**Declaration**

*I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a higher degree to any other University or Institution.*

Signed: ___________________________________________ (Frances Kay-Lambkin)

Date: _____________________________________________
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Abstract

A large body of population- and treatment-based evidence exists to indicate depression and alcohol/other drug (AOD) use are highly prevalent on a global scale, and co-occur with considerable frequency. Despite this evidence, significant gaps exist in treatment research and clinical services, as people with co-occurring depression and AOD use problems have typically been excluded from randomised controlled treatment trials, and also face many individual- and service-level barriers to accessing treatment. Consequently, a well-defined and adequately tested treatment strategy does not currently exist for people experiencing the complexities of concurrent depression and AOD use problems.

A small body of evidence exists to suggest that co-occurring mental and AOD use disorders (“comorbidity”) leads to poorer treatment outcomes, increased risk of relapse, higher levels of problematic symptomatology, and poorer quality of life. However, little consistent information is currently available to suggest what additional impact comorbid depression and AOD misuse produces relative to the experience of a “single” condition (such as depression or AOD misuse in isolation). Studies 1 and 2 attempted to address this important gap in knowledge by examining the presenting characteristics of 246 people with AOD use problems, according to the presence of comorbid depressive symptoms. One hundred and thirty seven participants were drawn from AOD treatment services, and a further 109 were referred via mental health services and also met criteria for a psychotic disorder. Results indicated that the presence of depression was associated
with a significantly higher severity of psychiatric symptoms and personality disorder, significantly decreased social and occupational functioning and significantly reduced quality of life. Current depression was also associated with a significant increase in the experience of cravings and self-reported dependence on amphetamines. These difficulties were over and above the already high rates of disability and distress reported by each sample as a whole. Furthermore, treatment for mental health problems was rare among the AOD treatment participants, as was AOD treatment among the mental health sample. This is despite the presence of moderate to severe levels of depression and AOD use reported by each sample. In particular, Studies 1 and 2 highlight the vulnerabilities for people with comorbid mental health and AOD use problems who present to treatment in the mental health or AOD use settings, and in particular how depression significantly increases the disability and other challenges experienced by these people. These results provide a strong rationale for the development of an appropriate treatment protocol for depression and AOD use comorbidity.

No clear treatment model or evidence-based approach exists to suggest how depression and AOD use comorbidity is best managed. When people with this comorbidity do manage to access clinical treatment services, they typically receive treatment targeted at one aspect of their presentation (e.g. depression-focussed or AOD-focussed treatment). Yet, it is not known whether a singular focus of treatment is effective in producing sustainable change in the outcomes of people with comorbid problems, nor whether failure to treat all components of the comorbid presentation confers a worse outcome. Studies 3 and 4 reported on two randomised controlled clinical trials of psychological
treatment for AOD use problems among a sample of 246 people with AOD use problems, drawn from AOD treatment services (n=137) or mental health services (n=109). In doing so, these studies provide some of the first available data on these issues. Participants were categorised according to the presence of comorbid depression (as per Studies 1 and 2) and response to treatment was analysed over a six- to 12-month follow-up period. In spite of high levels of current depressive symptoms at entry to the studies, and equally hazardous use thresholds of a range of substance, people enrolled in Studies 3 and 4 reported some gains via their experiences with these single-focussed treatments. Attendance and retention rates were higher than reported in previous research, and the presence of depression did not adversely influence the motivation of project participants to change their current AOD use patterns. A treatment effect was generally not detected among the Study 3 and 4 participants, regardless of the presence of depression, with those receiving an assessment-only control treatment in both studies reporting similar patterns of change in outcome. Regardless of the magnitude of change reported by all study participants, people with depression reported significantly higher levels of depression, poly-drug use, amphetamine dependence, hazardous use of a range of substances, HIV risk taking and criminal activity and lower levels of functioning and self-concept across the follow-up assessment period. These residual symptoms were present at sufficiently high levels of severity to increase the risk of relapse to AOD use and continued morbidity. These results suggested the potential value of targeting depression in the context of comorbid AOD use problems.
One previous study has examined the impact of an adjunctive psychological treatment of depression for people hospitalised for alcohol use disorder. Results indicated that people who received the additional depression treatment reported significantly greater improvements on depression- and alcohol-related outcomes over the short-term relative to people receiving a relaxation-only control treatment. These improvements were suggested to be enhanced if treatment had integrated depression- and alcohol-related approaches into the one treatment program. In the first study of its kind, Study 5 developed and evaluated the efficacy of an integrated psychological treatment program for comorbid depression and AOD use problems. Sixty-seven participants received integrated treatment delivered by a therapist, computer-delivered integrated treatment or a brief intervention (control) treatment delivered by a therapist. Depression scores, daily use of alcohol and cannabis, hazardous use of a range of substance and poly-drug use fell significantly over a 12-month follow-up period across the integrated treatments and brief intervention (control) conditions. The small sample size of Study 5 meant that very few treatment effects were detected at a statistically significant level, however important reductions in key outcomes for depression, AOD use, quality of life and general functioning were noted for people in the integrated treatment relative to controls over a 12-month period. The magnitude of change in Study 5 across these domains was comparable with the only other study of psychological treatment of depression and alcohol-use disorders described above. The integrated treatment in Study 5 was associated with higher levels of improvement in depression, alcohol use and cannabis use (where present) than did the AOD-focussed treatment examined in Studies 3 and 4. The results further suggest that a brief intervention targeting both depression and AOD drug use problems is associated with reductions in key outcomes in the short-term, with
integrated, lengthier psychological treatment potentially associated with longer-term changes on the same outcomes.

No previous study has directly compared the outcomes for people completing psychological treatment delivered via a computer program with those completing treatment with a ‘live’ clinician over an extended follow-up period of 12-months. Given the barriers people with comorbid depression and AOD use problems face in accessing available treatment services, the consideration of alternative modes of delivery of evidence-based treatment to this group is timely. Study 6 expanded on the Study 5 results by presenting further analysis of the performance of the computer-delivered version of the integrated treatment relative to the clinician-delivered equivalent, matched for content. Given the small sample size of participants, Study 6 devised a four-point criterion which, if satisfied, would suggest that the computer-delivered and clinician-delivered integrated treatments were approximately equal. Based on these criteria, the results indicated that the outcome profiles for people engaged in the computer-delivered treatment were equivalent to those reported by people involved in clinician-delivered therapy over a 12-month follow-up period. Additionally, computer-delivered integrated treatment was associated with similar rates of improvement as the therapist-equivalent on depression scores, risky drinking patterns, hazardous use of substances, poly-drug use, levels of daily cannabis use, suicidality, treatment retention and therapeutic alliance. This result requires further replication to test these assumptions, however it is promising that a treatment requiring an average of 12-minutes face-to-face of “generic” clinician time per week
produces a similar pattern of improvement to a treatment requiring an average of 60 minutes of face-to-face specialist psychologist input over the same time period.

Studies 1-6 resulted in the development of a menu of treatment options for people with depression and AOD use comorbidity, with each treatment approach providing evidence for at least some benefit among the study participants. While encouraging, these results again raise the issue of how treatment may be incorporated into existing services (mental health, AOD use, primary care, etc.), which typically remain segregated, with little opportunity for collaboration and cross-fertilisation of skills and expertise between service settings. Chapter 7 discusses a new model of treatment for comorbid depression and AOD use problems that incorporates the results of Studies 1-6, and involves a stepped care approach to developing a treatment plan tailored to the specific needs and levels of distress experienced by people with depression and AOD use comorbidity. The stepped care model of treatment could be incorporated into existing service settings and structures, with the potential for computer-based therapy to provide access to specialised treatment for depression and AOD use comorbidity that might otherwise be unavailable. As a result, stepped care treatment could foster earlier engagement with treatment services and encourage motivation and optimism among people with comorbid depression and AOD use problems. These are important issues for service development and delivery of appropriate treatments to this underserved population.
Chapter 1

Depression and Alcohol/Other Drug Use Problems

The Challenge of Comorbidity

1.0 Abstract

Despite the increasing prevalence of comorbid depression and alcohol/other drug (AOD) use disorders, researchers have largely ignored this population. This is a concern given treatment services are unclear about optimal treatment approaches for comorbidity and aetiological theories to explain the co-occurrence have little evidence to support the adoption of one model over another. Epidemiological data on comorbid depression and AOD use disorders are summarised and a context is established for the studies presented in the body of this thesis. It is suggested that treatment strategies be expanded to cover the spectrum of distress, symptom levels and impairment with which people with comorbidity will likely present. This approach does not rely on the confirmation of formal diagnoses of disorders before treatment planning commences, and will potentially fill the gap between current, available treatment approaches for comorbid depression and AOD use problems and the unique, unmet needs of this population.
In 1995, the first national household survey of mental health and wellbeing (NSMHWB) occurred in Australia, and confirmed the results of similar population-based epidemiological studies in the United Kingdom (UK) and the United States (US). Around 23% of NSMHWB respondents met diagnostic criteria for a mental disorder in the past 12 months, and 13.9% met criteria for a current disorder, that is, within the month prior to interview (Andrews, Henderson, & Hall, 2001). The three most common mental disorders were anxiety, alcohol/other drug (AOD) use and affective disorders, occurring at rates of 9.5%, 7.7% and 5.7% respectively in the previous 12-month period (Andrews et al., 2001).

