.b What is the source and amount of funding from all sources for this research?

Source (Name of Organisation / Funding Scheme)	Amount
The Salvation Army	\$397,000

5.c Is there any affiliation or financial interest between the sponsor/funding body and the researcher(s) or supervisor associated with this research? If Yes, Please declare.

No

5.d Are there any conditions placed on this research by the funding body? (please provide details)

No

5.e Is a copy of the HREC approval to be forwarded to the Granting Body? Yes

If YES, please advise of any deadlines:

No deadline, but provided to the funding body before the research is commenced.

6. Has this research project been reviewed by any other Institutional Ethics Committee?
(for example multi-centre research)

No

If YES, include a copy of any correspondence the sponsor or researcher has entered into with the other Ethics Committee(s) to this point.

7. Research Categories

Please mark the research categories relevant to this research proposal. See guidelines for descriptions of the categories. At least one category should be marked for each grouping. For "Other", please specify.

If your research only involves participants and research procedures from a-d under A Participants and B Research Procedures Used, it may be open to expedited review by the Chair of the HREC. In that case, submit only one copy of your application (please see guidelines regarding expedited review).

A Participants

- a. Healthy members of the community
- b. University students
- c. Employees of a specific company/organisation
- d. Members of a specific community group, club or association
- e. Clients of a service provider
- f. Health Service clients (e.g. users/clients of a health service)
- g. School children
- h. Hospital in-patients
- i. Clinical clients (e.g. patients)
- j. Aboriginal/Torres Strait Islander people
- k. Members of socially disadvantaged groups
- l. Cadavers/ cadaveric organs
- m. Other: _____

Expected age(s) of participants – please circle one or more

Children (under 14)

Young people (14-18)

Adults (> 18) YES

B Research procedures used

- a. Anonymous questionnaires/ surveys
- b. Coded (potentially identifiable) questionnaires/ surveys
- c. Identifiable questionnaires/ surveys
- d. Examination of student work, journals etc
- e. Examination of medical, educational, personnel or other confidential records
- f. Observation (overt)
- g. Observation (covert)
- h. Interviews (structured or unstructured)
- i. Telephone interviews
- j. Procedures involving physical experiments (e.g. exercise, reacting to computer images)
- k. Procedures involving administration of substances (e.g. drugs, alcohol, food)

- l. Physical examination of participants (including eg. blood glucose, blood pressure and temperature monitoring)
- m. Collection of body tissues or fluid samples
- n. Surgical procedures
- o. Other: _____

C Research areas

- a. Qualitative research
- b. Social Science research
- c. Humanities research
- d. Educational research
- ☒ e. Health research
- ☒ f. Psychological research
- g. Comparison or evaluation of drugs or surgical or other therapeutic devices
- h. Comparison or evaluation of clinical procedures
- i. Comparison or evaluation of counselling or training methods
- j. Investigation of the effects of an agent (drug or other substance)
- k. Investigation of bio-mechanical processes
- l. Biomedical research
- m. Epidemiology
- n. Genetic research
- o. Other: _____

8.a Does the project involve the use of drugs?

NO

If YES give details:

Is the research clarified as a:

CTN Trial

CTX Trial

Other (Please detail)

8.b Does the project involve the use of a surgical or other therapeutic device? (please detail)

NO

8.c If you answered YES to 8a. or 8b., is there any business or similar association between the researcher and the supplier of a drug or surgical or other therapeutic device to be used in the trial? (please detail).

NA

If you answered YES to 8a. or 8b., please include the budget for this trial including information about capitation fees, payments to researchers, institutions or organisations involved in the research, current and consequential costs and costs which may be incurred by participants.

Please include evidence of arrangements to ensure adequate compensation to participants for any injury suffered as a result of participation in the trial. (Indemnification forms

and, if the research is being undertaken in a private practice, evidence of adequate and appropriate insurance coverage)

NA

- 9. Justify the design of your proposed research and describe what you want participants to do.**
Please provide an explanation, in terms understandable by a non-expert reader. For student researchers, please provide (in no more than 2 pages) the background to this project (Attach extra sheets if necessary)

Background

The current research is in two parts.

Mental health screening

The Illawarra Institute for Mental Health (iiMH) has been contracted by The Salvation Army to develop, trial and integrate mental health screening tools across their residential sites. The Salvation Army provides a range of long-term, residential treatment services for people with substance abuse problems. Although recommended as best practice, The Salvation Army does not currently use mental health screening procedures within their organisation.

35% to 89% of individuals seeking treatment from alcohol and other drug (AOD) services also have a co-occurring mental health disorder (Hides, et al., 2007). Problems facing people with comorbidity include: poorer treatment response (Grella & Stein, 2006), higher rates of relapse, more hospital visits, increased involvement in violence, family difficulties, homelessness (Brunette, et al., 2004) and HIV (Adams, 2008). It has also been acknowledged that clients with comorbidity have received poor care due to gaps in service provision (Adams, 2008). Accurate and effective identification of mental illness comorbidity is the first step to a comprehensive needs assessment that can be readily transferred into effective, individualised and collaborative care planning to better meet the needs of this population. Recent research conducted by Corey Keyes, (see 2002, 2005, 2006, 2008), however, has empirically disproven the notion that the absence of mental illness can be equated with the presence of mental health in epidemiological, youth and cross-cultural populations. Keyes' research has demonstrated that mental illness and mental health are distinct, only moderately correlated construct domains in these populations. Keyes' empirical revelation indicates systematic procedures to screen AOD clients for mental illness comorbidity and the treatment protocols used to treat them are in need of comprehensive review in terms of scope, aims and purpose. It may no longer be enough to identify which clients have co-occurring mental illness. Clients' mental health may also need to be assessed and the information fed into the treatment planning process.

The Addiction Severity Index (ASI; McLellan, 1980) is the most widely used structured interview within substance abuse treatment settings. This scale includes several items that screen for possible co-morbid mental illness problems. A previous evaluation indicates that these items provide good sensitivity (Cacciola, Peceoraro & Alterman, 2008). Another screening scale, The Mental Health Screening Form – III (MHSF-III; Carroll & McGinley, 2000), has also been widely used within both treatment and research settings. The current study aims to examine if the sensitivity of these measures can be improved if they are administered concurrently. This study also aims to compare instruments that screen for mental illness with Keyes' measure of mental health to determine whether the absence of mental illness may be equated with the presence of mental health or a two factor model is to be preferred. Keyes' measure of mental health, The Mental Health Continuum – Short Form (MHC-SF; Keyes, 2006), has not been used in an AOD residential treatment or co-occurring disorder populations.

Emotional control and cue exposure

Effective drug and alcohol treatment should focus on the prevention of further relapse. This typically involves identifying the person's high-risk situations / triggers and preparing the person to manage these events. Cue exposure has consistently been recommended as an important treatment approach within the substance abuse field (Otto, Powers & Fischmann, 2005). It involves directly exposing the patient to situations that the person would normally associate with their substance of abuse (e.g., drug using equipment, emotions associated with drug use). The goal of exposure is to break the patient's bond between these events / emotions and their drug use. Whilst laboratory studies have consistently demonstrated that cue exposure is an important component of relapse prevention training (Siegel & Ramos, 2002), this has typically not translated into routine practice. This is likely to be associated with ethical issues associated with cue exposure (i.e. using illicit substances, bringing substances of abuse into drug free environments) and practical difficulties (i.e. difficulties accessing the person's local pub).

Poor emotion regulation is generally associated with poorer outcomes for individuals with substance misuse problems (e.g. Bonn-Miller, Vujanovic & Zvolensky, 2008; Fox, Axelrod, Paliwal & Sinha, 2007; Fox & Sinha, 2008). For example, approximately 50% of substance abuse patients returning to residential treatment report their previous relapse was the direct result of trying to cope with negative emotions (Fernandez-Montalvo, et al., 2007). Similarly, individuals scoring highly on Alexithymia scales are at higher risk of relapse following substance abuse treatment (Loas, et al., 1997). It is important that cue exposure activities address negative emotions. The use of music for cue exposure in residential treatment settings is likely to be extremely beneficial for this purpose. Music has been successfully used in laboratory-based studies to induce both positive and negative mood states (Martin, 1990). Its effects occur quite quickly (within 10 minutes) and 75% of participants report changes in mood in clinical studies (see Martin, 1990). Additionally, most patients have access to music, and cue exposure homework activities could be developed with relative ease. Whilst music has been promoted for use in substance abuse treatment settings (Dingle, Gleadhill & Baker, 2008), very limited research has been conducted to examine the relationship between mood and substance abuse treatment.

The study is exploratory in nature and seeks to examine the degree to which substance abuse patients report that music influences their mood. It will also compare differences in individuals' reactions to music with patients' self-rated emotional control ratings.

Research plan

a) Research design

A cross-sectional design will be used. Participants will be at different stages of their 10-month treatment program. All measures will be quantitative self-report questionnaires.

b) Participants

The sample will consist of individuals attending the Salvation Army Bridge residential rehabilitation program located in, Townsville (n = 32), Brisbane (n = 90), Gold Coast (n = 55), Lake Macquarie (n = 104), Sydney (n = 110), Blue Mountains (n = 17), Central Coast (n = 40) and Canberra (n = 40). We anticipate at least 70% of these residents to participate. All individuals will be diagnosed with an alcohol and/or substance misuse problem. Participants may also be diagnosed with a co-occurring mental illness problem (e.g. depression, anxiety, psychotic disorder).

c) Treatment Condition

Clients will be attending the Salvation Army Bridge program. The program is 10 months in length, with participants completing a 6-stage, group-based treatment process. The treatment programs provide a combination of skills training, psycho-education, 12-step based interventions and individual counseling.

d) Measures

The measures outlined in the section below have all been combined into one questionnaire, the '**Mental Health Screening and Emotional Control**'. The questionnaire takes approximately 60 minutes and contains 188 items.

Background Information and drug and alcohol use

Basic demographic information will be collected. This will include age, weeks in the program, gender and The Salvation Army centre they are attending. We will also collect information on the person's drug and alcohol history. This will include the length of time the person has had a substance misuse problem, the types of drugs the person has used in the previous 12-months, the substance the person considers their primary drug of choice, frequency of drug use and if they have ever received treatment before. We will ask clients to specify any previous mental illness diagnoses, how well their current service is meeting their mental health needs and if they have suffered any of the poorer treatment responses and outcomes traditionally associated with co-occurring AOD and mental illness disorders previously.

Desires for Alcohol Questionnaire – Strong Desire Subscale (DAQ; Clark, 1994). This is a self-report questionnaire that measures an individual's current desire for alcohol. The questionnaire consists of three subscales (negative reinforcement, strong desire, mild desire). This scale was modified for this study in order to assess *drug* and *alcohol* desires. An example is the statement 'My desire to drink now seems overwhelming' was adjusted to 'My desire to drink and/or use drugs now seems overwhelming'.

Mental Health Screening

Mental Health Screening Form – III (MHSF-III; Carroll & McGinley, 2000) - The Mental Health Screening Form – III is designed as a mental illness screening device for clients seeking admission to substance abuse treatment programs. Each MHSF-III question is answered either "yes" or "no." All questions reflect the respondent's entire life history; therefore all questions begin with the phrase "Have you ever...". The MHSF-III features a "Total Score" line to reflect the total number of "yes" responses. The maximum score on the MHSF-III is 18 (question 6 has two parts). This feature permits programs to do research and program evaluation on the mental illness-chemical dependence interface for their clients. The first four questions on the MHSF-III are not unique to any particular mental illness diagnosis; however, questions 5 through 17 reflect symptoms associated with the following diagnoses/diagnostic categories: Q5, Schizophrenia; Q6, Depressive Disorders; Q7, Posttraumatic Stress Disorder; Q8, Phobias; Q9, Intermittent Explosive Disorder; Q10, Delusional Disorder; Q11, Sexual and Gender Identity Disorders; Q12, Eating Disorders (Anorexia, Bulimia); Q13, Manic Episode; Q14, Panic Disorder; Q15, Obsessive-Compulsive Disorder; Q16, Pathological Gambling; and Q17, Learning Disorder and Mental Retardation.

Mental Health Continuum – Short Form (MHC – SF; Keyes, 2006) - The Mental Health Continuum – Short Form is a measure of mental health that consists of 14 items. It measures the degree of (1) Emotional Well Being (items 1–3) as defined in terms of positive affect/satisfaction with life; (2) Social Well Being (items 4–8) as described in Keyes's (1998) model of Social Well Being (one item on each of the dimensions of social acceptance, social actualization, social contribution, social coherence and social integration); and (3) Psychological Well Being (items 9–14) as described in Ryff's (1989) model (including one item on each of the dimensions of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self-acceptance). The MHC–SF

allows a diagnosis to be made of the level of mental health an individual enjoys from languishing mental health to flourishing mental health.

Addiction Severity Index – Self Report (ASI–SR; Rosen, Henson, et al., 2000) – The Addiction Severity Index (ASI; McLellan, et al., 1980) is the most widely published substance abuse assessment. For the purposes of this study we will be using the ‘Your Health’ section of the self report version. Previous research indicates that the ASI provides good sensitivity and specificity to identify co-occurring mental illness problems (Cacciola, Pecoraro, & Aterman, 2008).

Alexithymia and Emotional Regulation

The *Toronto Alexithymia Scale* (TAS-20; Bagby, et al., 1992) is a widely used self-report measure of Alexithymia. The scale is 20-items in length and provides independent measures of (1) Difficulties in Identifying Feelings; (2) Difficulties in Describing Feelings; and (3) Externally Orientated Thinking.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) – this is a 36-item self-report measure that provides a total score of emotional regulation and 6-subscale scores (Nonacceptance of Emotional Response; Difficulties Engaging in Goal Directed Behaviour; Impulse Control Difficulties; Lack of Emotional Awareness; Limited Access to Emotion Regulation Strategies; and Lack of Emotional Clarity). The scale has previously been used with substance abuse populations (e.g. Bonn-Miller, Vujanovic, & Zvolensky, 2008; Fox, Paliwal & Sinha, 2007).

A 53-item scale was developed for the purposes of this study to examine the relationship between emotions and (a) using drugs and/or alcohol; and (b) listening to music. The emotions used in the scale were selected from a previous survey examining emotions and music (Juslin & Laukka, 2004).

Music

Music Experience Questionnaire (MEQ; Werner, Swope & Heide, 2006). The MEQ is a 53-item self report measure of individual differences in reaction to music. It is comprised of 6 independent subscale scores (Commitment to Music; Innovative Musical Aptitude; Social Uplift; Affective Reactions; Positive Psychotropic Effects; and Reactive Musical Behaviour).

See Appendix B for copies of the measures.

e) Procedures

Assessment protocol

The process will first involve informing staff members of the study through a presentation in their weekly staff meetings. Following this staff will then inform the clients of the study in the clients ‘house meeting’. Questionnaires will then be distributed and completed by the clients who are willing to participate. All clients will be provided with a participant information sheet. Researchers will be on site at the time when clients are completing the questionnaires.

- 10. Please provide a brief statement of the ethical considerations relevant to the proposed research; specifically in relation to the participants’ welfare, rights, beliefs, perceptions, customs and cultural heritage both individual and collective. (Attach an extra sheet if necessary)**

Informed consent – It is important that clients are aware of their freedom of choice to participate or refuse participation in this study. For this to be made certain clients will be approached about this study through the Salvation Army staff so clients do not feel pressured by the re-

searchers to participate. Salvation Army staff will be instructed to reinforce to the clients that participation is voluntary and there will be no negative repercussions for refusing to participate. Also clients will also be given the option of refusing participation through the researchers being the ones to hand out the questionnaires and be present while they are completed, in the instance they don't want to refuse through Salvation Army staff. A third option for clients to refuse participation is by not completing the survey and placing it in an anonymous envelope. This will allow clients to refuse participation without informing Salvation Army staff or the researchers. Clients will be made aware of this before they receive their survey and envelope. We have used the same research protocol previously and clients did return blank surveys indicating that they felt comfortable to refuse participation.

Confidentiality – To ensure confidentiality consent forms will not be used. Rather the following statement will be included on the participant information sheet “In order to protect your privacy we will not request your written consent to participate in this study, instead by completing and returning this questionnaire you will be providing your consent to participate in this study. If you do not wish to participate in this study you can either: (1) Discuss this with the Salvation Army staff; (2) Discuss this with one of the researchers; and/or (3) Return the incomplete questionnaire in the envelope provided.”