1.1 PREVALENCE OF ALCOHOL/OTHER DRUG USE

Consistently, population surveys reveal that the most commonly used substance among adults is alcohol, followed by cannabis and psychostimulants (such as cocaine and amphetamines). For example, the US Epidemiological Catchment Area (ECA) study reported lifetime prevalence rates of alcohol abuse/dependence at around 14%, with 6.1% lifetime prevalence of other drug abuse/dependence (Regier et al., 1990). Australian data indicate that one in 15 adults meet criteria for an alcohol use disorder in a 12-month period, and one in 45 adults report other drug use disorders over the same period (Teesson, Hall, Lynskey, & Degenhardt, 2000). Thus, alcohol use disorders are three times more prevalent in the Australian population than the other drug use disorders (Andrews, Hall, Teesson, & Henderson, 1997). Cannabis was the most commonly used illicit drug in both the ECA and NSMHWB surveys, and in Australia accounted for 1.7% of the other drug use disorders reported by the sample.
AOD use disorders are more common among males than females. For example, the NSMHWB revealed that rates of alcohol use disorder were more prevalent in males (9.4% versus 3.7%), and rates of other drug use disorders were reported among 3.2% of males and 1.3% of female respondents (Teesson et al., 2000). Despite this, rates of help-seeking for AOD use disorders are generally higher among females than males, with around 39% of women in the NSMHWB seeking help for alcohol-related problems, compared with 23% of men (Teesson et al., 2000).

Aside from gender, the prevalence of AOD use disorders is affected by various other sociodemographic variables such as employment, marital status and age. To use the NSMHWB as an example, being single and unemployed were factors associated with higher rates of alcohol use disorders, as was decreasing age of survey respondents (Teesson et al., 2000). The same patterns were found for other drug use problems.

1.2 Prevalence of Mental Disorders

Epidemiological research suggests that, aside from AOD use disorders, anxiety and affective disorders are among the most common mental disorders experienced in the general population. A household study conducted in the mid-1990s in the UK, revealed that the one-week prevalence of generalised anxiety disorder was around 3%, followed closely by rates of depressive disorder of 2% (Jenkins et al., 1997). Psychotic disorders were the least common mental disorders detected in the UK-based survey, occurring at around 0.4% in respondents for the year prior to the study (Jenkins et al., 1997).
In Australia, the NSMHWB indicated that around 2.3 million Australian adults met criteria for some mental disorder over a 12-month period (Andrews et al., 1997). In support of previous population-based surveys of mental disorder, the most prevalent mental disorders were the anxiety disorders, occurring in 9.7% of survey respondents. Depressive disorders occurred in 5.7% of the study population (Andrews et al., 1997).

In general, depressive disorders are more common in females than males, and tend to decrease with age, declining markedly after age 55 years (Andrews et al., 1997). In addition, unemployed people report higher rates of depression and rates are higher if people do not complete secondary school, are separated or divorced and if they currently live alone. For example, in the NSMHWB, rates of depression rose to 11% for those people without housemates in the year prior to the survey (Andrews et al., 1997). These patterns were not observed among people with anxiety disorders.

Health service utilisation is typically low for people with mental disorders such as depression. Notwithstanding the serious functional, social and other impairments experienced by people with psychotic disorders (Carr, Neil, Halpin, & Holmes, 2002), the observation that people with depression do not access treatment at the same rate as their counterparts with psychosis is concerning. Depression, for example, accounted for the most disability of the high prevalence disorders, with respondents to the NSMHWB indicating on average that for almost 12 days of the past four weeks, they were completely unable to carry out their usual activities owing to their symptoms (Andrews et al., 2001). Further, of the 13.3% of disability-adjusted life years attributable to mental
disorder, affective disorders alone accounted for 33%, and depression was responsible for 12% of the total burden of non-fatal global disease (AIHW, 1999). This is despite effective psychological and pharmacological treatments being available for depression (APA, 2000).

1.3 Prevalence of Comorbid Mental and Alcohol/Other Drug Use Disorders

A reliable finding across population-based surveys is the common co-occurrence of mental disorders, referred to as ‘comorbidity’. The presence of one mental disorder seems to increase the risk of developing additional mental disorders (Kessler, 1994). In Australia, for example, high rates of comorbidity were also detected among the NSMHWB respondents, with one in four people with either an anxiety, depressive or AOD use disorder also meeting criteria for another mental disorder (Andrews et al., 1997).

The ECA study revealed that the rate of alcohol use disorders among people with mental disorders was 22.3%, compared to 11% of their counterparts without mental disorders (Regier et al., 1990). Rates of other drug use disorders among people with mental disorders were around 15%, relative to a rate of 3.7% of the remaining survey respondents (Regier et al., 1990). Taken together, these findings suggest that adults with lifetime mental disorders are twice as likely to experience alcohol use disorders and around four times more likely to have a drug use disorder than are their counterparts without mental disorders.
Equally, studies have indicated an increased rate of psychiatric disorder is likely among people using alcohol/other drugs. Although rates of some acute mental disorders among AOD users are comparable to the general population, a consistent finding has been that rates of depression are elevated among AOD users, particularly those using alcohol at harmful levels (Skinstad & Swain, 2001). In the US, major depression occurred in 9.61% of national survey respondents identified as having a current or past-year alcohol use disorder, and around 21% of people in the same survey with major depression also reported an alcohol use disorder over the previous 12-month period (Grant & Harford, 1995).

Service-based research suggests that levels of comorbidity and associated problems may be more pronounced in treatment-seeking populations (Arendt & Munk-Jorgenson, 2004). The ECA study reported that rates of AOD use disorders within mental health services was twice that of people with mental disorders not engaged in treatment, and rates of mental disorder were even higher among people engaged in AOD treatment (Regier et al., 1990). For example, depressive disorders can occur in as many as 60% of treatment seekers for cocaine dependence, as evidenced in a survey of people recruited to research studies over a 16-month period, whereby 53% (n=184) reported lifetime use of cocaine and of these, 89% met criteria for lifetime major depressive disorder (Helmus, Downey, Wang, Rhodes, & Schuster, 2001).
Although the evidence suggests that comorbidity is common, researchers and policy makers have largely ignored this population, and treatment services generally do not provide for people with multiple disorders (Clarkin & Kendall, 1992; Teesson, 2000).

1.4 The Impact of Comorbid Mental and Alcohol/Other Drug Use Disorders

Although much is known about the characteristics of people with single disorders who present for treatment, the exclusion of people with comorbid disorders from most studies and treatment services means that much less is known about the particular impact that coexisting conditions exerts on the individual seeking treatment. In one of the few alcohol/other drug treatment studies that did not specifically exclude people with comorbid issues, Copeland, Swift and Rees (2001) examined the clinical profile of people presenting for treatment for cannabis use disorders. Results indicated that 83.3% (n=190) experienced cannabis-related health problems, such as respiratory distress (e.g. asthma, coughing), problems with relationships, and psychological symptomatology (e.g. depression). Financial difficulties, criminal activity and use of multiple drugs in addition to cannabis over their lifetime were high (Copeland et al., 2001). Despite the inclusion of people in this study with comorbid mental health symptoms, no data were provided on the impact of these conditions, such as depression, on the presenting characteristics of the participants.

In general, the small body of research that does exist in this area tends to focus on psychosis and substance use comorbidity, and suggests that these groups do have poorer
treatment outcomes and are regarded as more complex to treat (Teesson et al., 2000). Laudet and colleagues (2000) report that people with lifetime rates of comorbid psychosis and substance use disorders are more likely than their non-comorbid counterparts to experience financial difficulties, unemployment, marital and social problems and low rates of education. People with schizophrenia and comorbid substance use disorders, compliance with treatment and management plans more generally is often low (Jerrell, 1996; Laudet et al., 2000), and emergency and other high-cost services are required more often than would otherwise be necessary (Kavanagh, Mueser, & Baker, 2003; Laudet et al., 2000). Upon presentation to treatment services, levels of symptomatology and distress are high for this group (Johnson, 2000).

1.4.1 Comorbid depression and alcohol/other drug use problems

Depression and AOD use disorders are two of the three most common mental disorders experienced by the Australian population (Andrews et al., 2001); results consistently reported in international epidemiological research and across gender, ethnic and age groupings (Lynskey, 1998). At a population level, the presence of comorbid depression and AOD use disorders has been associated with high levels of disability, days out of role and a significant contribution to the total burden of disease (Andrews et al., 1997). In addition, epidemiological research suggests that there is a consistent association between suicidality, depression and AOD use problems (e.g. Abraham & Fava, 1999; Beautrais, Joyce, & Mulder, 1999; Lewinsohn, Rohde, & Seeley, 1995).
Little research exists that examines the impact of depression and AOD use comorbidity on the individual, and most available evidence does not report outcomes for depression and AOD use problems separately from other mental disorders (Teesson et al., 2000) (McNamara, Schumacher, Milby, Wallace, & Usdan, 2001). In a study among 214 regular amphetamine users, Baker and colleagues (2004) reported high levels of polydrug use among the sample (average of four drugs per participant), high rates of criminal behaviour (62%), high likelihood of personality disorders and average duration of amphetamine use of around nine years. Although rates of self-reported mental health problems among the sample were high (50%) and 42% were currently taking medication for mental health complaints, this study did not directly address comorbid mental health and AOD use problems. It is therefore not clear whether the presence of coexisting mental disorder or rates of severity of symptoms, such as depression, influenced the initial presentations of participants to the study.