The surveys will be collected directly by researchers from the University of Wollongong and no individual data will be given to the case managers or the service. The researchers will be on site to collect the data and clients will also be given the option of posting their survey directly to the researchers at the University of Wollongong with their provided reply-paid envelope. All information will be stored securely at the University of Wollongong.

11. Referring to the categories of participants to be involved in this project identified in question 7, above, What is the rationale for selecting participants from this/these group/s?

We are interested in identifying co-occurring mental illness problems within residential drug and alcohol rehabilitation programs. The study will use clients who are currently attending these programs.

12. How will potential participants be approached initially and informed about the project? Please explain in detail and include copies of any letters, advertisements or other recruitment information, (e.g. direct approach to people on the street, mail-out to potential participants through an organisation, posters or newspaper advertisements, etc)

Salvation Army staff will be informed of the proposed study by one of the researchers via a presentation at a team meeting.

Clients will initially be informed of the study by Salvation Army staff. A participant information sheet (Appendix A) will be provided with contact details so if a client has further questions they can contact the researcher. This allows the opportunity for the client to refuse to participate outside of direct contact with Salvation Army staff.

We believe the safest approach to clients will be through Salvation Army staff. The staff will be instructed to reinforce to the clients that participation is voluntary and there will be no negative repercussions for refusing to participate. Also clients will be given the option of refusing participation through the researchers, in the instance they don't want to refuse through their caseworker. Clients will first be asked to put their survey in a provided envelope on completion. This allows a third option for clients to refuse participation by not completing the survey and placing it in an anonymous reply-paid envelope. This means that clients have the option to

refuse participation without contacting their caseworker or the researchers. Clients will be made aware of this option by Salvation Army staff before they receive their survey and envelope.

- 13. How many participants in total do you anticipate will be involved in the project? If the research has several stages involving different participants, please provide the total number of participants expected as well as the number of participants involved in each stage.**

There are a total of 488 beds in the rehabilitation centres throughout NSW, QLD and the ACT, however not all of these beds are always occupied. Therefore with an estimated 70% participation rate it is expected there will be around 340 clients involved in the study.

Participant Consent

Attach copies of any letters of invitation, information packages, consent forms, proxy/substitute consent forms, debriefing information, identification cards, contact detail cards, etc.

- 14 a. Is it anticipated that all participants will have the capacity to consent to their participation in the research?**

Yes

If NO, please explain why (e.g. children, incompetent participants, etc.) and explain how proxy or substitute consent will be obtained from the person with legal authority to consent on behalf of the participant (see Guidelines).

- 14 b. For participants who have the capacity to consent, how does the process ensure that informed consent is freely obtained from the participant?**

To enter the Bridge program clients will have undergone a supervised detoxification programme prior and will have already been assessed as having appropriate psychological stability. As previously noted, the consent process allows clients to refuse consent through discussing participation with Salvation Army staff or via a third party (the researchers). Also if participants do not wish to participate they are given the option of placing the incomplete survey in a blank reply-paid envelope which will be kept separate from the consent form which will be returned before the survey is completed. This means there will be no way of identifying those who chose not to participate because no name will be identified on the survey. This also gives clients the option of posting the envelope, allowing them time to decide whether they wish to participate and complete the survey.

- 14 c. Will written consent from participants be obtained?**

No

If NO, please explain why it would be inappropriate or unethical to seek written evidence of consent to this project.

By not obtaining written consent we eliminate any possible method of identifying any particular individual with their time in a residential drug and alcohol rehabilitation program. Also as the study does not require identifying information collection of such information would be both redundant and an unnecessary risk to the participant's privacy.

- 15. Are any participants in a dependent relationship with the researcher, the institution or the funding body (for example the researcher's clinical clients or students; employees of the institution; recipients of services provided by the funding body)? If so, what steps will be taken to ensure that participants are free to participate or refuse to participate in the research?**

The clients will be in a clinical relationship with the Salvation Army staff who will inform them of the study. As noted it will be clearly emphasised that participation is voluntary. In addition, the client will be provided with an option of contacting (or asking to be contacted by) the researchers so they have the opportunity to refuse to participate without having to do so directly with the caseworker.

- 16. How does the project address the participants' freedom to discontinue participation? Will there be any adverse effects on participants if they withdraw their consent and will they be able to withdraw data concerning themselves if they withdraw their consent?**

Once participants have completed their questionnaire and passed it on to researchers there will be no option to withdraw their data (as we do not have identifying information). Clients will be informed of this in their participant information sheet before completing the survey. Also clients will be made aware of their options to refuse participation before completing and returning the questionnaire.

- 17. Does the project involve withholding relevant information from participants or deceiving them about some aspect of the research?**

No

If YES, what is the justification for this withholding or deception and what steps will be taken to protect the participants' interest in having full information about their participation?

- 18. Will participants be paid or offered any form of reward or benefit (monetary or otherwise) for participation in the research? If so, please detail and provide a justification for the payment, reward or benefit.**

No

- 19. Confidentiality:
What measures will be taken to protect the privacy of individual subjects in terms of the test results and other confidential data obtained (both in recording the data and in its publication)?**

As consent forms will not be collected there will be no means by which the data collected can be attributed to an individual. Therefore data that is recorded and published will have no link to individual participants.

- 20. Will information collected from data or interview be published?**

Yes

If YES, please indicate what form this will take (Please note that any further use of information which may identify a participant is conditional upon the participant's permission for such use):

No individual identifying data will appear in any reports from the study. Data will be published in group form only. The data will be used for the purposes of research student theses and potentially publication in scholarly journals and conference presentations. A report will also be written for the Salvation Army.

- 21. Will any part of the research activities be placed on an audiotape, film, photograph or video-tape?**

No

To what purpose will the audiotape, film, photograph or video-tape be used?

For what audience(s) will the audiotape, film, photograph or video-tape be exhibited?

- 22. How will the data (including questionnaires, surveys, computer data, tapes, transcripts and specimens) be held securely, during and on completion of the project?**

Confidential data will be stored securely at the Illawarra Institute for Mental Health, it will be stored in locked filing cabinets and at the completion of the project will be held in a locked storage room.

Please confirm that original data will be held securely for a minimum of 5 years (15 years for clinical research).

Clinical research data will be securely stored for 15 years.

If NO, please give reasons why it would be unethical to store the data for this period.

- 23. Does the project involve the use of invasive procedures (e.g. blood sampling) or the risk of physical harm or emotional distress?**

Yes

If YES, give details:

Explain how the risks of harm or distress will be minimised. In the case of risks of emotional distress, what provisions have been made for an exit interview or the necessity of counselling?

Clients may experience mild distress from answering questions about cravings for drugs or alcohol, or by questions about past situations in which another individual has offended them. In the unlikely event that emotional distress occurs in response to some of the study questions there will be provision for participants to meet with one of the counselling staff who are available at the treatment centre.

24. Does this project involve obtaining information (e.g. data) of a private nature from any Commonwealth/State/Local Government Department or any other Agency, including health records from Area Health Services.

No

If YES, which Department (s)/Agency?

Please include copies of any correspondence regarding permission to access this information from a responsible officer of the Agency and complete a Privacy Guideline Form (available from Ethics Officer).

25. Does the research intend to determine whether illegal activity has occurred or anticipate that participants may reveal information about criminal activity?

Yes

If YES, how do you propose to respond to the legal issues raised?

There are questions in the survey that relate to clients' past drug use which may involve clients providing responses on past illegal substance use. Clients will be informed through their participant information sheet that any reports of current or past drug use will not be reported to the authorities or the Salvation Staff. Also clients' names will not be associated with their data from their questionnaire so no data can be traced to an individual client.

As this research is concerned with substance use the researchers will not report any illegal drug use.

26. Period of Research Clearance Requested (Please specify as near as possible 'start' and 'finish' dates for the conduct of research):

FROM: 15/11/08

TO: 15/11/09.

27. Any research project that involves the collection of data should be designed so that it is capable of providing information that can be analysed to achieve the aims of the project. Usually, although not always, this will involve various important statistical issues. It is important that the design and analysis be properly planned in the early stages of the project. You should seek statistical advice. The University of Wollongong has a Statistical Consulting Service that provides such advice to research students and staff undertaking research.

Are statistical issues relevant to this project?

Yes

If so, have you discussed this project with the Statistical Consulting Service? No

Statistical staff from the School of Psychology, will be consulted regarding the design of this study if required.

28. Does this project involve the collection or use of personal health information or information relating to the provision of a health service to an individual? This includes general information such as a gymnasium would collect as well as information collected for a medical purpose.

If so, you need to complete the Initial Application Form Part 2 – Privacy Addition for Health Information. For additional information regarding this please read the document

‘Health Records and Privacy Act’ and the NSW Privacy Commissioners’ Statutory guidelines on research. Both documents are available from the HREC webpage.

Yes

**NSW HEALTH
HEALTH ETHICS BRANCH
PRIVACY ADDITION TO HREC APPLICATION FORM**

The Health Records and Information Privacy Act 2002 commences on 1 September 2004. The Act creates a scheme to regulate the collection, use and disclosure of personal health information. It requires personal health information to be handled in accordance with 15 Health Privacy Principles (HPPs) set out in the Act. It is necessary for you to complete this part of the application form in order to ensure:

- You and the [name of institution] comply with the Act;
- This HREC can properly assess your research under the Act;
- This HREC can meet its statutory obligations to report to the Privacy Commissioner on its activities under the Act.

Please read the Statutory Guidelines made under the Act entitled *Health Records and Information Privacy Act 2002 (NSW): Statutory Guidelines on Research* which can be found on the website of Privacy NSW. This website can be accessed through www.lawlink.nsw.gov.au. Reading these documents will assist you in completing this section of the application form.

Q1. Does this project involve the collection, use, or disclosure of personal health information which is identified, or from which the identity of the person can be reasonably ascertained?

☐ Yes – you must complete this section of the application form. Go to question 2.

☒ No – you do not need to complete this section of the application form. Go to [insert next section of your standard HREC application form]

29. Comments. If you would like to make any comment about the application or the application process please do so.

DECLARATION BY CHIEF INVESTIGATOR

I, the undersigned, have read the current National Statement on Ethical Conduct in Research Involving Humans:

<http://www.health.gov.au/nhmrc/publications/synopses/e35syn.htm>

and accept responsibility for the conduct of the research activities detailed in this application in accordance with the principles contained in the National Statement and any other conditions laid down by the University of Wollongong's Human Research Ethics Committee.

Chief Investigator's signature/s:

Date:

If the Chief Investigator is a student include:

Supervisor's signature:

Date:

Signature/s of other researcher/s: (The first named researcher will assume responsibility for the project in the absence of the Chief Investigator)

Date:

DECLARATION BY HEAD OF UNIT

As Head of Unit I have responsibility for ensuring that Occupational Health and Safety (OHS) issues surrounding research in the Unit are addressed.

(please tick all relevant boxes)

- ___ I am satisfied that a general risk assessment for the research project addressed in this application has been completed adequately
- ___ I will ensure that a risk assessment specific to this application will be completed prior to commencing the activities described in this application
- ___ I will ensure that there exist appropriate mechanisms to address potential OHS issues that may arise and I have responsibility for implementing those mechanisms
- ___ I will ensure that mechanisms exist for ongoing assessment of the OHS issues related to this research
- ___ This research involves use of radiation, chemicals or biohazards. A Risk Assessment has been conducted and is attached to this application

Head of Unit's Signature.....Date.....

<p>NOTE: RESEARCH MUST NOT COMMENCE UNTIL APPLICATION HAS BEEN FULLY APPROVED.</p>

CHECKLIST

Applications should be sent to the Ethics Officer, Human Research Ethics Committee, Office of Research, University of Wollongong, Northfields Ave, Wollongong NSW 2522

_____ **Original Ethics Application plus appropriate number of copies (See Guidelines)**

_____ **Consent Form(s)**

_____ **Participant Information Sheet/Package**

_____ **Copies of Questionnaire(s)/Survey(s) or Interview Questions**

_____ **Copies of all documents and other material used to inform potential participants about the research including advertisements and letters of invitation.**

_____ **Evidence of permission to conduct research in locations not associated with the University of Wollongong**

_____ **Evidence of approval/rejection by other HREC(s), including comments and requested alternations to the protocol**

_____ **Any form requiring signature by the HREC (one copy)**

_____ **For Clinical Trials : Application Form (original +14 copies), Patient Information Package (14 copies), Consent Forms (14 copies), Indemnity Form (14 copies), Protocols (14 copies), Advertisement (14 copies), Summary Sheet (14 copies), Budget (14 copies), Insurance information (if in Private Practice) (14 copies), Investigator's Brochure (5 copies), CTN or CTX Form (1 original copy)**

Form Revised Jan 2003

University of Wollongong

Client Participant Information Sheet

Lake Macquarie Recovery Service Centre:

Mental Health and Substance Abuse Problems

Who is doing the study?

Dr Peter Kelly, Prof Frank Deane and Mr Kane Mortlock will be conducting this research project. Aspects of this research will be used for Mr Mortlock's doctoral thesis.

What is the study about?

The study aims to examine the proportion of people in residential drug and alcohol rehabilitation who also have a mental health problem. Studies have found that people with both drug and alcohol and mental health problems can do much worse than those with drug and alcohol problems alone. For this reason it is important to identify how many people in drug and alcohol treatment services also have mental health problems so more can be done to help this group. It will also examine people's different reactions to music. We are looking at this because music has been found to effect people's moods in different ways and may have the potential to be useful in therapy.

What do I need to do?

The first thing you need to do is carefully read this 'participant information sheet' making sure you understand what is required. In order to protect your privacy we will not request your written consent to participate in this study, instead by completing and returning this questionnaire you will be providing your consent to participate in this study. If you do not wish to participate in this study you can either:

1. Discuss this with the Salvation Army staff
2. Discuss this with one of the researchers
3. Return the incomplete questionnaire in the envelope provided.

It is anticipated that completion of this questionnaire will take approximately 60 minutes. If you would like further information on the study you can also contact Dr Kelly or Prof Deane at the University of Wollongong by calling 02 4221 4207.

Is there any risk or burden if I decide to participate?

The main burden will be related to the time it takes to complete the assessment. There is a very small risk that you might think some of the questions in the questionnaires are too personal or distressing. Example items are: "Have you ever been advised to take medication for anxiety, depression, hearing voices, or for any other emotional problem?" and to what extent do you "want to drink/use drugs so much I can taste it." However, in addition to your right not to participate in the survey, you also have the right to refuse to answer any specific questions that you find too personal or distressing and if any of the questions cause you any distress the Salvation Army staff will also be available to assist you.

Also because your name will not appear on any part of the questionnaire there will be no option to withdraw any information provided at a later date. If you choose not to participate in the study, this will in no way have an effect on your relationship with your support or treatment services or the University of Wollongong. **Participation is entirely voluntary.**

Are there any benefits expected?

People often find that when they complete the questionnaires it helps them reflect on their progress and clarify what it is about treatment that is helping them. Also the information from this study will hopefully contribute to improving the treatment program and complimenting already existing research.

How will my information be collected and used?

You will be required to complete a questionnaire which will involve completing a written survey. Information from this survey will be kept confidential. All questionnaire material will be stored securely at the University of Wollongong. The information may be used for publication in scholarly research journals, reports to the Salvation Army, student theses, and conference presentations. You will not be identifiable in any publications.

What if I have more questions?