It is likely that depression and AOD use comorbidity presents similar difficulties to those encountered by people with psychotic illness and comorbid AOD problems. For example, McDermut, Mattia and Zimmerman (2001) reported on the characteristics of 373 people with depression, 17% of whom met criteria for an AOD disorder. Those with an AOD use disorder reported significantly higher levels of depression, greater rates of hospitalisation, more suicide attempts and poorer social functioning than their counterparts with depression only.
McNamara et al. (2001) compared 82 people with comorbid anxiety/depression and AOD use disorders with 128 individuals with AOD use disorders alone. Results indicated that the comorbid group reported more severe levels of AOD use and psychiatric symptoms, employment problems, housing and social problems at baseline than did their counterparts (McNamara et al., 2001). The comorbid group were also more likely to meet formal diagnostic criteria for AOD abuse/dependence at baseline. However, the authors suggested that more research in this area is required to confirm these differences.

Other research suggests that the presence of depression increases the AOD user’s vulnerability to situations involving negative affect (Marlatt & George, 1984). For example, situations involving negative mood are among the most commonly cited reasons for relapse across a range of substances (Hesselbrock, Hesselbrock, & Workman-Daniels, 1986; Marlatt & George, 1984; Pickens, Hatsukami, Spicer, & Svikis, 1985). In addition, epidemiological research suggests that even mild depression elevates the risk of relapse to drinking three-fold in comparison to people without depressive symptomatology (Andrews et al., 1997).

Using data from NSMHWB, Burns and Teesson (2002) compared respondents with alcohol use disorders alone (n=410) and those with comorbid alcohol use disorder and anxiety, affective or drug use disorder (n=235). Results indicated that the comorbid group experienced around twice as many days out of role in the previous four-week period relative to their counterparts. In addition, a higher proportion of the comorbid group than the alcohol use only group were younger, never married, unemployed, and separated or
divorced (Burns & Teesson, 2002). People in the comorbid group were four-times more likely to have seen a specialist health professional for their problems, and slightly more likely to have seen any health professional in the previous 12 months. More recently, Burns, Teesson and O’Neill (2005) examined the impact of anxiety and depressive disorders on alcohol treatment outcomes. At entry to treatment, those participants with comorbid anxiety and depressive disorders reported more disability and higher levels of alcohol use.

Baker, Bucci, Lewin, Richmond and Carr (in press, February 2005) additionally compared different characteristics of mental health clients recruited to several studies (N=1152), 35% of whom had coexisting AOD use disorders. Results indicated that comorbidity was associated with significantly greater levels of depression, mania and reality distortion. Other research indicates that levels of depression are associated with higher rates of AOD use (such as tobacco) upon presentation to treatment services (Currie, Hodgins, el-Guebaly, & Campbell, 2001).

A small body of research exists that attempts to examine the relationship between depression and AOD use and treatment utilisation and outcome. The focus here has been almost exclusively on depression and comorbid alcohol use disorder. For example, people with comorbid depressive and alcohol use disorders are also suggested to require inpatient hospitalisation more frequently than their counterparts without problematic alcohol use (Brady, Casto, Lydiard, Malcolm, & Arana, 1991; Sonne, Brady, & Morton, 1994). In a large-scale study of people with affective disorders, Kessing (1999)
monitored 20,350 patients following discharge for a depression-related psychiatric hospitalisation. Among this group, 518 (2.5%) also had a diagnosis of alcohol use disorder and reported increased rates of recurrent depressive episodes over the follow-up period, as measured by re-admission rates over 23-years.

The presence of depression at entry to treatment for alcohol dependence has also been associated with premature treatment dropout, more frequent relapses to alcohol use and subsequent addiction treatment if left unaddressed (Brown, Evans, Miller, Burgess, & Mueller, 1997). Antidepressant medication can also be less effective when people are drinking alcohol at harmful levels (Hasin et al., 1996). For example, Worthington et al. (1996) assessed 94 people with major depressive disorder for levels of alcohol, tobacco and caffeine use prior to commencement of an eight-week course of the antidepressant, fluoxetine. At the conclusion of treatment, levels of alcohol use at baseline were positively correlated with levels of depressive symptoms, suggesting a poorer response to the antidepressant.

Alcohol use disorders comorbid with depression additionally place people at increased risk of suicide ideation and behaviour (Bronisch & Wittchen, 1994; Cornelius et al., 1995), and increased criminality (Jerrell, 1996). The same is likely true for drugs in addition to alcohol. For example, among a sample of 1016 methamphetamine users in the US, levels of psychiatric disorder were high, with around one-third of the sample reporting depressive symptoms in the month prior to the study (Zweben et al., 2004). Twenty seven percent of the sample reported suicide attempts in their lifetime, and assault
charges and other criminal activity were also high. In addition, respondents also scored high on measures of paranoia and psychotic-like symptoms. When comparing severity of methamphetamine use for people as a function of psychological distress, results indicated that those who injected drugs had significantly higher depression scores, and more suicide attempts (Zweben et al., 2004).

Depressive states can also influence subjective responses to alcohol. For example, Cooney, Litt, Morse, Bauer and Gaupp (1997) recruited 50 males diagnosed with alcohol dependence from a AOD abuse treatment program with the Veteran Affairs organisation in the US. Negative mood (or a depressive state) was induced in all participants via an imagery script, and led to increased self-reported cravings for alcohol and subsequent relapse to drinking. In a separate study among 73 people seeking treatment for cocaine dependence, 44% (n=38) were diagnosed with current major depressive disorder (Brown et al., 1995). Those with comorbid depression, as measured by diagnosis and level of current symptoms, reported higher levels of craving for cocaine, alcohol and other drugs and increased rates of treatment attrition. Cravings increased with increasing severity of depressive symptoms (Brown et al., 1995).

Despite these findings, Proudfoot, Teesson, Brewin and Gournay (2003) suggest that the effect of a comorbid depressive disorder on AOD use characteristics is not clear cut, as several researchers have failed to show a demonstrable effect of depression on AOD use and vice versa. For example, in a study of 54 undergraduate students in China, Yuen and Lee (2003) found that risk-taking tendencies were significantly reduced after induction of
a negative mood, relative to positive and neutral moods. Although not directly tested in this study, one implication of this result may be that drug use, arguably a “risky” behaviour, may be reduced in severity or frequency in the presence of depressive symptoms.

In a sample of 75 people with alcohol abuse/dependence, depressive symptoms present at the initial assessment were not related to quantity or frequency of drinking at baseline, nor to levels of alcohol consumption at the three-month follow-up assessment (Blume, Schmaling, & Marlat, 2001). This study also suggested that depression may indeed enhance motivation to reduce drinking behaviour, by increasing the alcohol-related costs/losses incurred by the individual. According to the stages of change model (Prochaska & DiClemente, 1982), behaviour change will likely occur when these personal costs for drinking outweigh any benefits the person perceives are associated with continuing to drink. Results of this study supported this hypothesis, with higher levels of depressive symptoms being significantly associated with the action stage of change for alcohol (Blume et al., 2001).

Levels of lifetime and current major depressive disorder were used to predict rates of relapse to problematic alcohol use following a brief intervention among 99 men with moderate to severe alcohol dependence (Sellman & Joyce, 1996). At the six-month follow-up, 58% of the sample had relapsed to drinking. However, no differences existed between relapsers and non-relapsers in terms of levels of depression at baseline, nor presence of lifetime major depressive disorder.
Similarly, Davidson and Blackburn (1998) recruited 82 people who had completed a 3-week inpatient detoxification program for alcohol use problems. Results indicated that a diagnosis of major depression at baseline was not related to levels of alcohol use at 6-weeks and 22-weeks post-discharge, nor was a diagnosis of major depression at follow-up. The authors suggested that a diagnosis of depression in the context of problematic alcohol use does not interfere with alcohol use outcomes (Davidson & Blackburn, 1998).

The effect of comorbid depression and alcohol use problems may be differential across gender. For example, although Rounsaville, Kosten and Kleber (1987) found that males in their study with depression and alcohol use disorder required more treatment for alcohol use, drank more frequently and heavily and scored higher on personality disorder questionnaires than their non-depressed counterparts, the same was not true for females. That is, depression was not predictive of poor prognosis for alcohol use among women in the sample who fared equally as well as women without comorbid depression. However, this result may not be consistent across studies, with some research suggesting that current levels of depression among females with alcohol misuse problems confers worse outcomes than for males with depression and alcohol use comorbidity (Lynskey, 1998).

In summary, it is acknowledged that comorbid depression and alcohol use problems present a set of unique difficulties and risks than would either condition present on its own. However, little firm evidence exists to clearly suggest how these might apply to
drugs in addition to alcohol, nor about the characteristics and needs of people within these populations who are seeking treatment (Copeland et al., 2001).

The conflicting results in the available studies may be related, in part, to the complexities of comorbidity, to a general lack of research attention devoted to this population, and the inconsistent methods of estimating and measuring depression and AOD use comorbidity within each study population (i.e. formal diagnosis of conditions versus levels of symptomatology and distress). For example, studies that show an association between depression and alcoholic relapse use rating scales to indicate severity of depressive symptomatology, whereas often, those which fail to detect a relationship report depression in terms of a dichotomous diagnosis (present/absent, Sellman & Joyce, 1996). Many studies also differ in the reporting of AOD misuse, some using estimates of quantity and frequency of current use, while others report lifetime and current rates of abuse and dependence among their samples (Sellman & Joyce, 1996). These differences are important, as some researchers contend that using current symptom severity, as opposed to lifetime rates of depressive and substance use disorder, provide better predictions of treatment retention (McNulty & Kouimtsidis, 2001). Further, as Degenhardt (2002) explains, the small body of literature regarding the impact of comorbidity on depression and substance use treatment seems to suggest that current symptoms (depression and/or alcohol/other drug misuse) rather than lifetime/prevalence rates of either condition are the variables that affect treatment outcomes among this population. However, more research needs to examine these issues in more detail.
In order to reduce relapse and maximise treatment outcomes, it has been argued that treatment components such as length, intensity, focus/content, risk reduction etc. need to be targeted and tailored to individual needs (Segal, Pearson, & Thase, 2003). Detailed knowledge about the characteristics of clients accessing treatment services (including the presence of comorbid issues and the impact this has on symptom severity, functioning, risk factors, treatment retention etc.) is fundamental to treatment development along these lines. Currently, clinicians, policy makers and researchers do not have sufficient consistent information available about comorbidity to take this step.

### 1.5 SUMMARY AND CONCLUSIONS

Depression and AOD use disorders commonly co-occur, and researchers and clinicians find it difficult to agree on how to best categorise and treat these concurrent conditions (Kay-Lambkin, Baker, & Lewin, 2004). Treatment providers have more information about the epidemiology of comorbid problems than they do about appropriate approaches to treatment (Clarkin & Kendall, 1992). This is a concern given that on a global scale, mental and AOD use disorders contribute 20% to the total burden of disease borne by society (Murray & Lopez, 1996), and evidence from some studies indicates that comorbidity is associated with poorer functioning, higher risk of relapse, and increased symptom severity.

The body of work reported in thesis will focus on comorbid depression and AOD use problems. A range of different treatment strategies appropriate for comorbid depressive
and AOD use conditions will be examined, which focus on reducing symptom levels as well as client distress, impairment and dysfunction. Specific treatment approaches that have been applied to people experiencing single conditions will be discussed in Chapter 2, along with the limited available evidence examining the efficacy of these approaches for people with comorbid conditions.
Chapter 2

T Treating Comorbid Depression and Alcohol/Other Drug Use Problems

2.0 Abstract

The relationship between depression and alcohol/other drug (AOD) use comorbidity is multifaceted, and no single aetiological model seems to adequately account for the aetiology of the co-occurrence. Consequently, there remain gaps in service provision and evidence-based treatment approaches for people experiencing depression and AOD use comorbidity. Traditionally, treatment of comorbidity has occurred within the existing framework and structures of mental health and AOD use treatment services, applying strategies appropriate for depression or AOD misuse as single disorders to people with comorbid problems. However, these treatment strategies have rarely been directly tested in research involving individuals with coexisting depression and AOD use problems, or in ways that can facilitate access to services for this disadvantaged group. This chapter describes a range of pharmacological and psychological treatment options that are potentially appropriate for use among people with coexisting depression and AOD use problems. In particular, emphasis is placed on the psychological strategies of motivational interviewing and cognitive behaviour therapy and how these treatments may be delivered in an accessible format.
2.1 Aetiological Models of Comorbid Depression and Alcohol/Other Drug Use Problems

Given the frequency with which depression and AOD disorders co-occur, population-based surveys have been used to more closely examine the various environmental, genetic and neurobiological factors that may explain this particular type of comorbidity (Volkow, 2004). As a result, several different models have been proposed to explain the co-occurrence of any mental disorder with an AOD use problem and these can be applied to the relationship between depression and AOD use, with a view towards planning treatment approaches for these comorbid conditions. Such models include the following:

(1) Primary AOD use model (Crum, Brown, Liang, & Eaton, 2001; Mueser, Drake, & Wallach, 1998) proposes that the problematic AOD use preceded the first depressive symptoms. In this case, treatment would target the primary disorder (AOD use), assuming that upon abstinence, the depressive symptoms would also remit.

(2) Primary depression model (Crum et al., 2001; Mueser et al., 1998) suggests that AOD use commenced after the development of depression, as a means to self-medicate symptoms, or to cope with distress related to symptom development. According to this model, depression would be the target of treatment, under the assumption that relief of depressive symptomatology and associated distress would lead to a remission of drug and alcohol use.

(3) Bidirectional model (Mueser et al., 1998) states that depression acts as a trigger and maintaining factor for harmful AOD use, and vice versa.
(4) Common-factor model (Crum et al., 2001; Mueser et al., 1998) suggests that one or more factors, such as genetic predisposition, antisocial personality disorder, social difficulties, stressful events etc. contribute to an increased risk of both depression and AOD use problems.

(5) Artefact model (Hall, 1996; Kendall & Clarkin, 1992; Lynskey, 1998) suggests that depression and AOD use problems are unrelated, and the high co-occurrence of these disorders could simply represent sampling biases in population and/or clinical studies, or the overlap in diagnostic classification systems for major depression and AOD abuse, dependence and withdrawal syndromes.

Little firm evidence exists to support the adoption of one of the above models over another, and each model has inherent problems when applied to individuals in real world clinical settings. For example, whilst longitudinal studies of the comorbidity of cannabis use and depressive symptomatology support a primary cannabis use model, cross sectional surveys indicate that a primary depression model better accounts for the dysphoria experienced with cannabis abuse in adulthood (Bovasso, 2001; Degenhardt, Hall, & Lynskey, 2003). Further, while the US-based ECA study revealed that rates of alcohol use disorders were 35% more likely in relatives of people with major depressive disorder, indicating a relationship between the that the two disorders (Grant, Hasin, & Dawson, 1996), a second study found no such association (Schuckit et al., 1997).

Other researchers have suggested that the primary/secondary distinction between the depressive disorder and the drug and alcohol use is immaterial once the two disorders
have surfaced (Powell et al., 1992). This assertion is supported by studies indicating that the primary/secondary distinction, at least for alcohol use problems and depression, is not predictive of treatment outcomes. For example, in a five-year follow-up of 97 Americans with concurrent affective disorder and alcohol use problems, levels of depression and alcohol use were equivalent for primary depressive and primary alcohol use conditions (Hasin et al., 1996).

Moreover, clinical practice suggests that the relationship between AOD use and depression may change over time. For example, depression may trigger alcohol use at some times and the reverse may occur at others (Hodgkins, el-Guebaly, Armstrong, & Dufour, 1999). In a 10-year follow-up of people with alcohol-related problems, Crum, Brown, Liang and Eaton (2001) assessed levels of depression, alcohol use, and the progression of both conditions over time. Results indicated that there was a bimodal association between depression and transition to higher levels of drinking, perhaps indicating more than one developmental pathway (Crum et al., 2001). That is, respondents who progressed from low-level drinking to higher levels appeared to be drinking to relieve tension and distress (self-medicating their depression), while those who were already drinking at high levels at baseline seemed to have already developed chronic drinking patterns that contributed to their current depressive episode, rather than the reverse (Crum et al., 2001). This may be indicative of the clinical situation where initially, an individual may be drinking to relieve negative mood and other symptoms of depression (the depression is primary), however over time, the drinking may develop into a chronic problem in its own right, leading to depressive episodes.
In this case, if treatment was based on the primary depressive condition, the now independent alcohol use problem may not receive appropriate treatment.

Kessler and colleagues (1997) have also observed that different models may apply for men and women who experience comorbid depression and AOD use problems. In a study of 2,945 people with alcohol use problems, Schuckit et al. (1997) classified 15.2% as having primary depression and a further 26.2% as having secondary (or alcohol-induced) depression. The authors observed that there was a significantly higher proportion of men than women in the secondary depressed group (70% versus 30%), whereas the gender ratio was roughly equivalent for those in the primary depression group (48% men versus 52% women) (Schuckit et al., 1997).

Epidemiological studies additionally suggest that drug and alcohol use problems are more prevalent among men than women, with affective and anxiety problems more commonly reported among women (Andrews, Henderson, & Hall, 2001a). One implication of this pattern may be that it is more acceptable for males to report problems with drugs and alcohol than to admit to problems with their mood, emotions or feelings. The reverse is likely to be true for females. This could lead to underreporting of affective states in men and of drug and alcohol use in women in survey-based research, further confounding the issues.

There are also practical problems in reliably establishing the temporal relationship between depression and AOD use problems, and using client self-report to establish the primary condition is often imprecise (Herman et al., 2004). This is especially true
if both conditions have been present for many years, and if the primacy of each condition has changed over time. As such, a reliance on treating coexisting depression and AOD use problems according to the primary/secondary model may be inadequate. Schuckit and colleagues (1997) report that the pattern of depressive symptoms in primary and secondary depression (coexisting with drug and alcohol use problems) is so similar that it is difficult for clinicians to use the presence of certain key depressive symptoms as indicators of primary and secondary depressive conditions. Thus, clinicians may not be able to identify from the outset which clients are more likely to have a depression that persists beyond abstinence from drug and alcohol use problems (Schuckit et al., 1997).