You may have additional questions that you wish to ask about the research before you decide whether to participate. You can contact Dr Kelly or Prof Deane at the University of Wollongong by calling 02 4221 4207. If you have any concerns or complaints regarding the way in which the research is or has been conducted, you can contact the Secretary of the University of Wollongong Human Research Ethics Committee on Phone: (02) 4221 4457, Fax: (02) 4221 4338 email: research@uow.edu.au

Mental Health Screening and Emotional Control

1. What is your age?

2. How many weeks have you been in the program for?

3. What gender are you? (Circle) 1. Male 2. Female

4. What program are you attending? (circle)

Gold Coast	Brisbane	Townsville	Canberra	Sydney	Central Coast	Morisset	Blue Mountains
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5. How long have you had drug and/or alcohol problems? _____ Years

6. In the 12 months before you entered treatment what substances had you used?
(You may tick multiple drugs)

Heroin	☐ 1
Marijuana/Cannabis	☐ 2
Amphetamines (e.g. speed, ice, crystal methyl)	☐ 3
Alcohol	☐ 4
Ecstasy	☐ 5
Cocaine	☐ 6
Other(s)	☐ 7
If Other(s) Please Specify	

7. What do you consider your primary drug of concern? (Please specify just one)

8. Before entering treatment, how often would you take this drug? (tick)

Once a month	☐ 1
More than once a month	☐ 2
At least once a week	☐ 3
Daily	☐ 4
More than once a day	☐ 5

9. Have you ever previously sought treatment for your current drug problem?

YES	☐ 1
NO	☐ 2

10. Have you ever received treatment for a mental health problem?

YES	☐ 1
NO	☐ 2

11. If YES, what diagnosis did you receive?

12. How well is the service meeting your mental health needs currently?

- ☐ Not at all ☐ Slightly ☐ Moderately ☐ Considerably ☐ Extremely

13. Have you experienced any of the following drug-and-alcohol-related things previously?

- ☐ Relapse ☐ Hospitalisation ☐ Violence ☐ Family difficulties ☐ Homelessness

DAQ

A craving refers to the thoughts and feelings associated with an urge or desire to drink or use drugs. The following questions in this section relate specifically the time since you've been in the residential treatment program. Please indicate your agreement to the following statements by circling the most appropriate number on the scale following the statement

	Strongly disagree						Strongly agree
1. I want to drink/use drugs so much I can taste it.	1	2	3	4	5	6	7
2. My desire to drink/ use drugs now seems overwhelming	1	2	3	4	5	6	7
3. I would do almost anything to have a drink/ take some drugs right now	1	2	3	4	5	6	7
4. I would feel as if all the bad things in my life had disappeared if I drank/used drugs now	1	2	3	4	5	6	7
5. Even major problems in my life would not bother me if I drank/used drugs now	1	2	3	4	5	6	7
6. I would feel less worried about my daily problems if I drank/used dugs now	1	2	3	4	5	6	7
7. Drinking/using drugs would be satisfying now	1	2	3	4	5	6	7
8. Drinking/using drugs would be pleasant now	1	2	3	4	5	6	7

TAS-20

Please rate how strongly you agree with the following statements.

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
1. I am often confused about what emotion I am feeling.	1	2	3	4	5
2. It is difficult for me to find the right words for my feelings.	1	2	3	4	5
3. I have physical sensations that even doctors don't understand.	1	2	3	4	5
4. I am able to describe my feelings easily.	1	2	3	4	5
5. I prefer to analyse problems rather than just describe them	1	2	3	4	5
6. When I am upset, I don't know if I am sad, frightened, or angry.	1	2	3	4	5

	Strong- ly disa- gree	Disa- gree	Unsure	Agree	Strong- ly agree
7. I am often puzzled by sensations in my body	1	2	3	4	5
8. I prefer to just let things happen rather than to understand why they turned out that way.	1	2	3	4	5
9. I have feelings that I can't quite identify.	1	2	3	4	5
10. Being in touch with emotions is essential.	1	2	3	4	5
11. I find it hard to describe how I feel about people.	1	2	3	4	5
12. People tell me to describe my feelings more.	1	2	3	4	5
13. I don't know what's going on inside me.	1	2	3	4	5
14. I often don't know why I am angry.	1	2	3	4	5
15. I prefer talking to people about their daily activities rather than their feelings.	1	2	3	4	5
16. I prefer to watch "light" entertainment shows rather than psychological dramas.	1	2	3	4	5
17. It is difficult for me to reveal my inner-most feelings, even to close friends.	1	2	3	4	5
18. I can feel close to someone, even in moments of silence.	1	2	3	4	5
19. I find examination of my feelings useful in solving personal problems.	1	2	3	4	5
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.	1	2	3	4	5

What is your favourite style of music?

In the past, to what extent have the following emotions triggered you to use your main drug of choice?

	Very small extent	Small extent	Unsure	Large extend	Very large extent
1. Sadness	1	2	3	4	5
2. Anger	1	2	3	4	5
3. Anxiety	1	2	3	4	5
4. Happiness / Joy	1	2	3	4	5
5. Love	1	2	3	4	5

	Very small extent	Small extent	Unsure	Large extend	Very large extent
6. Calmness	1	2	3	4	5

To what extent is music capable of leading you to experience the following emotions?

	Very small extent	Small extent	Unsure	Large extend	Very large extent
7. Sadness	1	2	3	4	5
8. Anger	1	2	3	4	5
9. Anxiety	1	2	3	4	5
10. Happiness / Joy	1	2	3	4	5
11. Love	1	2	3	4	5
12. Calmness	1	2	3	4	5

MEQ

This questionnaire concerns the place of music in your life. Questions concern your thoughts about music, your feelings about it, your reactions to it, and how it relates to your activities. There are no right or wrong answers to these questions. After reading each question carefully, indicate how true it is of your experience and behaviour, using the following scale:

	Very untrue	Some- what untrue	Equally true and un- true; unsure	Some- what true	Very true
1. I can easily improvise on an instrument without having music in front of me.	1	2	3	4	5
2. I frequently hear songs in my head.	1	2	3	4	5
3. I feel more integrated (more "together") when I hear certain kinds of music.	1	2	3	4	5
4. I often sing, hum, or whistle along with recorded music.	1	2	3	4	5
5. I would never want to listen to the same piece of music twice in a row.	1	2	3	4	5
6. When I'm enjoying music with other people I feel like we're	1	2	3	4	5

	Very untrue	Some-what untrue	Equally true and untrue; unsure	Some-what true	Very true
speaking the same language.					
7. I've had musical experiences that have changed my whole mood.	1	2	3	4	5
8. I enjoy singing in the shower or bath.	1	2	3	4	5
9. I sometimes spend more money than I can afford to attend a musical performance.	1	2	3	4	5
10. It is hard for me to keep the beat when dancing.	1	2	3	4	5
11. Music unites my mind and my body.	1	2	3	4	5
12. A song has never made me feel joyous.	1	2	3	4	5
13. I like listening to music that has a message.	1	2	3	4	5
14. There's nothing more powerful than singing a beloved song with other people.	1	2	3	4	5
15. Listening to music is a very private experience for me.	1	2	3	4	5
16. I wish my family had sung together more when I was growing up.	1	2	3	4	5
17. I have perfect pitch.	1	2	3	4	5
18. When they are done well, I find patriotic songs very stirring.	1	2	3	4	5
19. I wish music had been more a part of my childhood.	1	2	3	4	5
20. I have never been physically stirred up by music.	1	2	3	4	5
21. Music is the most important thing in my life.	1	2	3	4	5
22. Music helps me forget my cares.	1	2	3	4	5
23. Totally new tunes, that I've never heard before, sometimes pop into my head.	1	2	3	4	5
24. I can hardly resist dancing to certain music.	1	2	3	4	5
25. Music gives me a sense of purpose and movement.	1	2	3	4	5
26. The experience of music brings me closer to a higher power.	1	2	3	4	5
27. I am especially responsive to the beat or rhythm in music.	1	2	3	4	5

	Very untrue	Some-what untrue	Equally true and untrue; unsure	Some-what true	Very true
28. People have applauded my performance of music.	1	2	3	4	5
29. I enjoy making up or composing tunes, songs or musical pieces.	1	2	3	4	5
30. I have a good sense of pitch.	1	2	3	4	5
31. I easily get "lost" in the depth of my concentration on music.	1	2	3	4	5
32. I often find myself swaying in tune with music to which I'm listening.	1	2	3	4	5
33. Music never affects my feelings.	1	2	3	4	5
34. Music has no place in my life.	1	2	3	4	5
35. Music helps me get out of myself.	1	2	3	4	5
36. Certain music draws me strongly to dance.	1	2	3	4	5
37. I have made sacrifices in my life in the pursuit of music.	1	2	3	4	5
38. I follow the details of certain musical performers' lives.	1	2	3	4	5
39. I love some kind of music.	1	2	3	4	5
40. Sometimes I spend too much money on musical recordings or music videos.	1	2	3	4	5
41. It's important for me to see music being performed and not just hear it.	1	2	3	4	5
42. Music helps me not feel so lonely.	1	2	3	4	5
43. Often I tap my feet or hands along with music I'm hearing.	1	2	3	4	5
44. I am better able to face the world after enjoying music.	1	2	3	4	5
45. The emotional side of music makes me uncomfortable.	1	2	3	4	5
46. There are some kinds of music that I really detest.	1	2	3	4	5
47. I've been both aroused and satisfied by a musical experience.	1	2	3	4	5
48. Music gives a sense of order to my life.	1	2	3	4	5
49. I'm pretty good at improvising music, either in my head or on an instrument.	1	2	3	4	5
50. Hearing a song will sometimes	1	2	3	4	5

	Very untrue	Some-what untrue	Equally true and untrue; unsure	Some-what true	Very true
bring to my mind a period of my life.					
51. Music can influence my emotions.	1	2	3	4	5
52. Life would be meaningless to me without music.	1	2	3	4	5
53. I've had experiences of ecstasy while listening to music.	1	2	3	4	5

DERS

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item:

	Almost never (0-10%)	Some-times (11-35%)	About half time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)
1. I am clear about my feelings.	1	2	3	4	5
2. I pay attention to how I feel.	1	2	3	4	5
3. I experience my emotions as overwhelming and out of control.	1	2	3	4	5
4. I have no idea how I am feeling.	1	2	3	4	5
5. I have difficulty making sense out of my feelings.	1	2	3	4	5
6. I am attentive to my feelings.	1	2	3	4	5
7. I know exactly how I am feeling.	1	2	3	4	5
8. I care about what I am feeling.	1	2	3	4	5
9. I am confused about how I feel.	1	2	3	4	5
10. When I'm upset, I acknowledge my emotions.	1	2	3	4	5
11. When I'm upset, I become angry with myself for feeling that way.	1	2	3	4	5
12. When I'm upset, I become embarrassed for feeling that way.	1	2	3	4	5
13. When I'm upset, I have difficulty getting work done.	1	2	3	4	5
14. When I'm upset, I become out of control.	1	2	3	4	5
15. When I'm upset, I believe that I will remain that way for a long time.	1	2	3	4	5
16. When I'm upset, I believe that I'll end up feeling very depressed.	1	2	3	4	5

	Almost never (0-10%)	Some- times (11-35%)	About half time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)
17. When I'm upset, I believe that my feelings are valid and important.	1	2	3	4	5
18. When I'm upset, I have difficulty focusing on other things.	1	2	3	4	5
19. When I'm upset, I feel out of control.	1	2	3	4	5
20. When I'm upset, I can still get things done.	1	2	3	4	5
21. When I'm upset, I feel ashamed with myself for feeling that way.	1	2	3	4	5
22. When I'm upset, I know that I can find a way to eventually feel better.	1	2	3	4	5
23. When I'm upset, I feel like I am weak.	1	2	3	4	5
24. When I'm upset, I feel like I can remain in control of my behaviors.	1	2	3	4	5
25. When I'm upset, I feel guilty for feeling that way.	1	2	3	4	5
26. When I'm upset, I have difficulty concentrating.	1	2	3	4	5
27. When I'm upset, I have difficulty controlling my behaviors.	1	2	3	4	5
28. When I'm upset, I believe that there is nothing I can do to make myself feel better.	1	2	3	4	5
29. When I'm upset, I become irritated with myself for feeling that way.	1	2	3	4	5
30. When I'm upset, I start to feel very bad about myself.	1	2	3	4	5
31. When I'm upset, I believe that wallowing in it is all I can do.	1	2	3	4	5
32. When I'm upset, I lose control over my behaviours.	1	2	3	4	5
33. When I'm upset, I have difficulty thinking about anything else.	1	2	3	4	5
34. When I'm upset, I take time to figure out what I'm really feeling.	1	2	3	4	5
35. When I'm upset, it takes me a long time to feel better.	1	2	3	4	5
36. When I'm upset, my emotions feel overwhelming.	1	2	3	4	5

MHSF-III

Please rate Yes or No to the following questions. Please note, each item refers to your entire life history, not just your current situation, this is why each question begins – “Have you ever”

1) Have you <u>ever</u> talked to a psychiatrist, psychologist, therapist, social worker or counsellor about an emotional problem?	YES	NO
2) Have you <u>ever</u> felt you needed help with your emotional problems, or have you had people tell you that you should get help for your emotional problems?	YES	NO
3) Have you <u>ever</u> been advised to take medication for anxiety, depression, hearing voices, or for any other emotional problem?	YES	NO
4) Have you <u>ever</u> been seen in a psychiatric emergency room or been hospitalised for psychiatric reasons?	YES	NO
5) Have you <u>ever</u> heard voices no one else could hear or seen objects or things which others could not see?	YES	NO
6) a) Have you <u>ever</u> been depressed for weeks at a time, lost interest or pleasure in most activities, had trouble concentrating and making decisions or thought about killing yourself? b) Did you <u>ever</u> attempt to kill yourself?	YES YES	NO NO
7) Have you <u>ever</u> had nightmares or flashbacks as a result of being involved in some traumatic/terrible event? For example, warfare, gang fights, fire, domestic violence, rape, incest, car accident, being shot or stabbed?	YES	NO
8) Have you <u>ever</u> experienced any strong fears? For example, of heights, insects, animals, dirt, attending social events, being in a crowd, being alone, being in places where it may be hard to escape or get help?	YES	NO
9) Have you <u>ever</u> given in to an aggressive urge or impulse, on more than one occasion, that resulted in serious harm to others or led to the destruction of property?	YES	NO
10) Have you <u>ever</u> felt that people had something against you, without them necessarily saying so, or that someone or some group may be influencing or trying to influence your thoughts or behaviour?	YES	NO
11) Have you <u>ever</u> experienced any emotional problems associated with your sexual interests, your sexual activities, or your choice of sexual partner?	YES	NO
12) Was there <u>ever</u> a period in your life where you spent a lot of time thinking and worrying about gaining weight, becoming fat, or controlling your eating? For example, by repeatedly dieting or fasting, engaging in much exercise to compensate for binge eating, taking enemas, or forcing yourself to throw up?	YES	NO

13) Have you <u>ever</u> had a period of time when you were so full of energy and your ideas came very rapidly, when you talked nearly non-stop, when you moved quickly from one activity to another, when you needed little sleep, and believed you could do almost anything?	YES	NO
14) Have you <u>ever</u> had spells or attacks when you suddenly felt anxious, frightened, uneasy to the extent that you began sweating, your heart began to beat rapidly, you were shaking or trembling, your stomach was upset, you felt dizzy or unsteady, as if you would faint?	YES	NO
15) Have you <u>ever</u> had a persistent, lasting thought or impulse to do something over and over that caused you considerable distress and interfered with normal routines, work, or your social relations? Examples would include repeatedly counting things, checking and rechecking on things you had done, washing and rewashing your hands, praying, or maintaining a very rigid schedule of daily activities from which you could not deviate?	YES	NO
16) Have you <u>ever</u> lost considerable sums of money through gambling or had problems at work, in school, with your family and friends as a result of your gambling?	YES	NO
17) Have you <u>ever</u> been told by teachers, guidance counselors, or others that you have a special learning problem?	YES	NO

MENTAL HEALTH CONTINUUM – SHORT FORM (MHC – SF)

The following questions are about how you have been feeling in the past month. Please place a check mark in the box that best represents how often you have felt each feeling.

In the past month, how often did you feel ...	NEVER (0)	ONCE OR TWICE (1)	ABOUT ONCE A WEEK (2)	2 OR 3 TIMES A WEEK (3)	ALMOST EVERY DAY (4)	EVERY DAY (5)
1. happy						
2. interested in life						
3. satisfied						
4. that you had something important to contribute to society						
5. that you belonged to a community (like a social group, your neighbourhood, your city)						
6. that our society is becoming a better place for people						
7. that people are basically good						
8. that the way our society works makes sense to you						
9. that you liked most parts of your personality						
10. good at managing the responsibilities of your daily life						
11. that you had warm and trusting relationships with others						
12. that you have experiences that challenge you to grow and become a better person						
13. confident to think or express your own ideas and opinions						
14. that your life has a sense of direction or meaning to it						

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ADDICTION SEVERITY INDEX – SELF REPORT (ASI-SR) PART II: YOUR HEALTH

7. How many days have you experienced medical problems **in the past 30 days?**

(Do not include ailments directly caused by drugs/alcohol, except for serious ailments that would continue even if you were abstinent – for example, cirrhosis of the liver, abscesses from needles, etc.)

_____ Number of Days

8. How troubled or bothered have you been by these medical problems **in the past 30 days?**

☐ Not at all ☐ Slightly ☐ Moderately ☐ Considerably ☐ Extremely

9. How important to you now is treatment for these medical problems?

☐ Not at all ☐ Slightly ☐ Moderately ☐ Considerably ☐ Extremely

10.

In the past 30 days , have you had a significant period of time in which you have:	<u>NO</u>	<u>YES</u>	Only when high, or in withdrawal from alcohol/drugs
a. Experienced <u>serious</u> depression, hopelessness, loss of interest, difficulty with daily functioning?			
b. Experienced <u>serious</u> anxiety/tension, uptight, unreasonably worried, inability to feel relaxed?			
c. Experienced hallucinations – saw things or heard voices that were not there?			
d. Experienced trouble understanding, concentrating, or remembering?			

11.

In the past 30 days , did you have a significant period (it may have been the direct result of alcohol/drug use) in which you have:	<u>YES</u>	<u>NO</u>
a. Experienced trouble controlling violent behaviour, including episodes of rage, or violence?		
b. Experienced serious thoughts of suicide (seriously considered a plan for taking your life)?		
c. Attempted suicide?		

12. **In the past 30 days**, how many days have you experienced these psychological or emotional problems?

_____ Number of Days

13. How much have you been troubled or bothered by these psychological or emotional problems **in the past 30 days?**

☐ Not at all ☐ Slightly ☐ Moderately ☐ Considerably ☐ Extremely

14. How important to you now is treatment for these psychological or emotional problems?

☐ Not at all ☐ Slightly ☐ Moderately ☐ Considerably ☐ Extremely

15. **In the past 30 days**, have you been prescribed medication for any psychological or emotional problems?

☐ NO

☐ YES

If completing this survey raises any emotional issues with you we strongly encourage that you discuss this with your support worker.

Thank you for completing the survey.

Appendix D

HE08/297

17th November 2008

Chairperson
Human Research Ethics Committee
University of Wollongong

Ethics Number: HE08/297

Project Title: *Mental health screening within residential drug and alcohol rehabilitation*

Thank you for providing a prompt response to our application. We have carefully attended to each aspect of the committees' concerns as outlined below.

1. Provide a longer outline of the purpose of the study on the information sheet.

The following passage has been inserted into the participant information sheet, (attached in full as appendix A), to enlarge upon our outline of the purpose of the study:

What is the study about?

The study aims to examine the proportion of people in residential drug and alcohol rehabilitation who also have a mental health problem. Studies have found that people with both drug and alcohol and mental health problems can do much worse than those with drug and alcohol problems alone. For this reason it is important to identify how many people in drug and alcohol treatment services also have mental health problems so more can be done to help this group. It will also examine people's different reactions to music. We are looking at this because music has been found to effect people's moods in different ways and may have the potential to be useful in therapy.

2. Extend the amount of time it takes to complete the survey on the information sheet.

The advice on the estimated amount of time it takes to complete the survey has been extended from 40 minutes to 60 minutes.

3. Provide examples of "sensitive questions" on the participant information sheet.

The participant information sheet has had the following paragraph added that includes two items that could be construed as "sensitive":

There is a very small risk that you might think some of the questions in the questionnaires are too personal or distressing. Example items are: "Have you ever been advised to take medication for anxiety, depression, hearing voices, or for any other emotional problem?" and to what extent do you "want to drink/use drugs so much I can taste it." However, in addition to your right not to participate in the survey, you also have the right to refuse to answer any specific questions that you find too personal or distressing and if any of the questions cause you any distress the Salvation Army staff will also be available to assist you.

4. To ensure clients have the freedom to not participate, only have researchers in the room when clients are completing the surveys.

At the time when clients are completing the surveys only researchers will be in the room.

In addition to the concerns raised by the committee we would like to add an additional 2 questions to the survey to examine the participants' perceptions of how well their mental health needs are being met by their drug and alcohol treatment service currently and what, if any, poorer treatment outcomes traditionally associated with drug and alcohol and mental illness comorbidity they have experienced previously. The items are as follows:

14. How well is the service meeting your mental health needs currently?

☐ Not at all ☐ Slightly ☐ Moderately ☐ Considerably ☐ Extremely

15. Have you experienced any of the following drug-and-alcohol-related difficulties previously?

☐ Relapse ☐ Hospitalisation ☐ Violence ☐ Family difficulties ☐ Homelessness

We would appreciate it if you could let us know if these revisions have adequately addressed the Committee's concerns as soon as possible in order to finalise dates for the data collection.

Yours sincerely,
Professor Frank Deane
University of Wollongong

University of Wollongong Client Participant Information Sheet

Lake Macquarie Recovery Service Centre:

Mental Health and Substance Abuse Problems

Who is doing the study?

Dr Peter Kelly, Prof Frank Deane and Mr Kane Mortlock will be conducting this research project. Aspects of this research will be used for Mr Mortlock's doctoral thesis.

What is the study about?

The study aims to examine the proportion of people in residential drug and alcohol rehabilitation who also have a mental health problem. Studies have found that people with both drug and alcohol and mental health problems can do much worse than those with drug and alcohol problems alone. For this reason it is important to identify how many people in drug and alcohol treatment services also have mental health problems so more can be done to help this group. It will also examine people's different reactions to music. We are looking at this because music has been found to effect people's moods in different ways and may have the potential to be useful in therapy.

What do I need to do?

The first thing you need to do is carefully read this 'participant information sheet' making sure you understand what is required. In order to protect your privacy we will not request your written consent to participate in this study, instead by completing and returning this questionnaire you will be providing your consent to participate in this study. If you do not wish to participate in this study you can either:

1. Discuss this with the Salvation Army staff
2. Discuss this with one of the researchers
3. Return the incomplete questionnaire in the envelope provided.

It is anticipated that completion of this questionnaire will take approximately 60 minutes. If you would like further information on the study you can also contact Dr Kelly or Prof Deane at the University of Wollongong by calling 02 4221 4207.

Is there any risk or burden if I decide to participate?

The main burden will be related to the time it takes to complete the assessment. There is a very small risk that you might think some of the questions in the questionnaires are too personal or distressing. Example items are: "Have you ever been advised to take medication for anxiety, depression, hearing voices, or for any other emotional problem?" and to what extent do you "want to drink/use drugs so much I can taste it." However, in addition to your right not to participate in the sur-

vey, you also have the right to refuse to answer any specific questions that you find too personal or distressing and if any of the questions cause you any distress the Salvation Army staff will also be available to assist you.

Also because your name will not appear on any part of the questionnaire there will be no option to withdraw any information provided at a later date. If you choose not to participate in the study, this will in no way have an effect on your relationship with your support or treatment services or the University of Wollongong. **Participation is entirely voluntary.**

Are there any benefits expected?

People often find that when they complete the questionnaires it helps them reflect on their progress and clarify what it is about treatment that is helping them. Also the information from this study will hopefully contribute to improving the treatment program and complimenting already existing research.

How will my information be collected and used?

You will be required to complete a questionnaire which will involve completing a written survey. Information from this survey will be kept confidential. All questionnaire material will be stored securely at the University of Wollongong. The information may be used for publication in scholarly research journals, reports to the Salvation Army, student theses, and conference presentations. You will not be identifiable in any publications.

What if I have more questions?

You may have additional questions that you wish to ask about the research before you decide whether to participate. You can contact Dr Kelly or Prof Deane at the University of Wollongong by calling 02 4221 4207. If you have any concerns or complaints regarding the way in which the research is or has been conducted, you can contact the Secretary of the University of Wollongong Human Research Ethics Committee on Phone: (02) 4221 4457, Fax: (02) 4221 4338 email: research@uow.edu.au

Appendix E

Research Office use only

HE 09/224

UNIVERSITY OF WOLLONGONG/ILLAWARRA AREA HEALTH SERVICE

Human Research Ethics Committee

INITIAL APPLICATION FOR APPROVAL TO UNDERTAKE RESEARCH INVOLVING HUMAN PARTICIPANTS

(A separate application is required for each project)

Please answer questions in terms understandable to the layperson.

1. Descriptive Title of Project:

The Salvation Army Recovery Service Centres: Validation of Mental Disorder and Mental Health Screening Measures

2. 7 line summary of project aims:

This project will first examine the sensitivity, specificity and overall accuracy of a number of screening measures designed to detect mental disorder amongst individuals with alcohol and other drug problems. The project will also investigate the psychometric validity and reliability of a measure of mental health. Results will be used to inform assessment, treatment planning and treatment outcome measurement within substance abuse treatment facilities.

**3. Name Position/Appointment Institution Qualifications
Chief Investigator(s) (Academic or Professional)**

Kane Mortlock (BA, LLB (Hons), BPsyc (Hons))
PhD candidate
Illawarra Institute for Mental Health
School of Psychology
University of Wollongong

Prof Frank Deane (PhD, Dip. Clin. Psych)
Director
Illawarra Institute for Mental Health
School of Psychology
University of Wollongong

Dr Trevor Crowe (PhD)
Research Fellow
Illawarra Institute for Mental Health
University of Wollongong

Address for Correspondence (1st named investigator):

Illawarra Institute for Mental Health
Building 22
University of Wollongong
Wollongong, NSW 2522

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Other Participating Researchers: (names/address/contact details of other researchers working on this project)

Dr Peter Kelly, Associate Fellow, Illawarra Institute for Mental Health, Building 22, University of Wollongong, NSW 2522.

4. Where will potential participants be approached by the researchers to seek their participation in the research and where will research activities involving participants be conducted:

Supervisors and caseworkers of the Salvation Army Bridge program will be informed of the proposed study by the researchers. Clients will be informed of the study in their "house" meeting (located in the residential treatment facility) where they will be notified of a sign up sheet available to sign up for the study. A participant information sheet (Appendix A) will be provided along with contact details so that the clients can contact the researcher if there are any further questions. This will allow the opportunity for the client to refuse to participate outside of direct contact with his/her caseworker. The chief investigator will be on site at The Salvation Army Recovery Service Centres to conduct the research and will be the only other person present in the room at the time the research is conducted.

Purpose and Funding of Project

5.a Is this: YES Staff Research (University of Wollongong)

 Staff Research (Illawarra Area Health Service)

YES Student Research (Post grad. degree or subject)

Course undertaken: PhD (Psychology)

Unit/ Faculty/Department School of Psychology/HBS

Supervisor Prof Frank Deane & Dr Trevor Crowe

 Other (Please specify e.g. for external people who want to research Uni students or IAHS clients)

5.b What is the source and amount of funding from all sources for this research?

Source (Name of Organisation / Funding Scheme)	Amount
The Salvation Army	\$397 000

5.c Is there any affiliation or financial interest between the sponsor/funding body and the researcher(s) or supervisor associated with this research? If Yes, Please declare.

NO

5.d Are there any conditions placed on this research by the funding body? (please provide details) YES/NO

NO

5.e Is a copy of the HREC approval to be forwarded to the Granting Body?

YES

If YES, please advise of any deadlines:

No deadline, but provided to the funding body before the research is commenced.

6. Has this research project been reviewed by any other Institutional Ethics Committee? (for example multi-centre research)

NO

If YES, include a copy of any correspondence the sponsor or researcher has entered into with the other Ethics Committee(s) to this point.

7. Research Categories

Please mark the research categories relevant to this research proposal. See guidelines for descriptions of the categories. At least one category should be marked for each grouping. For "Other", please specify.

If your research only involves participants and research procedures from a-d under A Participants and B Research Procedures Used, it may be open to expedited review by the Chair of the HREC. In that case, submit only one copy of your application (please see guidelines regarding expedited review).

A Participants

- a. Healthy members of the community
- b. University students
- c. Employees of a specific company/organisation
- d. Members of a specific community group, club or association
- ☒ e. Clients of a service provider
- ☒ f. Health Service clients (e.g. users/clients of a health service)
- g. School children
- h. Hospital in-patients
- i. Clinical clients (e.g. patients)
- j. Aboriginal/Torres Strait Islander people
- k. Members of socially disadvantaged groups
- l. Cadavers/ cadaveric organs
- m. Other: _____

Expected age(s) of participants – please circle one or more

Children (under 14)

Young people (14-18)

☒ Adults (> 18)

B Research procedures used

- a. Anonymous questionnaires/ surveys
- b. Coded (potentially identifiable) questionnaires/ surveys
- ☒ c. Identifiable questionnaires/ surveys
- d. Examination of student work, journals etc
- e. Examination of medical, educational, personnel or other confidential records
- f. Observation (overt)

- g. Observation (covert)
- h. Interviews (structured or unstructured)**
- i. Telephone interviews
- j. Procedures involving physical experiments (e.g. exercise, reacting to computer images)
- k. Procedures involving administration of substances (e.g. drugs, alcohol, food)
- l. Physical examination of participants (including eg. blood glucose, blood pressure and temperature monitoring)
- m. Collection of body tissues or fluid samples
- n. Surgical procedures
- o. Other: _____

C Research areas

- a. Qualitative research
- b. Social Science research
- c. Humanities research
- d. Educational research
- e. Health research**
- f. Psychological research**
- g. Comparison or evaluation of drugs or surgical or other therapeutic devices
- h. Comparison or evaluation of clinical procedures
- i. Comparison or evaluation of counselling or training methods
- j. Investigation of the effects of an agent (drug or other substance)
- k. Investigation of bio-mechanical processes
- l. Biomedical research
- o. Epidemiology
- p. Genetic research
- o. Other: _____

8.a Does the project involve the use of drugs?

NO

Is the research clarified as a:

CTN Trial

CTX Trial

Other (Please detail)

8.b Does the project involve the use of a surgical or other therapeutic device? (please detail)

NO

8.c If you answered YES to 8a. or 8b., is there any business or similar association between the researcher and the supplier of a drug or surgical or other therapeutic device to be used in the trial? (please detail).

N/A

If you answered YES to 8a. or 8b., please include the budget for this trial including information about capitation fees, payments to researchers, institutions or organisations

involved in the research, current and consequential costs and costs which may be incurred by participants.

Please include evidence of arrangements to ensure adequate compensation to participants for any injury suffered as a result of participation in the trial. (Indemnification forms and, if the research is being undertaken in a private practice, evidence of adequate and appropriate insurance coverage)

N/A

9. Justify the design of your proposed research and describe what you want participants to do.

Please provide an explanation, in terms understandable by a non-expert reader. For student researchers, please provide (in no more than 2 pages) the background to this project (Attach extra sheets if necessary)

The current research is in two parts.

Mental disorder screening

The Illawarra Institute for Mental Health (iIMH) has been contracted by The Salvation Army to develop, trial and integrate mental disorder screening tools across their residential sites and to improve treatment offered to clients in The Salvation Army alcohol and other drug recovery services generally. The Salvation Army provides a range of long-term, residential treatment services for people with substance abuse problems. Although screening for co-occurring mental disorder is recommended as best practice, there is no definitive guidance provided by existing research as to which mental disorder screening instrument should be used. A preliminary screening instrument has been instituted as a temporary measure until the proposed research can report on which instrument is most accurate at identifying mental disorder comorbidity in a residential, alcohol or other drug recovery service population.

It has been acknowledged that clients with comorbid mental disorders and substance misuse have received poor care due to gaps in service provision (Adams, 2008; Harris & Edlund, 2005). Not treating co-occurring disorders “contributes to some of the most intractable and expensive social problems” (Davis et al., 2006, p. 263). In Australia the historical inadequacy of treatment for this population was targeted by the Australian Government’s National Comorbidity Initiative, which allocated \$17.9 million over seven years to address the treatment of this population. The emphasis of this initiative under which funding for the proposed research is auspiced is upon the importance of identifying and effectively managing clients who are experiencing both a substance use disorder(s) and a mental disorder(s) in treatment settings (Australian Institute of Health and Welfare, 2009).