2.2 Models of treatment for comorbid conditions

Treatment experts are currently undecided about whether the most effective strategy for managing comorbidity is to focus on the more acute or primary condition where identified, or whether both issues warrant treatment simultaneously (Weiss & Najavatis, 1998; Zweben et al., 2004). Little empirical evidence exists to suggest a firm answer to this problem, and approaches to treating people with comorbid issues will vary between treatment settings and research studies (Nunes & Quitkin, 1997). Several models of treatment exist that could be applied to people with comorbid depression and AOD use problems, and are guided by different aetiological models of comorbidity. These include “sequential”, “parallel” or “integrated” treatment approaches.
Research to date on the efficacy of these treatment models for people with comorbid issues is limited. Most studies focus on psychosis (Kavanagh, Mueser, & Baker, 2003) and draw exclusively from either mental health or AOD use treatment settings. This is despite evidence suggesting that people with comorbid disorders will attempt to access both systems for treatment (Havassy, Alvidrez, & Owen, 2004).

2.2.1 Sequential Treatment

Sequential, or serial treatment is based on the traditional approach to managing comorbid conditions, and is commonly utilised by mental health and AOD services in Australia (Proudfoot, Teesson, Brewin, & Gournay, 2003). In these cases, the primary disorder is targeted for treatment, with the secondary condition prioritised following successful management of the primary disorder, if it still persists (Mueser, Noordsy, Drake, & Fox, 2003). In practice, this treatment approach has led to clinicians utilising treatment strategies that would be applied to any client with AOD use problems or mental disorder occurring in isolation of each other, rather than formulating a comorbidity-specific treatment regime (Brady et al., 1996). Generally, the use of sequential treatments for comorbid psychotic and AOD use disorders is not well supported (Kavanagh et al., 2003). However, as Kavanagh et al. (2003) explain, very little is known about how comorbid depression and AOD use problems respond to this treatment approach.

Concerns have been raised with sequential treatments for comorbid conditions, with experts arguing that it is not sensitive to the severity and consequences of coexisting
problems, nor the complexity of their interactions, and it is often the case that the relationship between depression and AOD use disorders may be more fluid than implied by simple primary and secondary categories (Havassy et al., 2004; Kavanagh et al., 2003; Mueser et al., 2003).

One major practical issue influencing the effectiveness of sequential treatments for comorbid conditions is the differing treatment philosophies and priorities held by mental health and AOD services. Historically, AOD treatment services tend to emphasise confrontational, self-help or 12-step interventions, and will have non-academic staff providing treatment (Proudfoot et al., 2003). In contrast, psychiatric services traditionally operate within a medical model of disease and illness, using more tertiary-trained staff, and focussing on medication to treat disorders (Proudfoot et al., 2003). AOD use within mental health settings can be regarded as a form of self-medicating symptoms of the mental health condition, often going undiagnosed and/or overlooked (Weiss & Najavatis, 1998). The converse is often true regarding mental health symptoms in AOD treatment services. As Osher and Kofoed (1989) explain, these differences could lead to reduced compliance with either or both treatments, given the potential for conflicting messages to be received by clients who will often find treatment strategies and information difficult to reconcile.

In Australia, sequential treatment of comorbid depression and AOD use disorder by segregated treatment services frequently inhibits collaboration and integration between services (Anderson, 2003). For example, a study by Kavanagh et al. (2000)
indicated that among 492 mental health and AOD treatment staff, 73% reported substantial difficulty in organising joint case conferences for clients with comorbid depression and AOD use problems across services, and 60% questioned the appropriateness of mental health or AOD treatment for these clients. A further 55% reported significant problems in case management and duty of care, in terms of which service was required to take responsibility for the management of people with comorbid depression and AOD use. In particular, AOD clinicians reported significant difficulty with rejection of people with comorbid depression and AOD use by mental health services (74%), and problems in accessing assessment and treatment services for these clients within mental health services for mental health symptoms across the range of severities of depression.

The eligibility criteria or service orientation can also limit access to available evidence-based treatment for people with comorbid depression and AOD use problems. For example, upon presentation to mental health services, people with acute comorbid AOD use issues may be refused entry to mental health programs, with the advice to seek treatment for their AOD misuse problem before mental health treatment can be offered (Proudfoot et al., 2003). This is particularly the case for comorbid depression and AOD use disorders, an approach supported by the World Health Organisation, which suggests a treatment algorithm for depression that starts with treatment targeted at the AOD use problem prior to the depressive symptoms (Treatment Protocol Project, TPP, 2000). In practice, however, even following completion of AOD treatment, any remaining depressive symptoms are unlikely to receive subsequent
treatment from mental health services in Australia, unless it is in a severe or acute phase of illness (Kavanagh et al., 2000; Proudfoot et al., 2003). The most likely scenario is that people with depression and AOD use comorbidity will receive treatment for their AOD use problem but not often for their depressive condition, over and above medication, despite often high levels of severity of symptoms (Havassy et al., 2004).

2.2.2 Simultaneous treatment approaches to comorbid problems

A more recent model of care for people experiencing both mental disorder and AOD use problems has been to consider providing concurrent treatment for both conditions. Simultaneous treatment is recommended for people with depression and AOD use comorbidity, given that more extensive intervention targeted at these issues may be required in order to produce longer-term gains (Kavanagh et al., 2003). The two methods of offering concurrent comorbidity treatment are parallel and integrated models.

2.2.2.1 Parallel treatments

Parallel treatment of comorbid conditions involves simultaneous treatment of mental health and AOD, provided by staff in separate service settings (Proudfoot et al., 2003; Weiss & Najavatis, 1998). Parallel treatment models provide some advantages over sequential approaches, as comorbid issues can be addressed within the same
treatment plan (Osher & Kofoed, 1989). While evidence exists to suggest that parallel approaches are not appropriate for people with psychosis and AOD use comorbidity (Mueser et al., 2003; Proudfoot et al., 2003), the absence of a body of literature about the use of parallel treatments for people with comorbid depressive conditions and AOD misuse means that similar conclusions cannot yet be drawn (Kavanagh et al., 2003).

As Westermeyer (2003) explains, addressing both depression and AOD use disorders during the same treatment occasion may be preferable to a single-focussed treatment, although very little evidence currently exists to support this suggestion for depression and AOD use comorbidity. In one naturalistic study of treatment access, Charney, Paraherakis and Gill (2001) compared 43 people with comorbid depression and AOD use disorders with an AOD use-only group (n=77), all of whom received treatment targeted at the single AOD use disorder. Participants equally had access to outpatient detoxification, two group therapy sessions per week, psychiatric consultations and at least four individual therapy sessions (motivational interviewing) over a six-month period (Charney et al., 2001). Results indicated that both the depressed and non-depressed participants reduced their levels of AOD use, but no impact on depressive symptoms was noted over a six-month follow-up period. This is despite those participants in the comorbid depression group accessing psychiatric appointments more often than their AOD-use-only counterparts (Charney et al., 2001). It may be that instead of providing people with comorbid depression and AOD use problems access to additional treatments for their co-occurring conditions, an integrated
treatment that combines mental health and AOD treatment strategies may be required (Charney et al., 2001).

A parallel approach to treatment of comorbid mental and AOD use disorder places the onus on the client to assimilate and integrate information, treatment strategies and understanding about their conditions (Drake, Bartels, Teague, Noordsy, & Clark, 1993). As with sequential treatments, parallel approaches can also be difficult to co-ordinate effectively between two separate services, potentially resulting in increased costs of providing treatment and greater risks for client non-compliance and confusion about treatment (Minkoff, 1989). As described in the previous section, the potential for discordant treatment for comorbidity to impact client outcomes is a concern, and indicates the need to consider co-ordinated treatment approaches for comorbid conditions.

2.2.2.2 Integrated treatments

The notion of integrated treatment was developed in response to the difficulties and challenges posed by sequential and parallel approaches (Proudfoot et al., 2003; Woody, 1996). In particular, integrating treatments for comorbid depression and AOD use problems can potentially overcome the complications in establishing primary and secondary disorders, and treatment can use strategies from both fields to address and relieve current distress within the client (Charney, Paraherakis, Negrete, & Gill, 1998).
The definition of an integrated treatment will vary between settings and studies. For example, many studies have investigated the benefits of integrating psychological approaches with medication regimes to more comprehensively target a single condition such as depression (e.g. Stein et al., 2004b, see Chapter 4). In Stein et al. (2004b), treatment focussed on depression among a sample of injecting drug users, and results suggested that this integrated approach has many advantages, as the psychological treatment potentially counteracted some of the perceived negative aspects of antidepressant medication, and vice versa.

In a different way, integrated treatment can refer to treatment that is offered by the one clinician, simultaneously targeting co-occurring depression and AOD use conditions, using techniques drawn from evidence-based treatment approaches across mental health and AOD use domains. This “clinical” integration of treatment for comorbidity is in contrast to other forms of integration that might occur at the level of the service or organisation that does not necessarily specify a particular, defined clinical approach to treatment (Drake, Mueser, Brunette, & McHugo, 2004). Kavanagh and colleagues (2003) suggest that clinically integrated treatments may provide superior outcomes to parallel or sequential approaches, as treatment can additionally target the mutual relationship between conditions in a meaningful, consistent way, potentially encouraging the client to develop better management skills for both conditions. However, to date, clinically integrated treatments have not been sufficiently developed or tested among people with depression and AOD use comorbidity.
Integrated treatments can more easily be tailored to the particular needs of the client with comorbid depression and AOD use problems, targeting areas of high distress and priority as they identify, addressing both acute and non-acute symptoms (Ries, 1993). In addition, integrating treatments in the manner defined above provides clients with a coherent treatment plan that can arguably be delivered in a manner that is cost- and time-effective for service providers and clients themselves (Drake, Mercer-McFadden, Mueser, McHugo, & Bond, 1998).