Problems facing the significant number of people with comorbidity include poorer treatment response and an inability to maintain functional stability (Grella & Stein, 2006; Ziedonis & Stern, 2001), higher rates of relapse (Swofford, Kasckow, Scheller-Gilkey, & Inderbitzin, 1996), more hospital visits (Haywood et al., 1995), increased involvement in violence (Swartz et al., 1998), family difficulties and limited social relationships, increased unemployment, victimisation (Goodman, Rosenberg, Mueser, & Drake, 1997), incarceration (Abram & Teplin, 1991), homelessness (Drake, Osher, & Wallach, 1991), HIV (Adams, 2008; Brunette, Mueser, & Drake, 2004; Ziedonis & Stern, 2001) and Hepatitis C (Rosenberg et al., 2001). In 2005, in most cases in Australia where a mental or behavioural disorder was recorded as the underlying cause of death, the abuse of psychoactive substances such as alcohol and heroin was also involved (Australian Institute of Health and Welfare, 2008).

The accurate identification of mental disorder comorbidity is an important step towards improving treatment for this population (Ziedonis et al., 2005). Yet there is no consensus about which screening instrument to use to identify mental disorder comorbidity in alcohol and other drug,

residential, treatment service populations (Maisto & Kivlahan, 2007). There is no adequate base of research evidence upon which to build a consensus. Clinicians often miss the co-occurrence of mental disorders and substance use disorders because of an absence of routine screening (Donald, Dower, & Kavanagh, 2005). Few screening instruments have been tested against one another directly in the same population to obtain data on their relative accuracy. Two exceptions are studies by Sacks et al., (2007) which compared two instruments in a prison population and by Lee et al., (2007) which compared two different instruments in an Australian population but changed one of them from Likert to dichotomous scoring and reported no sensitivity, specificity or accuracy figures. No comparative studies of all the major screening instruments have been conducted in Australian populations. The research data on existing instruments has been obtained separately in different populations and only one of them has been conducted in Australia (see the abovementioned Lee et al., 2007).

One aim of the present study is to address this research gap to help determine the best instrument to screen for mental illness comorbidity in Australian, alcohol and other drug, residential treatment populations. To facilitate this aim clients will be administered a number of the major screening instruments designed to detect mental disorder. A semi-structured, clinical diagnostic interview (SCID-1) will then also be administered to provide a criterion measure against which to evaluate the sensitivity of the various screening instruments at identifying mental disorder, the specificity of the various screening instruments at correctly ruling out those who are not mentally disordered, and the overall accuracy of the instruments (obtained by combining the previous two elements). Comparing the various screening instruments directly against each other in a single population will provide evidence about which mental disorder screening instrument is the most accurate at identifying mental disorder comorbidity in Australian, alcohol and other drug, residential recovery services. This is information the entire addiction-treatment industry could benefit from.

Mental health screening

In addition to the accurate identification of pathology-focused mental illness, wellness-oriented mental health is also being recognized as an important construct in the treatment of both mental disorders and drug and alcohol disorders (Corrigan & Ralph, 2005; Davidson & White, 2007; Miller & Miller, 2009). The latest theoretical models proposed as a framework within which to treat co-occurring disorders include wellness-oriented mental health concepts in addition to pathology-focused mental illness concepts (see, for e.g., Davidson et al., 2008; Gagne, White, & William, 2007). The Surgeon General of the United States of America, defined mental health as:

the successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with adversity; from early childhood until late life, mental health is the springboard of thinking and communication skills, learning, emotional growth, resilience and self-esteem (US Department of Health and Human Services, 1999, p. 6).

Contrastingly, mental illness is

the term that refers collectively to all mental disorders. Mental disorders are health conditions that are characterised by alterations in thinking, mood or behaviour (or some combination thereof) associated with distress and/or impaired functioning (US Department of Health and Human Services, 1999, p. 6)

Recent empirical research conducted by Corey Keyes suggests mental illness (illness-oriented constructs such as distress and deficits in functioning) and mental health (wellness-oriented and successful-functioning constructs such as happiness and purpose in life) are different latent constructs. The implication is that treatment aimed at mental disorder alone is inadequate as a prescription to obtain mental health (2005). Keyes found that the absence of mental illness does not equate to the presence of mental health in epidemiological populations and that the worst psychosocial dysfunction was suffered by those both mentally ill and low on mental health (termed "flounders") (2002, 2005). People with mental illness, but medium to high mental health (described as the "purely mentally ill" and "strugglers") suffered

much less psychosocial dysfunction (Keyes, 2002, 2005). The implications of this research are that it may no longer be enough to identify which clients have co-occurring mental disorder. Clients' mental health may also need to be assessed and the information fed into the treatment planning process.

It is possible that it is co-occurring disorder clients' mental health in combination with their mental illness that is associated with their psychosocial dysfunction, not their mental illness alone. It may be possible to alleviate significant psychosocial dysfunction and reverse traditionally poor treatment outcomes by raising mental health irrespective of client mental illness status. This possibility is particularly important to alcohol and other drug, residential rehabilitation services that often lack the expertise to administer specific, best practice interventions for each type of mental disorder. Measuring mental health, in a clinical population may provide the data necessary to provide new integrated treatments consistent with recent advocacy and theoretical models (see, for e.g., Davidson et al., 2008; Davidson & White, 2007; Miller & Miller, 2009).

The first step is to assess the validity and reliability of Keyes' measure in a clinical population. Test-retest reliability analyses require a coded, potentially identifiable method so that the same clients can be administered the same measure on two separate occasions.

Research plan

a) Research design

A cross-sectional design will be used. Participants will be interviewed within one month of intake. Each participant will be interviewed over two separate sessions to facilitate test-retest data and guard against results from an instrument informing an interview or vice versa. Additionally, some archival data from the generic intake process will be accessed including information gathered using the full Addiction Severity Index 5th Edition (McLellan et al., 1995) and the Depression, Anxiety and Distress Scale – 21 (DASS, Lovibond & Lovibond, 1995). Measures used in the two sessions will be quantitative self-report questionnaires and a semi-structured interview. In one session participants will be interviewed using the Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (First, Spitzer, Gibbon, & Williams, 2002), which may be audio-recorded if participant consent is given so that an interrater reliability analysis can be conducted. For the participants, this audio recording will be an optional component and they will be able to do the study without consenting to this component. The Mental Health Continuum – Short Form will also be administered for the first time during this session. In the other session participants will be administered the following instruments as mental illness screening instruments: the MHSF-III, the Modified Mini Screen (MMS, Alexander, Haugland, Lin, Bertollo, & McCorry, 2008), and the World Health Organisation's Self-Reporting Questionnaire (SRQ, Beusenbergh & Orley, 1994), part of the Psycheck package (see Lee et al., 2007). Participants will also be administered Ryff's 54-item Scales of Psychological Well-Being, the WHO Well-being Index (WHO-5, Bech, 1998, 2001), the Short Depression Happiness Scale (SHDS, Joseph, 2004), and the Mental Health Continuum – Short Form for a second time to test the validity and reliability of the Mental Health Continuum – Short Form.

b) Participants

The sample will consist of individuals attending the Salvation Army Bridge residential rehabilitation program located in, Lake Macquarie (n = 104), Sydney (n = 110), Blue Mountains (n = 17), and Canberra (n = 40). We anticipate at least 70% of these residents to participate. All individuals will be diagnosed with an alcohol and/or substance misuse problem. Participants may also be diagnosed with a co-occurring mental illness problem (e.g. depression, anxiety, psychotic disorder).

c) Measures

The measures outlined in the section below will be administered in conjunction with the interview and it anticipated the whole procedure will take approximately 2 to 2.5 hours to complete.

Background Information and drug and alcohol use

Basic demographic information will be collected. This will include age, weeks in the program, gender and The Salvation Army centre they are attending. Information gathered separately during the intake process using the full Addiction Severity Index 5th Edition (McLellan et al., 1995) will also be accessed as relevant to the person's drug and alcohol history. This will include the length of time the person has had a substance misuse problem, the types of drugs the person has used in the previous 12-months, the substance the person considers their primary drug of choice, frequency of drug use and if they have ever received treatment before. We will ask clients to specify any previous mental illness diagnoses, how well their current service is meeting their mental health needs and if they have suffered any of the poorer treatment responses and outcomes traditionally associated with co-occurring AOD and mental illness disorders previously.

Mental Disorder Screening

Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (SCID-IP, First et al., 2002) – The Structured Clinical Interview for DSM-IV Disorders is a semi-structured interview for making the major DSM-IV Axis I diagnoses. The SCID-IP is divided into six self-contained modules that can be administered in sequence: mood episodes, psychotic symptoms, psychotic disorders, mood disorders, substance use disorders, anxiety disorders, adjustment, and other disorders. The SCID-IP is widely accepted as the standard for assessing substance use and mental disorders (Magruda, Sonne, Brady, Quello, & Martin, 2005). A screening instrument is considered to be accurate if it concurs with the SCID-IP on the presence or absence of a disorder (Sacks, Melnick, Coen, Banks, Friedmann, Grella, Knight et al., 2007).

Mental Health Screening Form – III (MHSF-III; Carroll & McGinley, 2000) – The Mental Health Screening Form – III is designed as a mental illness screening device for clients seeking admission to substance abuse treatment programs. Each MHSF-III question is answered either “yes” or “no.” All questions reflect the respondent's entire life history; therefore all questions begin with the phrase “Have you ever...”. The MHSF-III features a “Total Score” line to reflect the total number of “yes” responses. The maximum score on the MHSF-III is 18 (question 6 has two parts). This feature permits programs to do research and program evaluation on the mental illness-chemical dependence interface for their clients. The first four questions on the MHSF-III are not unique to any particular mental illness diagnosis; however, questions 5 through 17 reflect symptoms associated with the following diagnoses/diagnostic categories: Q5, Schizophrenia; Q6, Depressive Disorders; Q7, Posttraumatic Stress Disorder; Q8, Phobias; Q9, Intermittent Explosive Disorder; Q10, Delusional Disorder; Q11, Sexual and Gender Identity Disorders; Q12, Eating Disorders (Anorexia, Bulimia); Q13, Manic Episode; Q14, Panic Disorder; Q15, Obsessive-Compulsive Disorder; Q16, Pathological Gambling; and Q17, Learning Disorder and Mental Retardation.

Addiction Severity Index 5th Edition – Psychiatric Status Domain (McLellan et al., 1995) – The Addiction Severity Index is the most widely published substance abuse assessment. The entire measure is being administered as part of The Salvation Army intake protocol. For the purposes of the mental disorder screening aspect of this study we will be using the ‘Psychiatric Status’ section of the interview. Previous research indicates that the ASI provides good sensitivity and specificity to identify co-occurring mental illness problems (Cacciola, Pecora-ro, & Alterman, 2008).

Modified Mini Screen (MMS, Alexander, Haugland, Lin, Bertollo, & McCorry, 2008) – The Modified Mini Screen is designed to identify people with mental disorder problems who are in treatment for chemical dependency, including speciality sector substance abuse treatment settings, shelters, jails and community outreach programs. The Modified Mini Screen (MMS)

consists of 22 items that ask about current symptoms for major depression, dysthymia, suicidality, hypomania, panic, agoraphobia, social phobia, obsessive compulsive disorder, PTSD, psychosis and generalized anxiety.

World Health Organisation's Self-Reporting Questionnaire (SRQ20, Beusenberg & Orley, 1994), part of the Psycheck package (see Lee et al., 2007) – The Self-Reporting Questionnaire was originally designed by Harding et al. (1980) to study mental illness in primary care in developing countries. The items were extracted from pre-existing psychiatric instruments (Ghubash, Daradkeh, El-Rufaie, & Abou-Saleh, 2001). The SRQ20 became formally recommended by the World Health Organization in 1994 as a screen for common mental disorders (depression and anxiety) in primary health care.

Mental Health Screening

Mental Health Continuum – Short Form (Keyes, 2009) – The Mental Health Continuum – Short Form is a measure of mental health that consists of 14 items. It measures the degree of (1) Emotional Well Being (items 1–3) as defined in terms of positive affect/satisfaction with life; (2) Social Well Being (items 4–8) as described in Keyes's (1998) model of Social Well Being (one item on each of the dimensions of social acceptance, social actualization, social contribution, social coherence and social integration); and (3) Psychological Well Being (items 9–14) as described in Ryff's (1989) model (including one item on each of the dimensions of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self-acceptance). The MHC–SF allows a diagnosis to be made of the level of mental health an individual enjoys from languishing mental health to flourishing mental health.

Ryff Scales of Psychological Well-Being – 54 (PWB-54, Ryff, 1989) – Ryff's Scales of Psychological Well-Being include 6 subscales. The subscales are autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance.

WHO Well-being Index (WHO-5, Bech, 1998, 2001) – The World Health Organisation (WHO) Five Well-being Index was derived from a larger rating scale developed for a WHO project on quality of life in patients suffering from diabetes. During the first psychometric evaluation, 10 of the original 28 items were selected due to the homogeneity they had shown across the various European countries participating in this study (Bech, Gudex, & Staehr, 1996). Because it was thought positive psychological well-being has to include positively worded items only, these 10 items were then reduced to five items (WHO-Five) which still covered positive mood (good spirits, relaxation), vitality (being active and waking up fresh and rested), and general interests (being interested in things).

Short Depression Happiness Scale (SDHS, Joseph, Linley, Harwood, Lewis, & McCollam, 2004) – The SDHS is a 6-item short form of the 25-item statistically bipolar, self-report Depression Happiness Scale designed for the rapid assessment of depression and happiness conceived of as two poles on a single continuum. Three items are positive and three items are negative.

Depression Anxiety Stress Scale – 21 (DASS-21, Lovibond & Lovibond, 1995) – The DASS-21 is a shortened form of the 42-item Depression Anxiety Stress Scale. DASS items can be reliably grouped into three scales: Depression, Anxiety and Stress. The Depression Scale includes items that measure symptoms associated with dysphoric mood (e.g., sadness or worthlessness). The Anxiety Scale measures symptoms related to physical arousal, panic attacks and fear. The Stress Scale includes items that measure tension, irritability and a tendency to overreact to stressful events (Antony, Bieling, Cox, Enns, & Swinson, 1998). This measure is being administered as part of The Salvation Army intake protocol and the data collected will be accessed for the purposes of this study.

See Appendix C for copies of all the written measures for this study including those used in the intake process.

- 10. Please provide a brief statement of the ethical considerations relevant to the proposed research; specifically in relation to the participants' welfare, rights, beliefs, perceptions, customs and cultural heritage both individual and collective. (Attach an extra sheet if necessary)**

Informed consent – It is important that clients are aware of their freedom of choice to participate or refuse participation in this study. For this to be made certain clients will be approached about this study through the Salvation Army staff so clients do not feel pressured by the researchers to participate. Salvation Army staff will be instructed to reinforce to the clients that participation is voluntary and there will be no negative repercussions for refusing to participate. If potential participants express an interest in participating then a time to meet with the researchers will be arranged. At the time of the appointment, prior to commencing, the information form will again be reviewed and signed consent obtained. This provides a second occasion for the potential participant to be fully informed about what is required for participation and to refuse to participate if they choose. The Consent Form is Appendix B to this document.

Confidentiality – The surveys will be collected directly by researchers from the University of Wollongong and no individual data will be given to the case managers or the service. The researchers will be on site to collect the data. All information will be stored securely at the University of Wollongong. All individuals will be provided with a unique identifier so that once data is entered into the statistical package there will be no identifying information. Questionnaires with identifying information will have all names removed and replaced with the unique identifier. After data has been entered into the statistical packages all questionnaires will be scanned for storage without names and original paper versions will be destroyed. If participants agree to have their interviews audio taped (optional), then after interrater reliability analyses have been conducted the audio recordings will be destroyed.

- 11. Referring to the categories of participants to be involved in this project identified in question 7, above, What is the rationale for selecting participants from this/these group/s?**

We are interested in identifying co-occurring mental illness problems and levels of mental health within residential drug and alcohol rehabilitation programs. As outlined in the introduction this is to better identify and then treat comorbid problems. The study will use clients in this population who are currently attending these programs.

- 12. How will potential participants be approached initially and informed about the project? Please explain in detail and include copies of any letters, advertisements or other recruitment information. (e.g. direct approach to people on the street, mail-out to potential participants through an organisation, posters or newspaper advertisements, etc)**

The Salvation Army staff (predominantly program managers) will be informed of the proposed study by one of the researchers.

Clients will initially be informed of the study by The Salvation Army staff. A participant information sheet (Appendix A) will be provided with contact details so if a client has further questions they can contact the researcher. A sign up sheet will also be provided so clients who chose to can volunteer to participate in the study.

We believe the safest approach to clients will be through Salvation Army staff. The staff will be instructed to reinforce to the clients that participation is voluntary and there will be no negative repercussions for refusing to participate. Also clients will be given the option of refusing participation through the researchers, in the instance they don't want to refuse through their case-worker.

Once we have preliminary agreement, the researcher will arrange to meet with the participant, at that time the information sheet will again be reviewed, an opportunity to ask further questions will be provided and the consent form will be signed if the participant wants to proceed.

- 13. How many participants in total do you anticipate will be involved in the project? If the research has several stages involving different participants, please provide the total number of participants expected as well as the number of participants involved in each stage.**

It is our intention that a minimum of 100 clients participate in this study. A maximum of 150 clients would be interviewed.

14. Participant Consent

Attach copies of any letters of invitation, information packages, consent forms, proxy/substitute consent forms, debriefing information, identification cards, contact detail cards, etc.

See Appendix B for a copy of the Consent Form.

- 14 a. Is it anticipated that all participants will have the capacity to consent to their participation in the research?**

YES

If NO, please explain why (e.g. children, incompetent participants, etc.) and explain how proxy or substitute consent will be obtained from the person with legal authority to consent on behalf of the participant (see Guidelines).

- 14 b. For participants who have the capacity to consent, how does the process ensure that informed consent is freely obtained from the participant?**

To enter the Bridge program clients will have undergone a supervised detoxification programme prior and will have already been assessed as having appropriate psychological stability. As previously noted, the consent process allows clients to refuse consent through discussing participation with Salvation Army staff and the researchers. The Salvation Army staff will emphasize clients' right to refuse to participate in the program and will assure clients that no negative ramifications will follow them doing so. Further, when the researchers first meet with the participants, information about the study will again be reviewed and signed consent obtained. This provides a second opportunity for questions and the option to decline participation.

- 14 c. Will written consent from participants be obtained?**

YES

If NO, please explain why it would be inappropriate or unethical to seek written evidence of consent to this project.

- 15. Are any participants in a dependent relationship with the researcher, the institution or the funding body (for example the researcher's clinical clients or students; employees of the institution; recipients of services provided by the funding body)? If so, what steps will be taken to ensure that participants are free to participate or refuse to participate in the research?**

The clients will be in a clinical relationship with the Salvation Army staff who will inform them of the study. As noted it will be clearly emphasised that participation is voluntary. In addition, the client will be provided with an option of contacting (or asking to be contacted by) the researchers so they have the opportunity to refuse to participate without having to do so directly with the caseworker.

- 16. How does the project address the participants' freedom to discontinue participation? Will there be any adverse effects on participants if they withdraw their consent and will they be able to withdraw data concerning themselves if they withdraw their consent?**

Participants will be able to withdraw their data at any point because they will be identifiable. Clients will be informed of this in their participant information sheet before participating.

- 18. Does the project involve withholding relevant information from participants or deceiving them about some aspect of the research?**

NO.

If YES, what is the justification for this withholding or deception and what steps will be taken to protect the participants' interest in having full information about their participation?

- 18. Will participants be paid or offered any form of reward or benefit (monetary or otherwise) for participation in the research? If so, please detail and provide a justification for the payment, reward or benefit.**

NO.

- 19. Confidentiality:
What measures will be taken to protect the privacy of individual subjects in terms of the test results and other confidential data obtained (both in recording the data and in its publication)?**

After data is entered names from questionnaires will be removed and unique codes used. Initially, names need to be used since contact will be face-to-face for the interview and there will be a test-retest component to the study requiring that time 1 and time 2 data be linked. Once all data is entered into statistical packages, only unique codes will be on the data. Questionnaires will be scanned with the use of unique identifiers and names removed. Original paper versions of questionnaires used for research purposes will be destroyed. Only grouped data will be reported in any publications or presentations and no individual will be identifiable. Once audio recorded interviews have been assessed by an independent rater to determine interrater reliability they will be destroyed.

- 20. Will information collected from data or interview be published?**

YES.

If YES, please indicate what form this will take (Please note that any further use of information which may identify a participant is conditional upon the participant's permission for such use):

No individual identifying data will appear in any reports from the study. Data will be published in group form only. The data will be used for the purposes of research student theses and potentially publication in scholarly journals and conference presentations. A report may also be written for the Salvation Army.

- 21. Will any part of the research activities be placed on an audiotape, film, photograph or video-tape?**

YES.

To what purpose will the audiotape, film, photograph or video-tape be used?

Some Structured Clinical Interviews for Diagnoses will be audio recorded so that the reliability of the interviewer can be rated against additional clinicians and reported on as part of the reliability of the research. This will be an "optional" component. Participants will be able to do the study without doing this audio-recorded component.

For what audience(s) will the audiotape, film, photograph or video-tape be exhibited?

Only trained, experienced research clinicians will review the audio recordings for the purposes of establishing interrater reliability.

- 22. How will the data (including questionnaires, surveys, computer data, tapes, transcripts and specimens) be held securely, during and on completion of the project?**

Confidential data will be stored securely at the Illawarra Institute for Mental Health, it will be stored in locked filing cabinets and at the completion of the project will be held in a locked storage room.

Please confirm that original data will be held securely for a minimum of 5 years (15 years for clinical research).

Clinical research data will be securely stored for 15 years.

If NO, please give reasons why it would be unethical to store the data for this period.

- 23. Does the project involve the use of invasive procedures (e.g. blood sampling) or the risk of physical harm or emotional distress?**

YES

If YES, give details:

Clients may experience mild distress from answering questions about cravings for drugs or alcohol, or by questions about mental disorders.

Explain how the risks of harm or distress will be minimised. In the case of risks of emotional distress, what provisions have been made for an exit interview or the necessity of counselling?

As part of their assessment and treatment process, all participants would have had similar questions asked of them previously. In this sense they will not be surprised by any of the questions in the research protocol. In the unlikely event that emotional distress occurs in response to some of the study questions there will be provision for participants to meet with one of the counselling staff who are available at the treatment centre.

- 24. Does this project involve obtaining information (e.g. data) of a private nature from any Commonwealth/State/Local Government Department or any other Agency, including health records from Area Health Services.**

NO

If YES, which Department (s)/Agency?

Please include copies of any correspondence regarding permission to access this information from a responsible officer of the Agency and complete a Privacy Guideline Form (available from Ethics Officer).

25. Does the research intend to determine whether illegal activity has occurred or anticipate that participants may reveal information about criminal activity ?

YES

If YES, how do you propose to respond to the legal issues raised?

It is not an aim of this research to examine serious criminal activity, but it is possible that clients may identify serious crimes that they have committed during the course of the interview. To minimise the risk to the individual client the following statement will be included on the consent form and participants will be reminded about this issue at the time of the interviews.

"It is not a component of this research to examine your involvement in any serious criminal activities. If you choose to discuss any serious criminal activity you should avoid identifying any specific individuals who may have committed crimes in any way. Serious criminal activity covers offences such as drug trafficking, serious assaults, sexual assaults, child abuse or neglect, murder and manslaughter. It does not cover minor possession of drugs. **As this research is concerned with substance use the researchers will not report any illegal drug use.**"

26. Period of Research Clearance Requested (Please specify as near as possible 'start' and 'finish' dates for the conduct of research):

FROM: 1/11/09

TO: 1/11/10

27. Any research project that involves the collection of data should be designed so that it is capable of providing information that can be analysed to achieve the aims of the project. Usually, although not always, this will involve various important statistical issues. It is important that the design and analysis be properly planned in the early stages of the project. You should seek statistical advice. The University of Wollongong has a Statistical Consulting Service that provides such advice to research students and staff undertaking research.

Are statistical issues relevant to this project?

YES

If so, have you discussed this project with the Statistical Consulting Service?

The statistical consultants in the School of Psychology have been and will again be consulted regarding the design and analysis of this study.

28. Does this project involve the collection or use of personal health information or information relating to the provision of a health service to an individual? This includes general information such as a gymnasium would collect as well as information collected for a medical purpose.

If so, you need to complete the Initial Application Form Part 2 – Privacy Addition for Health Information. For additional information regarding this please read the document 'Health Records and Privacy Act' and the NSW Privacy Commissioners' Statutory guidelines on research. Both documents are available from the HREC webpage.

YES

29. Comments. If you would like to make any comment about the application or the application process please do so.

DECLARATION BY CHIEF INVESTIGATOR

I, the undersigned, have read the current National Statement on Ethical Conduct in Research Involving Humans:

<http://www.health.gov.au/nhmrc/publications/synopses/e35syn.htm>

and accept responsibility for the conduct of the research activities detailed in this application in accordance with the principles contained in the National Statement and any other conditions laid down by the University of Wollongong's Human Research Ethics Committee.

Chief Investigator's signature/s:

Date:

If the Chief Investigator is a student include:

Supervisor's signature:

Date:

Signature/s of other researcher/s: (The first named researcher will assume responsibility for the project in the absence of the Chief Investigator)

Date:

DECLARATION BY HEAD OF UNIT

As Head of Unit I have responsibility for ensuring that Occupational Health and Safety (OHS) issues surrounding research in the Unit are addressed.

(please tick all relevant boxes)

- ___ I am satisfied that a general risk assessment for the research project addressed in this application has been completed adequately
- ___ I will ensure that a risk assessment specific to this application will be completed prior to commencing the activities described in this application
- ___ I will ensure that there exist appropriate mechanisms to address potential OHS issues that may arise and I have responsibility for implementing those mechanisms
- ___ I will ensure that mechanisms exist for ongoing assessment of the OHS issues related to this research
- ___ This research involves use of radiation, chemicals or biohazards. A Risk Assessment has been conducted and is attached to this application

Head of Unit's Signature.....Date.....

<p>NOTE: RESEARCH MUST NOT COMMENCE UNTIL APPLICATION HAS BEEN FULLY APPROVED.</p>

CHECKLIST

Applications should be sent to the Ethics Officer, Human Research Ethics Committee, Office of Research, University of Wollongong, Northfields Ave, Wollongong NSW 2522

- _____ Original Ethics Application plus appropriate number of copies (See Guidelines)
- _____ Consent Form(s)
- _____ Participant Information Sheet/Package
- _____ Copies of Questionnaire(s)/Survey(s) or Interview Questions
- _____ Copies of all documents and other material used to inform potential participants about the research including advertisements and letters of invitation.
- _____ Evidence of permission to conduct research in locations not associated with the University of Wollongong
- _____ Evidence of approval/rejection by other HREC(s), including comments and requested alternations to the protocol
- _____ Any form requiring signature by the HREC (one copy)
- _____ For Clinical Trials : Application Form (original +14 copies), Patient Information Package (14 copies), Consent Forms (14 copies), Indemnity Form (14 copies), Protocols (14 copies), Advertisement (14 copies), Summary Sheet (14 copies), Budget (14 copies), Insurance information (if in Private Practice) (14 copies), Investigator's Brochure (5 copies), CTN or CTX Form (1 original copy)

Form Revised Jan 2003

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Appendix F

NSW HEALTH

HEALTH ETHICS BRANCH

PRIVACY ADDITION TO HREC APPLICATION FORM

The Health Records and Information Privacy Act 2002 commences on 1 September 2004. The Act creates a scheme to regulate the collection, use and disclosure of personal health information. It requires personal health information to be handled in accordance with 15 Health Privacy Principles (HPPs) set out in the Act. It is necessary for you to complete this part of the application form in order to ensure:

- You and the [*name of institution*] comply with the Act;
- This HREC can properly assess your research under the Act;
- This HREC can meet its statutory obligations to report to the Privacy Commissioner on its activities under the Act.

Please read the Statutory Guidelines made under the Act entitled *Health Records and Information Privacy Act 2002 (NSW): Statutory Guidelines on Research* which can be found on the website of Privacy NSW. This website can be accessed through www.lawlink.nsw.gov.au. Reading these documents will assist you in completing this section of the application form.

Q1. Does this project involve the collection, use, or disclosure of personal health information which is identified, or from which the identity of the person can be reasonably ascertained?

✓ Yes – you must complete this section of the application form. Go to question 2.

☐ No – you do not need to complete this section of the application form. Go to [*insert next section of your standard HREC application form*]

Q2. Could the purpose of this project be served by collecting, using or disclosing de-identified information?

☐ Yes – you should collect, use or disclose de-identified information only. If you do so, you do not need to complete this section of the application form.

✓ No – Go to question 3.

Q3. Why can't the purpose of the project be achieved using de-identified information?

✓ The proposed project involves linkage of data.

- ☐ Scientific defects in the project would result if de-identified information was used. Please provide details.

- ☐ Other. Please provide details.

Go to question 4.

Q4. Are you proposing to collect, use or disclose the health information with the consent of the individual(s) concerned?

- √ Yes – you can collect, use or disclose the health information relying on the ‘consent exemption’ in HPP 10 or HPP 11. Go to question 12.

- ☐ No – Go to question 5.

Best practice tip: Wherever possible, you should seek the consent of the person. Use or disclosure authorised by the person is almost always to be preferred, provided the consent is freely given and informed.

Q5. From which organisations/bodies are you collecting personal health information? Please specify each individual hospital, other area health services and any other organisations. If known, please name the individual custodian of this information and the personnel in the organisation who generally have access to the information.

Go to question 6.

Q6. Is the information being collected reasonably necessary for the project, being collected for a lawful purpose (HPP1), relevant to the project, and not excessive (HPP 2)?

☐ Yes – go to question 7.

☐ No – you must comply with HPP 1 and HPP 2. Refer to the Act.

Q7. Was the health information originally collected for the primary purpose of this project?

☐ Yes – you can use or disclose the health information for the project relying on HPP 10 or HPP 11. You do not need to complete any more questions from this section of the application form. Go to [*insert the next section of your standard HREC application form*]

☐ No – Go to question 8.

Q8. Is this project directly related to the primary purpose for which the health information was collected and would the person reasonably expect you to use or disclose their health information for the purposes of this project?

☐s – please provide details of how it is directly related

You can use or disclose the health information for the project relying on the ‘direct relation exemption’ in HPP 10 or HPP 11. You do not need to answer any more questions from this section of the application form. Go to [*insert the next section of your standard HREC application form*]

☐ No – Go to question 9.

Best practice tip: It is unlikely that many research activities will come within this exemption, however some compilation or analysis of statistics activities might come within it. Using health information to compile statistics about the number of patients treated for a particular disease within a hospital, for example, would arguably come within this exemption.

Q9. Is the use or disclosure for the project authorised, required, permitted or reasonably contemplated under another law?

☐ Yes – Please provide details.

You can use or disclose the health information relying on the exemption in HPP 10(2) or HPP 11(2). You do not need to answer any more questions from this section. Go to *[insert next section of your standard HREC application form]*

☐ No – Go to question 10.

Q10. Why is it impracticable to obtain the consent of the individual to collect, use or disclose their health information?

- ☐ The size of the population involved in the research.
- ☐ The proportion of individuals who are likely to have moved or died since the health information was originally collected.
- ☐ The risk of introducing potential bias into the research, thereby affecting the generalisability and validity of the results.
- ☐ The risk of creating additional threats to privacy by having to link information in order to locate and contact individuals to seek their consent.
- ☐ The risk of inflicting psychological, social or other harm by contacting individuals with particular conditions in certain circumstances.
- ☐ The difficulty of contacting individuals directly when there is no existing or continual relationship between the organisation and the individuals.
- ☐ The difficulty of contacting individuals indirectly through public means, such as advertisement and notices.
- ☐ Other – please give details.

Go to question 11.

Q11. Please provide reasons why the collection, use or disclosure of this information is in the public interest, and why the public interest in the project substantially outweighs the public interest in the protection of privacy.

NB: In determining whether the public interest in the project substantially outweighs the public interest in the protection of privacy, the HREC will consider the matters listed below. Please make reference to relevant factors in your reasons.