This approach to integrated treatment for comorbidity, is supported by several authors. For example, Martino, Carroll, Kostas, Perkins and Rounsaville (2002) recommended that among a population with comorbid psychosis and AOD use disorders, an integrated approach to motivational interviewing be taken, incorporating dual foci on AOD use problems and mental health conditions. Motivational interviewing seems central to an integrated treatment approach to comorbid problems, given people may be at different stages of readiness to change their AOD use and mental health conditions (Drake et al., 1998). Cognitive behaviour therapy (CBT) may also be potentially a useful strategy when considering integrating treatment approaches for comorbid problems, as it provides a framework for incorporating multiple techniques that target particular symptoms and/or aspects of distress and dysfunction (Kendall, Kortlander, Chansky, & Brady, 1992). Miller and Brown (1997) report that there are no treatment strategies particular to either AOD use treatment and/or depression that could not be applied in the treatment of these conditions as they co-occur. Myrick and Brady (2003) further suggest that it is particularly important to
emphasise non-pharmacological treatments for people with depression and AOD use comorbidity, with a view to teaching self-regulation of moods and AOD use and avoiding problematic interactions between medications and AOD use.

2.3.3 Accessible Treatment Models

In Australia, the National Survey of Mental Health and Well Being (NSMHWB) revealed that 62% of people with mental illness do not seek any professional help for their condition (Andrews, Hall, Teesson, & Henderson, 1997). Inability to access treatment could be related to a number of issues, including service-level variables, as discussed above. Additionally, as with physical disorders, there will never be sufficient funds to cater to the needs and wants of all people with mental disorders (Teesson & Proudfoot, 2003). Yet the level of disablement and burden to society attributed to comorbid mental health and substance use problems is considerably more than the proportion of government spending allocated to treatment for these conditions (Teesson & Proudfoot, 2003). It may be that existing professionals are thus limited in their capacities to respond to the increased need for their services, as indicated in the NSMHWB, where “psychologists” and “other health professionals” saw only 16% of people with mental disorders (Andrews et al., 1997). Clearly, existing services within the public health system are under-resourced and over-committed in response to an increasing demand for mental health and AOD treatment.

In lieu of adequate resources being directed toward this problem, primary care settings are frequently being accessed for treatment of more common mental health conditions.
such as depression and AOD use. As Hickie, Davenport, Naismith and Scott (2001) report, 29% of people with mental health problems use general practitioners (GPs) for mental health care. Strategies such as the BeyondBlue national depression initiative and the Better Outcomes in Mental Health Care scheme have been implemented in recognition of this situation (Hickie, 2002; Hickie, Koschera, Davenport, Naismith, & Scott, 2001), and seek to provide GPs with training and support to deliver cognitive behaviour therapy (CBT) and other treatments within their regular practice. However, the time commitment required by GPs to develop and implement CBT and other psychological skills often exceeds their available resources, and mental health services are not readily accessible for referrals (ten Have, de Graaf, Vollebergh, & Beekman, 2003). Taken together, the ability of people with depression, particularly depression that co-occurs with an AOD use problem is severely restricted. Further, evidence-based psychological treatments, which are often preferred and can be significantly more cost-effective than pharmacotherapy, are very difficult to access (Schoenbaum, 2001).

In addition to service barriers, individuals with comorbid depression and AOD use disorders will experience a range of individual, economic and community-level barriers to accessing treatment for their conditions (Anderson, 2003; Robertson & Donnermeyer, 1997). People may be geographically isolated, where services are limited, access to public transport restricted or unavailable and costs associated with travel high (Kavanagh et al., 2000; Robertson & Donnermeyer, 1997). People may experience financial disadvantage and are unable to pay for psychological and other
available treatment services, whether within these isolated areas or urban centres. In addition, attitudinal barriers to treatment for depression or AOD use problems may override the perceived need for treatment even if it was available and readily accessible (Booth, Kirchner, Fortney, Ross, & Rost, 2000; Robertson & Donnermeyer, 1997). For example, the social and personal stigma associated with the diagnosis of a mental health or AOD use problem, along with concerns about the ineffectiveness of treatments, may make many individuals unlikely to regard their symptoms as serious enough to warrant intervention. The need to develop appropriate, evidence based treatments that are well accepted by these communities is clear (Booth et al., 2000; Metsch & McCoy, 1999; Paykel, Abbott, Jenkins, Brugha, & Meltzer, 2000).

Approximately two-thirds (n=924/1422, 65%) of the people meeting criteria for a mental health problem in the NSMHWB did not perceive the need for treatment, preferring to manage on their own (Andrews, Issakidis, & Carter, 2001b). Of these, the majority were classed as having comorbid conditions. Given the disability reported by these people in terms of days out of role in the previous month, the authors prioritised this particular group as targets for treatment. However, given their lack of perceived need for treatment, it was suggested that web-based self-help approaches may be most appropriate, as these can be made widely accessible and are flexible enough to be used as deemed necessary by the individual themselves (Andrews et al., 2001b).

Given these access issues, particularly for evidence-based psychological treatment for comorbid depression and AOD use problems, methods of improving the accessibility
of efficacious treatments are of vital importance. Service providers and researchers alike are therefore examining ways to improve access to, and acceptability of, treatment. The importance of this issue is highlighted by Commonwealth and State health departments in Australia, which are prioritising improved access to services in policy documentation (NSWHealth, 2000).

2.2.3.1 Alternative modes of delivery of comorbidity treatment

There is evidence that alternative modes of treatment delivery can be effective, particularly for highly structured therapies such as CBT. For example, 50 participants with depression reported treatment gains after a cognitive bibliotherapy group, which were maintained over three years of follow-up (Smith, Floyd, & Jamison, 1997). The authors asserted that bibliotherapy had advantages over therapist-delivered interventions, being more readily accessible for periodic booster treatments. The bibliotherapy provided in this study was re-consulted by 50% of the participants over the three-year follow-up period. In the AOD treatment arena, a correspondence-based CBT program for problematic drinking produced a 50% reduction in alcohol use over a 12-month period (Kavanagh, Sitharthan, & Sayer, 1996; Sitharthan, Kavanagh, & Sayer, 1996). In addition, research has suggested that approaches such as bibliotherapy may be preferred for people with alcohol use problems, who may be reluctant to seek treatment given stigma or other adverse consequences associated with admitting to an alcohol use problem (Duckert, 1988).
While these results are encouraging, bibliotherapy has yet to be compared to other standard treatments for depression/AOD use, nor has it been used among treatment-seeking populations or those with more severe levels of symptomatology (Jorm, Christensen, Griffiths, & Rodgers, 2002). In addition, no published studies currently exist to test the use of these alternative modes of treatment for people with coexisting mental health and drug and alcohol use problems.

The advent of the technological age has led to the application of computers in many settings, including the use of computers in therapy. Computer-based therapy is a relatively new field, but it has the potential to make a vast impact on treatment by significantly improving access to resources among individuals suffering with conditions like depression and AOD occurring comorbidly and in isolation of each other. In addition, population surveys reveal that, in Australia, 66% of households in 2003 had access to a computer at home, with just over half of the population reporting access to the internet at home (ABS, 2005). These rates of computer and internet access are comparable to other countries, including the United Kingdom (UK), United States (USA), Canada and Japan, and are only expected to increase (ABS, 2005). In light of this, computers and the Internet offer a potential solution to the barriers facing individuals in accessing psychological information and treatments for coexisting mental health and AOD use problems (Tate & Zabinski, 2004). Computer-based therapy is hypothesised to have the advantages of bibliotherapy, and also to be more interactive and engaging, important components in treatment retention and satisfaction (Gourlay, Lun, Lee, & Tay, 2000). Further, the ease of use and availability of
computers and the Internet make for an attractive alternative to face-to-face treatments, and could improve on results seen in trials of other treatment platforms (Copeland & Martin, 2004).

Very few controlled trials have examined the use of computerised treatments for mental health or AOD use problems. However, the preliminary evidence from these studies suggests potential benefits of computer-based treatments (Copeland & Martin, 2004; Kypri, Sitharthan, Cunningham, Kavanagh, & Dean, in submission). CBT has been adapted for delivery via computer programs and/or the Internet for the following conditions: anxiety (White, Jones, & McGarry, 2000); panic (Carlbring, Westling, Ljungstrand, Ekselius, & Andersson, 2001); agoraphobia (Ghosh & Marks, 1987); smoking cessation (Hilton, 1999; Shiffman, Paty, Rohay, Di Marino, & Gitchell, 2001); and eating disorders (Kerwin, in press, January 2005). However, very few computerised or Internet-based interventions exist for substances other than alcohol or nicotine (Copeland & Martin, 2004), and none have been developed or tested for more severe mental illnesses, such as current severe depression, current heavy/problematic AOD use, suicidal depression etc. In addition, no published studies report on the use of this technology for people with coexisting mental health and AOD use problems. One reason for this may be the perception that computerised therapy may be most appropriate for people experiencing mild levels of distress (Tate & Zabinski, 2004).

The National Institute for Clinical Excellence in the UK suggests that computerised CBT may be of value in clinical settings, especially in managing conditions such as
anxiety and depression (NICE, 2002). However, treatment would need to encompass the comorbidities with which people experiencing depression (and anxiety) commonly encounter. The community is also becoming increasingly open to the idea of using computers to facilitate health care delivery. For example, in a study by Graham and colleagues in the UK, 91% of survey respondents felt they wanted to access psychotherapy via a computer system (Graham, Franses, Kenwright, & Marks, 2001).

A danger with the rapid expansion of this area however, is that the use of technology for therapeutic purposes may be ahead of knowledge about its impact. It is therefore important that research is conducted so that we can test the strengths and limitations of this approach, to ensure that future implementation of computer-therapy is informed by empirical findings. Except for one small study, existing data from studies of computer-based therapy do not provide evidence of its efficacy relative to therapist-delivered equivalents nor to other acceptable control conditions. In addition, no studies have targeted the large and important group of people with comorbid depression and AOD use problems.

2.3 Specific Treatment Approaches for Comorbid Depression and Alcohol/Other Drug Use Problems

In addition to the lack of evidence to suggest the most appropriate model for treatment of depression and AOD use comorbidity, no clear protocol currently exists to suggest what the most effective content of treatment is for these conditions. Several experts have recommended that treatments for depression or AOD use problems occurring in isolation of each other be considered for application to people with these comorbid
problems (Hall, 1996; Hasin et al., 1996). A review of the evidence for effective treatments for AOD use problems by the American Psychiatric Association (APA, 1995) recommended the use of a range of approaches with moderate to substantial clinical confidence, based on the results of randomised controlled trials and other evidence. These included psychosocial treatments such as CBT, brief interventions, behavioural therapies and group therapies, along with pharmacological treatments to reduce cravings or that target a comorbid psychiatric condition.

Similar approaches are effective in managing depression. For example, Nemeroff and Schatzberg (1998) report that the effective treatment of depression with antidepressant medication is well established, and Craighead, Craighead and Ilardi (1998) reveal that CBT, behavioural therapies and interpersonal approaches each have documented evidence for reducing depressive symptomatology. The use of antidepressant medication and psychological approaches is recommended with substantial clinical confidence by the American Psychiatric Association as effective approaches in treating depressive conditions (APA, 2000). With the exception of the research described below, these strategies have rarely been examined among comorbid groups.

2.3.1 Pharmacological treatment approaches to comorbidity

There is a paucity of research examining the use of pharmacotherapy among people with coexisting depression and AOD use problems, despite their high rates of co-occurrence and difficulties with management (Pettinati, 2004). While there is an abundance of research into the use of antidepressants for people with depression, this
research has generally excluded people with coexisting conditions such as AOD use problems (Rounsaville, 2004). The same is true for studies on the pharmacotherapy for AOD use problems, and a clear medication strategy for this subgroup has not been developed nor properly tested. Typically, as reported by the Depression and Bipolar Support Alliance (DBSA, 2004), the pharmacological treatment of depression and coexisting AOD use problems is based on medication regimes used among people with either condition.

2.3.1.1 Antidepressant therapy

The American Psychiatric Association (APA, 2000) recommend the following antidepressant medications as the most effective in treating depressive disorders, considering side effect profiles, cost, and available evidence: selective serotonin-reuptake inhibitors (SSRIs), desipramine (a tricyclic antidepressant, TCA), nortriptyline (TCA), bupropion and venlafaxine. However, very little is known about the performance of these medications among people with comorbid problems.

In total, four trials have compared antidepressants with a placebo among people with coexisting depression and alcohol dependence in an outpatient setting. Results indicated that TCAs and SSRIs (e.g. sertraline) reduce levels of depression relative to placebo among this population (McGrath, Nunes, & Quitkin, 1999; Moak et al., 2003; Pettinati, 2000; Roy, 1998). Antidepressants had no detectable effect on alcohol use outcomes.
Similar results were found for the use of antidepressants among people with coexisting depression and cocaine or opiate dependence. Imipramine (a TCA) and sertraline reduced depressive symptoms among this group, but did not affect levels of AOD use (Nunes, Sullivan, & Levin, 2004; Rounsaville, 2004). Fluoxetine (an SSRI) was also compared with placebo among a sample of 22 depressed people with comorbid alcohol and cannabis abuse (Cornelius et al., 1997). Results indicated that the antidepressant produced superior outcomes for marijuana use relative to placebo, with the placebo group reporting 20 times the rate of cannabis use as the active treatment group. In contrast, Schmitz and colleagues compared fluoxetine with placebo among a sample of 68 people with comorbid depression and cocaine dependence (Schmitz et al., 2001). Each study condition also received 24 sessions of CBT aimed at reducing cocaine use and depression. No significant effect of the medication was detected relative to placebo, and both study groups reported reductions in levels of depression over a six-week period.

Similarly, Dean and colleagues (2002) examined the benefits of fluoxetine relative to a placebo among 49 participants with current depressive symptoms who were enrolled in methadone maintenance therapy for heroin dependence. Results indicated there was no additional benefit of fluoxetine on levels of depression, or social or general functioning compared with placebo.

As Nunes and Quitkin (1997) report, much of the available literature is inconclusive about the relative benefits of antidepressant therapy to treat depression occurring in the context of AOD abuse or dependence. Traditionally, antidepressants are not
recommended prior to the emergence of depressive symptoms during a period of abstinence from substances (Pettinati, 2004). This approach is based on the assumption that secondary depressive symptoms will remit during a period of abstinence, and thus not require specific treatment. However, evidence suggests this is not always the case, and ‘secondary’ depression is often clinically identical to ‘primary’ depressive conditions, particularly for chronic AOD users with high level drug-related problems (Pettinati, 2004). In addition, modern approaches to treatment for AOD use problems tend to occur in outpatient settings (McLellan & Meyers, 2004), where abstinence is more difficult to maintain, given access to substances, immersion in high-risk situations, and tendencies for poor treatment compliance (Pettinati, 2004). Thus, clinicians are increasingly required to make decisions about commencing antidepressant medication without the desired information about symptom patterns during periods of abstinence.

2.3.1.2 Pharmacotherapy for alcohol/other drug use

Pharmacological treatment of AOD use is employed to assist in the management of withdrawal symptoms and to encourage abstinence by preventing cravings (Hulse, White, & Conigrave, 2002). Pharmacotherapy has been sufficiently tested for three drug types: alcohol, opiates and nicotine, and rarely have these schedules been trialled among people with comorbid issues (Kosten & Kosten, 2004). All other drug types, including stimulants and cannabis, have no approved pharmacotherapy regimen, regardless of comorbid issues (Kosten & Kosten, 2004). Pharmacotherapy for alcohol, opiate and tobacco dependence is briefly reviewed below.
2.3.1.2.1 Alcohol

Berglund (2003) reports that naltrexone, acamprosate (Campral) and disulfiram (Antabuse) have shown benefits in treating alcohol use problems over the short-term, if combined with a psychological intervention. The American Psychiatric Association (APA, 1995) suggests that naltrexone in particular, if combined with coping skills training, is useful in preventing relapse to alcohol use.

Naltrexone is an anti-craving drug that acts on the brain’s opiate receptors and reduces the likelihood of relapse to alcohol dependence (Shand, Gates, Fawcett, & Mattick, 2003). One study has examined the effectiveness of naltrexone among people with coexisting depression and alcohol/other drug use problems. Results indicated that at post-treatment levels of depression were higher for those taking naltrexone relative to the placebo group (Latt, Jurd, Houseman, & Wutzke, 2002). However, in the absence of additional studies to confirm this finding, this result should be interpreted with caution.

Acamprosate is thought to reduce drinking by moderating the brain’s response to withdrawal from alcohol. In their review of the available evidence, Shand et al. (2003) suggest that people who are moderately to severely alcohol dependent and medically stable may be most suitable for acamprosate therapy, provided they are also willing to comply fully with the medication regimen and engage in regular counselling with a health care worker or support group. Again, there are no data to indicate how well
acamprosate performs among people with coexisting depression and AOD use problems. In addition, acamprosate is commenced once abstinence from alcohol is achieved (Ritson, 2005), necessitating engagement in psychological/other therapies to assist the person in reaching this goal.

There is less evidence for the use of disulfiram among people with alcohol dependence than there is for naltrexone and acamprosate. Disulfiram works by interacting with alcohol to create an intensely aversive reaction when alcohol is consumed (Shand et al., 2003). To date, the American Psychiatric Association (APA, 1995) reports that disulfiram is no more effective than placebo in promoting abstinence, preventing relapse or improving social stability. However, when combined with regular supervision and psychological intervention, disulfiram has shown some benefits. Notwithstanding these benefits, disulfiram interferes with the metabolism of many other medications, including tricyclic antidepressants, so contraindications or precautions are necessary in these situations (APA, 1995; Ritson, 2005). In addition, it should not be given to people who are suicidal or depressed, as disulfiram, which affects the dopamine system in the brain, may lead to an exacerbation in these symptoms (Lopatko et al., 2002; Ritson, 2005).

2.3.1.2.2 Opiates

Two main pharmacotherapies are recommended for use among people with opiate dependence: methadone maintenance treatment (MMT) and buprenorphine (Ritter, 2002). Other forms of pharmacological treatment for opiate dependence include levo-
alpha-acetylmethadol (LAAM) and naltrexone (Mattick, Oliphant, Ward, & Hall, 1988). Of these, MMT is the most thoroughly studied and widely used treatment (Mattick, Kimber, Breen, & Davoli, 2003). However, in very few cases have these therapies been directly tested among people with depression and heroin or other opiate use problems.