- (a) The degree to which the project is in the public interest
- (b) The degree to which the project is likely to contribute to:
 - (i) the identification, prevention or treatment of illness, injury or disease; or
 - (ii) scientific understanding relating to health; or
 - (iii) the protection of the health of individuals and/or communities; or
 - (iv) the improved delivery of health, disability or aged care services; or
 - (v) enhanced scientific knowledge or understanding; or
 - (vi) enhanced knowledge within the fields of social science and the humanities relating to health;
- (c) Any likely benefits to individuals, to the category of persons to which the individual(s) belong, or the wider community that will arise from the project being undertaken in the manner proposed;
- (d) In considering benefits to the category of persons to which the individual(s) belong, specific consideration should be given to any likely benefits to individuals that belong to certain categories where the information may be of a particularly personal or sensitive nature; for example:
 - (i) children and young people; or
 - (ii) persons with intellectual or psychiatric disability; or
 - (iii) persons highly dependant on medical care; or
 - (iv) persons in dependant or unequal relationships; or
 - (v) persons who are members of collectivities; or
 - (vi) Aboriginal and Torres Strait Islander peoples; or
 - (vii) Persons whose information relates to their mental or sexual health
 - (viii) Persons who are incarcerated
- (e) whether the project design can be satisfied without needing to apply HPP 10(1)(f) or 11(1)(f) and the defects in the project that might arise if the project was not conducted in the manner proposed;
- (f) the cost of not undertaking the project (to government, the public, the health care system, etc.);
- (g) the public importance of the project;
- (h) whether the risk of harm to an individual whose health information is to be collected, used or disclosed in the project is minimal
- (i) the standards of conduct to be observed in the project, including:
 - (i) The project design and the scientific or other credentials of those involved in conducting that project;
 - (ii) If the project involves contact with participants, the procedures or controls that will apply to ensure participants are treated with integrity and sensitivity, including whether questions to be asked or procedures to be employed are intrusive;
 - (iii) Whether access to health information is restricted to appropriate personnel involved in conducting the proposed study [you are asked to respond to this in question 13];
 - (iv) The procedures that are to be followed to ensure that the information will not be published in a form that identifies particular individuals or from which an individuals or from which an individual's identity can be reasonably ascertained [you are asked to respond to this in question 12]; and
 - (v) The procedures that are to be followed at the completion of the project to ensure that all data containing health information are at least as secure as they were in the sources from which the data was obtained, including the date when the data will be destroyed or returned. These procedures must be in accordance with HPP 5 [you are asked to respond to this in question 13].

Go to question 12.

Q12. Please confirm that information which identifies individuals or from which an individual's identity can reasonably be ascertained, will not be published in any generally available publication?

√ Confirmed – publication of such information is not permissible under the Act

Q13. Describe in detail the security standards that will be applied to the storage of, and access to, the health information during the project and the proposed method of disposal of the health information at the completion of the project.

The surveys will be collected directly by researchers from the University of Wollongong and no individual data will be given to the case managers or the service. The researchers will be on site to collect the data. All information will be stored securely at the University of Wollongong. Questionnaires with identifying information will have all names removed and replaced with a unique identifier. All individuals will be provided with this unique identifier so that once data is entered into the statistical package there will be no identifying information. After data has been entered into the statistical packages all questionnaires will be scanned for storage without names and original paper versions will be destroyed. If participants agree to have their interviews audio taped (optional), then after interrater reliability analyses have been conducted the audio recordings will be destroyed.

Office use only:

- If “no” was ticked in response to question 4, mark here ☐ - This project should be counted for *reporting question 5*.
- If the applicant was required to complete question 10 and following, mark here ☐ - This project should be counted in determining the number of proposals to be listed next to “yes” in *reporting question 6*.
- Mark which boxes the applicant ticked in question 3.

- ☐ The proposed project involves linkage of data.
- ☐ Scientific defects in the project would result if de-identified information was used
- ☐ Other. Give brief description.....

This information should be used to answer *reporting question 8*.

- Mark which boxes the applicant ticked in question 10
- ☐ The size of the population involved in the research.
- ☐ The proportion of individuals who are likely to have moved or died since the health information was originally collected.
- ☐ The risk of introducing potential bias into the research, thereby affecting the generalisability and validity of the results.
- ☐ The risk of creating additional threats to privacy by having to link information in order to locate and contact individuals to seek their consent.
- ☐ The risk of inflicting psychological, social or other harm by contacting individuals with particular conditions in certain circumstances.
- ☐ The difficulty of contacting individuals directly when there is no existing or continual relationship between the organisation and the individuals.
- ☐ The difficulty of contacting individuals indirectly through public means, such as advertisement and notices.
- ☐ Other –give brief details.....

This information should be used to answer *reporting question 9*.

- Note the outcome of the HREC decision
- ☐ Approved including privacy aspects.
- ☐ Rejected for reasons including privacy aspects.
- ☐ Rejected for other reason.

Count this project for the purposes of *reporting question 10*, only if the first box is marked.

Appendix G

HE09/224

21st August 2009

Chairperson
Human Research Ethics Committee
University of Wollongong

Ethics Number: HE09/224

Project Title: *The Salvation Army Recovery Service Centres: Validation of Mental Disorder and Mental Health Screening Measures*

Thank you for providing a prompt response to our application. We have carefully attended to the Committees' concern as outlined below.

5. **Please state clearly in the 'risks' section of the Participant Information Sheet that if participants do reveal information about criminal activity which has a mandatory reporting requirement the researchers will have to report it.**

The following passage has been inserted into the Participant Information Sheet 'risks' section, (attached in full as appendix A), to address the Committee's concern:

It is not a component of this research to examine your involvement in any serious criminal activities. If you choose to discuss any serious criminal activity you should avoid identifying any specific individuals who may have committed crimes in any way. Serious criminal activity covers offences such as drug trafficking, serious assaults, sexual assaults, child abuse or neglect, murder and manslaughter. It does not cover minor possession of drugs. **As this research is concerned with substance use the researchers will not report any illegal drug use.** If you reveal information about criminal activity that has a mandatory reporting requirement, however, (for e.g., current criminal activity that is putting a child or children at risk of harm), the researchers will have to report it.

We would appreciate it if you could let us know if this revision has adequately addressed the Committee's concerns as soon as possible in order to finalise dates for the data collection.

Yours sincerely,

Professor Frank Deane
University of Wollongong

Appendix H

University of Wollongong

Client Participant Information Sheet

The Salvation Army Recovery Service Centres: Validation of Mental Disorder & Mental Health Screening Measures

Who is doing the study?

Mr Kane Mortlock, Prof Frank Deane and Dr Trevor Crowe will be conducting this research project. Aspects of this research will be used for Mr Mortlock's doctoral thesis.

What is the study about?

The study aims to examine the reliability of some tests that could be used in the service in the future. Some of these tests are designed to identify people who have mental illness (e.g., depression). Studies have found that people with both drug and alcohol and mental illness can have more difficulty recovering than people with drug and alcohol problems alone. For this reason it is important to identify those people who also have mental illness so more can be done to help this group. This study aims to find out which questionnaires work best at identifying people who have mental illness. So several short questionnaires designed to identify whether you have mental illness problems will be administered along with an interview against which these questionnaires will be compared. As an additional, optional component, this interview may also be audio recorded to allow a second trained rater to double-check the reliability of the interview conclusions. You may choose to still participate in the interview without having it audio recorded. The study also has some other short questionnaires that examine positive, wellness-oriented mental health constructs such as satisfaction with life, community belonging and whether you feel in control of your life. This part of the study is being done because treatments that concentrate upon positive goals and strengths have the potential to be useful in therapy.

What do I need to do?

The first thing you need to do is carefully read the rest of this 'participant information sheet' making sure you understand what is required. If you do not wish to participate in this study you can simply not put your name down on the signup sheet. **There will be no negative consequences for not participating in this study. It is entirely voluntary.** If you sign up to participate, you will be contacted by Mr Kane Mortlock to arrange times to do two sessions a couple of days apart within one month of your start date in the program. These two sessions will take approximately 2.5 hours in total. There will be a written consent form to sign before the first session. You will be asked to complete some questionnaires and an interview with Mr Kane Mortlock. If you would like further information you can contact Mr Kane Mortlock or Prof Frank Deane at the University of Wollongong by calling 02 4221 4207.

Is there any risk or burden if I decide to participate?

The main burden will be related to the time it takes to complete the two interviews. There is a very small risk that you might think some of the questions in the questionnaires or interview too personal or distressing. Many of the questions ask you about how you have been feeling emotionally. An example item is: "Have you ever been advised to take medication for anxiety, depression, hearing voices, or for any other emotional problem?" However, in addition to your right not to participate at all, even if you do decide to participate, you also have the right to refuse to answer any specific questions. If any of the questions cause you any distress the Salvation Army staff will also be available to assist you.

It is not a component of this research to examine your involvement in any serious criminal activities. If you choose to discuss any serious criminal activity you should avoid identifying any specific individuals who may have committed crimes in any way. Serious criminal activity covers offences such as drug trafficking, serious assaults, sexual assaults, child abuse or neglect, murder and manslaughter. It does not cover minor possession of drugs. **As this research is concerned with substance use the researchers will not report any illegal drug use.** If you reveal information about criminal activity that has a mandatory reporting requirement, however, (for e.g., current criminal activity that is putting a child or children at risk of harm), the researchers will have to report it.

Are there any benefits expected?

People often find that when they complete the questionnaires it helps them reflect on their progress and clarify what it is about treatment that is helping them. Also the information from this study will hopefully contribute to improving the treatment program for you and everyone who goes through it. You will be making a contribution to our understanding of how to best identify when people have mental health problems in addition to their substance misuse problems. This will assist in development of better treatment programs.

How will my information be collected and used?

Your information will be collected via some written questionnaires and an interview. We would also like permission to obtain information obtained from your initial intake assessment when you first came into The Salvation Army recovery programs. Your information will be kept confidential. It will be de-identified by attaching a special code to it so your name is not on it and you cannot be identified from it. All questionnaire material will be stored securely at the University of Wollongong in locked filing cabinets. The information from all the participants as a whole may be used for publication in scholarly research journals, reports to the Salvation Army, student theses, and conference presentations. **You will not be personally identifiable in any of these publications.** Only group information will be published. If you also agree to have your interview tape recorded, after these tapes have been assessed by a second rater, they will be destroyed.

What if I have more questions?

You may have additional questions that you wish to ask about the research before you decide whether to participate. You can contact Mr Kane Mortlock or Prof Frank Deane at the University of Wollongong by calling 02 4221 4207. If you have any concerns or complaints regarding the way in which the research is or has been conducted, you can contact the Secretary of the University of Wollongong Human Research Ethics Committee on Phone: (02) 4221 4457, Fax: (02) 4221 4338 email: research@uow.edu.au

Appendix I

University of Wollongong

Client Participant Consent Form

The Salvation Army Recovery Service Centres: Validation of Mental Disorder and Mental Health Screening Measures

The researchers are: Mr Kane Mortlock, Prof Frank Deane (Supervisor) & Dr Trevor Crowe (Supervisor).

I have been given information about the study 'The Salvation Army Recovery Service Centres: Validation of Mental Disorder and Mental Health Screening Measures'. I have discussed the project with The Salvation Army staff and have been offered the opportunity to discuss the research project with the chief researcher (Mr Mortlock) who is conducting this research.

I understand that, if I consent to participate in this project I will be asked to:

- Authorise access to my intake questionnaire data;
- Attend two research sessions;
 - Complete questionnaires;
 - Complete an interview; and
 - Authorise audio recording of that interview (Optional)

I have been advised of the potential risks and burdens associated with this research, which include completion of questionnaires that may contain personal questions and to not divulge the details of any serious criminal activity. I have been given an opportunity to contact the researchers and ask any questions I may have about the research and my participation.

I understand that my participation in this research is voluntary. I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my relationship with The Salvation Army or the University of Wollongong. I understand that I can consent to the research without consenting to the interview being audio recorded. I understand that consenting to the interview being audio recorded is an optional component and that I can consent to the research without consenting to this optional component if I choose.

I understand that the data collected from my participation will be de-identified, (made so you cannot be identified by it), collated with other participants' data and that I will not be identifiable in any reports of this study. I understand that the results may be reported in journal publications, organisational reports, research theses, and conference presentations, and I consent for it to be used in that manner.

If I have any enquiries about the research, I can contact Mr Mortlock or Prof Deane at the University of Wollongong by calling 02 4221 4207. If I have any concerns or complaints regarding the way the research is or has been conducted, I can contact the Ethics Officer, Human Research Ethics Committee, Office of Research, University of Wollongong on Phone: (02) 4221 4457, Fax: (02) 4221 4338 email: research_services@uow.edu.au.

By signing below I am indicating my consent to participate in the research titled '**The Salvation Army Recovery Service Centres: Validation of Mental Disorder and Mental Health Screening Measures**' conducted by Mr Mortlock, Prof Deane and Dr Crowe as it has been described to me in the Participant Information Sheet and discussed with The Salvation Army staff.

I understand that if I tick the checkbox next to, "I also consent to the interview being audio recorded", I am indicating consent to that optional component of the research as well.

☐

I consent to the interview being audio recorded.

Sign: _____

Name (please print): _____ Date: _____

Appendix J

UNIVERSITY OF WOLLONGONG RESEARCH STUDY: MENTAL HEALTH SCREENING QUESTIONNAIRE

Requirements:

- Participants 1-2 weeks into program
- Agree to participate in study
- Agree to 2 interviews 2 days apart
- First interview: ~1.5 hours (45mins to 2 hours max)
- Second interview: ~45 minutes (30 mins to 1 hour max)
- People tested on Monday are re-tested on Wednesday
- People tested on Tuesday are re-tested on Thursday

Time	Monday 8 March 2010	Time	Tuesday 9 March 2010
9.00 – 10.00	1.	9.00 – 11.00	4.
10.30 – 11.30pm	2.	12.30 – 2.30	5.
1.00 – 2.00pm	3.	2.30 – 4.30	6.

Time	Wednesday 10 March 2010	Time	Thursday 11 March 2010
9.00 – 10.00	1.	9.00 – 11.00	4.
10.30 – 11.30pm	2.	12.30 – 2.30	5.
1.00 – 2.00pm	3.	2.30 – 4.30	6.

Appendix K

MENTAL HEALTH CONTINUUM – SHORT FORM (MHC – SF)

The following questions are about how you have been feeling in the past month. Please place a check mark in the box that best represents how often you have felt each feeling.

In the past month, how often did you feel ...	NEVER (0)	ONCE OR TWICE (1)	ABOUT ONCE A WEEK (2)	2 OR 3 TIMES A WEEK (3)	ALMOST EVERY DAY (4)	EVERY DAY (5)
1. happy						
2. interested in life						
3. satisfied						
4. that you had something important to contribute to society						
5. that you belonged to a community (like a social group, your neighbourhood, your city)						
6. that our society is becoming a better place for people						
7. that people are basically good						
8. that the way our society works makes sense to you						
9. that you liked most parts of your personality						
10. good at managing the responsibilities of your daily life						
11. that you had warm and trusting relationships with others						
12. that you have experiences that challenge you to grow and become a better person						
13. confident to think or express your own ideas and opinions						
14. that your life has a sense of direction or meaning to it						

SELF REPORTING QUESTIONNAIRE-20

First: Please circle the “YES” box if you have had this symptom in the last 30 days.

1. Do you often have headaches?	YES	NO	
2. Is your appetite poor?	YES	NO	
3. Do you sleep badly?	YES	NO	
4. Are you easily frightened?	YES	NO	
5. Do your hands shake?	YES	NO	
6. Do you feel nervous, tense or worried?	YES	NO	
7. Is your digestion poor?	YES	NO	
8. Do you have trouble thinking clearly?	YES	NO	
9. Do you feel unhappy?	YES	NO	
10. Do you cry more than usual?	YES	NO	
11. Do you find it difficult to enjoy your daily activities?	YES	NO	
12. Do you find it difficult to make decisions?	YES	NO	
13. Is your daily work suffering?	YES	NO	
14. Are you unable to play a useful part in life?	YES	NO	
15. Have you lost interest in things?	YES	NO	
16. Do you feel like you are a worthless person?	YES	NO	
17. Has the thought of ending your life been on your mind?	YES	NO	
18. Do you feel tired all the time?	YES	NO	
19. Do you have uncomfortable feelings in your stomach?	YES	NO	
20. Are you easily tired?	YES	NO	

Second: Please look back over the questions. For every one you have answered “YES”, please put a tick in the final column if you had that problem at a time when you were NOT using alcohol or other drugs.

MODIFIED MINI SCREEN

1. Have you been consistently depressed or down, most of the day, nearly every day, for the past 2 weeks?	YES	NO
2. In the past 2 weeks, have you been less interested in most things or less able to enjoy the things you used to enjoy most of the time?	YES	NO
3. Have you felt sad, low or depressed most of the time for the last two years?	YES	NO
4. In the past month, did you think that you would be better off dead or wish you were dead?	YES	NO
5. Have you ever had a period of time when you were feeling up, hyper or so full of energy or full of yourself that you got into trouble or that other people thought you were not your usual self? (Do not consider times when you were intoxicated on drugs or alcohol).	YES	NO
6. Have you ever been so irritable, grouchy or annoyed for several days, that you had arguments, verbal or physical fights, or shouted at people outside your family? Have you or others noticed that you have been more irritable or overreacted, compared to other people, even when you thought you were right to act this way?	YES	NO
7a. Have you had one or more occasions when you felt intensely anxious, frightened, uncomfortable or uneasy even when most people would not feel that way? 7b. If yes, did these intense feelings get to be their worst within 10 min? If the answer to both a and b is YES, score the question YES If the answer to either a or b is NO, score the question NO	YES	NO
8. Do you feel anxious, frightened, uncomfortable or uneasy in situations where help might not be available or escape might be difficult?	YES	NO
9. Have you worried excessively or been anxious about several things over the past 6 months? If NO to Question 9, answer NO to Question 10 and proceed to Question 11	YES	NO
10. Are these worries present most days?	YES	NO
11. In the past month, were you afraid or embarrassed when others were watching you, or when you were the focus of attention? Were you afraid of being humiliated?	YES	NO
12. In the past month, have you been bothered by thoughts, impulses, or images that you couldn't get rid of that were unwanted, distasteful, inappropriate, intrusive or distressing?	YES	NO
13. In the past month, did you do something repeatedly without being able to resist doing it?	YES	NO
14. Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else?	YES	NO

15. Have you re-experienced the awful event in a distressing way in the past month?	YES	NO
16. Have you ever believed that people were spying on you, or that someone was plotting against you, or trying to hurt you?	YES	NO
17. Have you ever believed that someone was reading your mind or could hear your thoughts, or that you could actually read someone's mind or hear what another person was thinking?	YES	NO
18. Have you ever believed that someone or some force outside of yourself put thoughts in your mind that were not your own, or made you act in a way that was not your usual self? Or, have you ever felt that you were possessed?	YES	NO
19. Have you ever believed that you were being sent special messages through the TV, radio, or newspaper? Did you believe that someone you did not personally know was particularly interested in you?	YES	NO
20. Have your relatives or friends ever considered any of your beliefs strange or unusual?	YES	NO
21. Have you ever heard things other people couldn't hear, such as voices?	YES	NO
22. Have you ever had visions when you were awake or have you ever seen things other people couldn't see?	YES	NO

RYFF SCALES OF PSYCHOLOGICAL WELL-BEING 54

The following set of questions deals with how you feel about yourself and your life. Please remember that there are no right or wrong answers.

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
1. Sometimes I change the way I act or think to be more like those around me.	1	2	3	4	5	6
2. In general, I feel I am in charge of the situation in which I live.	1	2	3	4	5	6
3. I am not interested in activities that will expand my horizons.	1	2	3	4	5	6
4. When I look at the story of my life, I am pleased with how things have turned out.	1	2	3	4	5	6
5. Maintaining close relationships has been difficult and frustrating for me.	1	2	3	4	5	6
6. I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.	1	2	3	4	5	6
7. The demands of everyday life often get me down.	1	2	3	4	5	6
8. I live life one day at a time and don't really think about the future.	1	2	3	4	5	6

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
9. In general, I feel confident and positive about myself.	1	2	3	4	5	6
10. I often feel lonely because I have few close friends with whom to share my concerns.	1	2	3	4	5	6
11. My decisions are not usually influenced by what everyone else is doing.	1	2	3	4	5	6
12. I do not fit very well with the people and the community around me.	1	2	3	4	5	6
13. I tend to focus on the present, because the future nearly always brings me problems.	1	2	3	4	5	6
14. I feel like many of the people I know have gotten more out of life than I have.	1	2	3	4	5	6
15. I enjoy personal and mutual conversations with family members or friends.	1	2	3	4	5	6
16. I tend to worry about what other people think of me.	1	2	3	4	5	6
17. I am quite good at managing the many responsibilities of my daily life.	1	2	3	4	5	6
18. I don't want to try new ways of doing things - my life is fine the way it is.	1	2	3	4	5	6
19. Being happy with myself is more important to me than having others approve of me.	1	2	3	4	5	6
20. I often feel overwhelmed by my responsibilities.	1	2	3	4	5	6
21. I think it is important to have new experiences that challenge how you think about yourself and the world.	1	2	3	4	5	6
22. My daily activities often seem trivial and unimportant to me.	1	2	3	4	5	6
23. I like most aspects of my personality.	1	2	3	4	5	6
24. I don't have many people who want to listen when I need to talk.	1	2	3	4	5	6
25. I tend to be influenced by people with strong opinions.	1	2	3	4	5	6
26. When I think about it, I haven't really improved much as a person over the years.	1	2	3	4	5	6
27. I don't have a good sense of what it is I'm trying to accomplish in life.	1	2	3	4	5	6
28. I made some mistakes in the past, but I feel that all in all everything has worked out for the best.	1	2	3	4	5	6
29. I generally do a good job of taking care of my personal finances and affairs.	1	2	3	4	5	6

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
30. I used to set goals for myself, but that now seems like a waste of time.	1	2	3	4	5	6
31. In many ways, I feel disappointed about my achievements in life.	1	2	3	4	5	6
32. It seems to me that most other people have more friends than I do.	1	2	3	4	5	6
33. I enjoy making plans for the future and working to make them a reality.	1	2	3	4	5	6
34. People would describe me as a giving person, willing to share my time with others.	1	2	3	4	5	6
35. I have confidence in my opinions, even if they are contrary to the general consensus.	1	2	3	4	5	6
36. I am good at juggling my time so that I can fit everything in that needs to be done.	1	2	3	4	5	6
37. I have a sense that I have developed a lot as a person over time.	1	2	3	4	5	6
38. I am an active person in carrying out the plans I set for myself.	1	2	3	4	5	6
39. I have not experienced many warm and trusting relationships with others.	1	2	3	4	5	6
40. It's difficult for me to voice my own opinions on controversial matters.	1	2	3	4	5	6
41. I do not enjoy being in new situations that require me to change my old familiar ways of doing things.	1	2	3	4	5	6
42. Some people wander aimlessly through life, but I am not one of them.	1	2	3	4	5	6
43. My attitude about myself is probably not as positive as most people feel about themselves.	1	2	3	4	5	6
44. I often change my mind about decisions if my friends or family disagree.	1	2	3	4	5	6
45. For me, life has been a continuous process of learning, changing, and growth.	1	2	3	4	5	6
46. I sometimes feel as if I've done all there is to do in life.	1	2	3	4	5	6
47. I know that I can trust my friends, and they know they can trust me.	1	2	3	4	5	6
48. The past had its ups and downs, but in general, I wouldn't want to change it.	1	2	3	4	5	6
49. I have difficulty arranging my life in a way that is satisfying to me.	1	2	3	4	5	6

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
50. I gave up trying to make big improvements or changes in my life a long time ago.	1	2	3	4	5	6
51. When I compare myself to friends and acquaintances, it makes me feel good about who I am.	1	2	3	4	5	6
52. I judge myself by what I think is important, not by the values of what others think is important.	1	2	3	4	5	6
53. I have been able to build a home and a lifestyle for myself that is much to my liking.	1	2	3	4	5	6
54. There is truth to the saying that you can't teach an old dog new tricks.	1	2	3	4	5	6

MENTAL HEALTH SCREENING FORM-III

Instructions: In this program, we help people with all their problems, not just their addictions. This commitment includes helping people with emotional problems. Our staff is ready to help you to deal with any emotional problems you may have, but we can do this only if we are aware of the problems. Any information you provide to us on this form will be kept in strict confidence. It will not be released to any outside person or agency without your permission. If you do not know how to answer these questions, ask the staff member giving you this form for guidance. Please note, each item refers to your entire life history, not just your current situation, this is why each question begins – “Have you ever”

1) Have you <u>ever</u> talked to a psychiatrist, psychologist, therapist, social worker or counselor about an emotional problem?	YES	NO
2) Have you <u>ever</u> felt you needed help with your emotional problems, or have you had people tell you that you should get help for your emotional problems?	YES	NO
3) Have you <u>ever</u> been advised to take medication for anxiety, depression, hearing voices, or for any other emotional problem?	YES	NO
4) Have you <u>ever</u> been seen in a psychiatric emergency room or been hospitalised for psychiatric reasons?	YES	NO
5) Have you <u>ever</u> heard voices no one else could hear or seen objects or things which others could not see?	YES	NO
6) a) Have you <u>ever</u> been depressed for weeks at a time, lost interest or pleasure in most activities, had trouble concentrating and making decisions or thought about killing yourself? b) Did you <u>ever</u> attempt to kill yourself?	YES YES	NO NO
7) Have you <u>ever</u> had nightmares or flashbacks as a result of being involved in some traumatic/terrible event? For example, warfare, gang fights, fire, domestic violence, rape, incest, car accident, being shot or stabbed?	YES	NO
8) Have you <u>ever</u> experienced any strong fears? For example, of heights, insects, animals, dirt, attending social events, being in a crowd, being alone, being in places where it may be hard to escape or get help?	YES	NO
9) Have you <u>ever</u> given in to an aggressive urge or impulse, on more than one occasion, that resulted in serious harm to others or led to the destruction of property?	YES	NO
10) Have you <u>ever</u> felt that people had something against you, without them necessarily saying so, or that someone or some group may be influencing or trying to influence your thoughts or behaviour?	YES	NO

11) Have you <u>ever</u> experienced any emotional problems associated with your sexual interests, your sexual activities, or your choice of sexual partner?	YES	NO
12) Was there <u>ever</u> a period in your life where you spent a lot of time thinking and worrying about gaining weight, becoming fat, or controlling your eating? For example, by repeatedly dieting or fasting, engaging in much exercise to compensate for binge eating, taking enemas, or forcing yourself to throw up?	YES	NO
13) Have you <u>ever</u> had a period of time when you were so full of energy and your ideas came very rapidly, when you talked nearly non-stop, when you moved quickly from one activity to another, when you needed little sleep, and believed you could do almost anything?	YES	NO
14) Have you <u>ever</u> had spells or attacks when you suddenly felt anxious, frightened, uneasy to the extent that you began sweating, your heart began to beat rapidly, you were shaking or trembling, your stomach was upset, you felt dizzy or unsteady, as if you would faint?	YES	NO
15) Have you <u>ever</u> had a persistent, lasting thought or impulse to do something over and over that caused you considerable distress and interfered with normal routines, work, or your social relations? Examples would include repeatedly counting things, checking and rechecking on things you had done, washing and rewashing your hands, praying, or maintaining a very rigid schedule of daily activities from which you could not deviate?	YES	NO
16) Have you <u>ever</u> lost considerable sums of money through gambling or had problems at work, in school, with your family and friends as a result of your gambling?	YES	NO
17) Have you <u>ever</u> been told by teachers, guidance counselors, or others that you have a special learning problem?	YES	NO

THE SHORT DEPRESSION-HAPPINESS SCALE (SDHS)

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A number of statements that people have made to describe how they feel are given below. Please read each one and tick the box which best describes how frequently you felt that way in the past seven days, including today. Some statements describe positive feelings and some describe negative feelings. You may have experienced both positive and negative feelings at different times during the past seven days.

	Never	Rarely	Sometimes	Often
(1) I felt dissatisfied with my life				
(2) I felt happy				
(3) I felt cheerless				
(4) I felt pleased with the way I am				
(5) I felt that life was enjoyable				
(6) I felt that life was meaningless				

SELF REPORTING QUESTIONNAIRE-5

First: Please circle the “YES” box if you have had this symptom in the last 30 days.

1. Do you feel that somebody has been trying to harm you in some way?	YES	NO	
2. Are you a much more important person than people think?	YES	NO	
3. Have you noticed any interference or anything else unusual with your thinking?	YES	NO	
4. Do you ever hear voices without knowing where they come from or which other people cannot hear?	YES	NO	
5. Have you ever had any fits, convulsions, falls to the ground, with movements of the arms and legs, biting of the tongue or loss of consciousness?	YES	NO	

Second: Please look back over the questions. For every one you have answered “YES”, please put a tick in the final column if you had that problem at a time when you were NOT using alcohol or other drugs.

THE WHO (FIVE) WELL-BEING INDEX (1998 VERSION)

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks. Notice that higher numbers means better well-being.

Example: If you have felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick in the box with a number 3 next to it for question 1 below.

<i>Over the last two weeks:</i>	All of the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
(1) I have felt cheerful and in good spirits	5	4	3	2	1	0
(2) I have felt calm and relaxed	5	4	3	2	1	0
(3) I have felt active and vigorous	5	4	3	2	1	0
(4) I woke up feeling fresh and rested	5	4	3	2	1	0
(5) My daily life has been filled with things that interest me	5	4	3	2	1	0

Appendix L

ADDICTION SEVERITY INDEX PSYCHIATRIC STATUS DOMAIN

How many times have you been treated for any psychological or emotional problems:

P1* In a hospital or inpatient setting?

P2* Outpatient/private patient?

- Do not include substance abuse, employment, or family counseling.
- Treatment episode = a series of continuous visits or treatment days, not the number of visits.

P3. Do you receive financial support for a psychiatric disability? Can be from government or employer, etc.

☐

0-No 1-Yes

Have you had a significant period of time (that was not a direct result of alcohol/drug use) in which you have:

0-No 1-Yes
Past 30 Days Lifetime

P4. Experienced serious depression-sadness, hopelessness, loss of interest?

☐
☐

P5. Experienced serious anxiety/tension uptight, unreasonably worried, inability to feel relaxed?

☐
☐

P6. Experienced hallucinations-saw things/heard voices that others didn't see/hear? Code other psychotic symptoms here also.

☐
☐

P7. Experienced trouble understanding, concentrating, or remembering?

☐
☐

Note: Patient can be under the influence of alcohol/drugs for these questions.

Have you had a significant period of time (regardless of alcohol and drug use) in which you have:

0-No 1-Yes
Past 30 Days Lifetime

P8. Experienced trouble controlling violent behavior including episodes of rage, or violence?

☐
☐

P9. Experienced serious thoughts of suicide?
• Patient seriously considered a plan for taking his/her life.

☐
☐

P10. Attempted suicide?
• Include actual suicidal gestures or attempts.

☐
☐

P11. Has a health care provider recommended you take any medications for psychological or emotional problems?

☐
☐

- Recommended for the patient by a physician or other health care provider as appropriate. Record "Yes" if a medication was recommended even if the patient is not taking it.

P12. How many days in the past 30 have you experienced these psychological or emotional problems?

- This refers to problems noted in Questions P4-P10.

For Questions P13-P14, ask the patient to use the Patient Rating scale

P13. How troubled or bothered have you been by these psychological or emotional problems in the past 30 days?

- Patient should be rating the problem days from Question P12.

P14. How important to you now is treatment for these psychological or emotional problems?

Note: The patient is rating their need for you/your program to provide or refer them to psychological/psychiatric services, above and beyond treatment they may already be getting somewhere else.

CONFIDENCE RATING

Is the above information significantly distorted by:

P22 Patient's misrepresentation?

0-No 1-Yes

P23. Patient's inability to understand?

0-No 1-Yes

PSYCHIATRIC STATUS COMMENTS

(Include question number with your comments)

Specify Diagnoses if known: _____

CLOSING ITEM

G12. Special Code - If ASI is not completed:

1. Interview terminated by interviewer
2. Patient refused to finish interview
3. Patient unable to respond (language or intellectual barrier, under the influence, etc.)

Code "N" if Interview completed.

Appendix M

STRUCTURED CLINICAL INTERVIEW FOR DSM-IV-TR AXIS I DISORDERS

Patient Edition (January 2007)

SCID-I/P

Michael B. First, M.D.; Robert L. Spitzer, M.D.;
Miriam Gibbon, M.S.W.; and Janet B.W. Williams, D.S.W.

Study:	_____	Study No.:	___	___	___	___	P1
Subject:	_____	I.D. No.:	___	___	___	___	P2
Rater:	_____	Rater No.:	___	___	___	___	P3
		Date of Interview:	___	___	___	___	P4
			Mo.	Day	Year		
Sources of information (check all that apply):	___	Subject					P5
	___	Family/friends/associates					P6
	___	Health professional/chart/referral note					P7
Edited and checked by:	_____	Date:	_____				

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