MMT aims to stabilise people on a maintenance dose and is substituted for heroin/other opiates the person has been using, thereby suppressing opiate cravings and additional opiate use (APA, 1995; Mattick et al., 1988; Ritter, 2002). In addition, methadone programs also aim to engage people in group- or individual-supportive therapies to reduce dependence and use of other substances. Methadone is effective in decreasing the psychosocial and medical problems associated with problematic opiate use (e.g. heroin), including criminality (APA, 1995).

In a review of the moderators of treatment outcome among people on MMT, Darke (1998) revealed that depression among people on methadone is highly prevalent and that methadone has been associated with a reduction in depressive symptoms and psychiatric distress. This is more marked when MMT is combined with psychotherapy. The mechanism underlying the association between MMT and reduction in depression is not known, however Ward, Mattick and Hall (1998) suggest that it may be due to factors such as stabilisation of lifestyle that occur as a function of engagement with a methadone maintenance program.
Buprenorphine is an alternative treatment for opioid dependence (APA, 1995), and like MMT provides people with a pharmaceutical opioid that substitutes for use of other opiates (Mattick et al., 1988). An important benefit of buprenorphine is that it is safer in overdose than MMT, and has less potential for abuse (Mattick et al., 1988). In a recent Cochrane review of buprenorphine therapy, Gowing, Ali and White (2004) suggest that it has similar efficacy to MMT, but additional effectiveness research is required. Buprenorphine has also been associated with a reduction in depressive symptoms (Neri et al., 2005), but it has not yet been systematically evaluated using people with opiate dependence and histories of depression and/or current depressive symptoms.

2.3.1.2.3 Tobacco

It has been suggested that cigarette smoking causes neurochemical changes in the brain that contribute to the development of depression (Dierker, Avenevoli, Stolar, & Merikangas, 2002). As such, researchers have examined the use of pharmacological treatments, such as nicotine replacement therapy (NRT) and antidepressant medication with a view to improving outcomes for people with comorbid depression and nicotine dependence.

Of the four available forms of NRT (gum, patches, inhalers and sprays), nicotine gum has been the most extensively examined among people with depression and tobacco dependence (Kinnunen, Henning, & Nordstrom, 1999). For example, Kinnunen and colleagues combined brief behavioural counselling with either nicotine or placebo gum
and monitored 608 smokers over a 12-month period, one-third of whom met criteria for depression (Kinnunen, Doherty, Militello, & Garvey, 1996). Rates of abstinence at 12-months were 15.1% for the depressed nicotine gum group, and 5.7% for the depressed placebo group. In addition, levels of depression decreased significantly for those depressed smokers assigned to the nicotine gum condition (Kinnunen et al., 1996). The authors suggested that the mechanism underlying this change was the ability of NRT (when combined with behavioural counselling) to suppress withdrawal symptoms (Kinnunen et al., 1996).

Antidepressant medications have recently been applied to smoking cessation treatments to encourage a reduction in cigarette consumption (Wilhelm, Wedgewood, Niven, & Kay-Lambkin, in press, March 2005). For example, fluoxetine has been prescribed in two studies in the two to three weeks prior to quitting (Borelli et al., 1996; Dalack, Glassman, Rivelli, Covey, & Stetner, 1994). Results indicated that the addition of fluoxetine had no effect on rates of abstinence among either sample, but was associated with significant reductions in depression, anger and tension following the cessation date, relative to placebo (Dalack et al., 1994).

In the first study to examine the use of bupropion for smoking cessation among 137 heavy smokers with a history of depression, Sanderson et al. (2004) reported that bupropion used over a 12-month period was effective in delaying relapse to smoking among this comorbid group. Of note is that the sample had low levels of current depression (less than 9 on the Beck Depression Inventory II, Beck, Steer, & Brown,
However, this result is encouraging and the approach worthy of closer research attention (Sanderson et al., 2004).

2.3.1.3 Summary

Pharmacotherapy is most successful when people are motivated to change and willing to comply with their prescribed medication regime, and is commonly indicated for people who are using alcohol/other drugs at the severe end of the spectrum (APA, 1995; Shand et al., 2003). The same is true for severe levels of depressive symptomatology, including high levels of suicidal ideation (McGrath et al., 1999). Many forms of pharmacotherapy require the person to be abstinent from alcohol/other drugs in order to minimise drug interactions and potential complications (Ritson, 2005). In these cases, some form of psychological treatment may be a necessary precursor to assist the person achieve abstinence.

A review of psychosocial and pharmacological treatments for AOD use problems suggested that outcomes are enhanced by combining pharmacological and psychological treatment approaches (Carroll, 1997). In the few studies that have compared active medication to placebo among a group with coexisting depression and AOD use problems, psychological treatment has been provided in all treatment conditions (Kosten & Kosten, 2004). This approach suggests some consensus among researchers that psychological strategies, most notably cognitive behaviour therapy (CBT), are an effective component of intervention with this population (Rounsaville, 2004). Furthermore, Rittson (2005) explains that pharmacotherapy should always
occur within the context of psychological support and intensive non-pharmacological treatment programs to promote improvements in lifestyle, thinking and coping strategies, leading to longer-term change and the prevention of relapse.

2.3.2 Psychological Treatment Approaches

Psychological interventions, which allow the exploration of links between disorders, are of likely benefit to people with comorbid conditions, and are worthy of closer development and testing, in light of the potential for interactions between AOD use and pharmacotherapy (Nunes & Quitkin, 1997). In general, research on the most appropriate psychological treatment approaches for comorbid conditions is sparse, with no gold-standard effective treatment being established to date (Kavanagh et al., 2003).

Psychological treatment may be offered in an individual- or group-based format. However, it may be that group-based treatments are not suitable for everyone with comorbid mental and AOD use disorders (NSWHealth, 2000). For example, in a qualitative study among 18 people with co-occurring schizophrenia and AOD use disorders, individual therapy was considered one of the most important factors in assisting people to modify their AOD use (Maisto, Carey, Carey, Purnine, & Barnes, 1999). This was particularly the case when people also learned ways to keep themselves busy, modified their social environment to reduce contact with alcohol/other drugs, found ways to manage acute negative experiences, or used faith, prayer or meditation.
The provisional consensus among comorbidity experts is generally that motivational interventions may enhance a sense of control over substances (Proudfoot et al., 2003), and that CBT might also help to mobilise and build skills to bring about and maintain change in both depression and AOD use. However, few studies have been conducted with clinically relevant populations, such as among people with comorbid depression and AOD use problems. Consequently, the generalisability of the existing evidence for motivational approaches and CBT is open to question (Hollon, Shelton, & David, 1993). The small body of evidence for motivational interventions and CBT, as they have been applied to people with comorbid problems, is described below.

2.3.2.1 Motivational Interventions

Brief motivational interventions have been applied in inpatient and outpatient contexts, and by practitioners with little formal clinical (psychological) training. If shown to be effective, brief motivational interventions could therefore be used by a variety of treatment providers in medical, public health, mental health and/or AOD settings.

Typically, brief motivational interventions are of between one and four-sessions in duration, in addition to assessment (Babor, 1994; Carroll, 2004). This specific treatment strategy could be particularly effective in increasing treatment engagement and adherence for people with comorbid mental and AOD use disorders (Handmaker, Packard, & Conforti, 2002). In a review of the alcohol treatment literature, Miller and
Willbourne (2002) revealed that brief interventions, particularly those that emphasise the mobilisation of self-management skills and enhance motivation to change, were among the best approaches in treating alcohol use disorders. However, the application of motivational interviewing to people with depression and comorbid AOD use problems has not yet been fully tested (Handmaker et al., 2002; Miller, Yahne, & Tonigan, 2003).

As Miller, Yahne and Tonigan (2003) explain, motivational interviewing is based on the stages of change model, developed by Prochaska and DiClemente (1982). This model suggests that people will progress through a series of five stages in deciding and acting upon a plan to change a particular behaviour. These stages include: (i) precontemplation, (ii) contemplation, (iii) preparation, (iv) action, and (v) maintenance, each characterised by the balance between the benefits/losses of maintaining current behaviour versus the benefits/losses of changing that behaviour. For people in the earlier stages of change, the balance tends to favour no change to current behaviour. As the benefits/losses of staying the same are outweighed by the benefits/losses of changing, the person progresses through to the later stages of action and maintenance. Movement through these stages is not always linear, and people may shift backwards and forwards through each stage before eventually reaching the point where they can maintain the change in behaviour. Motivational interviewing can be used to help tip the balance of benefits and losses in favour of reducing/quititng alcohol use (Miller et al., 2003). Each stage of change has a range of motivational strategies for the clinician to implement, that are matched to the wants, needs and
attitudes of clients within that stage (Ziedonis & Trudeau, 1997). In this way, motivational interviewing seeks to promote engagement, minimise resistance and defensiveness, and encourage behaviour change.

Although motivational interviewing was originally developed in 1983 in the context of treatment for problematic alcohol use, it is not limited to the AOD arena and can be used to enhance motivation to change for virtually any health-related behaviour (Baker & Hambridge, 2002; Miller & Rollnick, 1991; Rollnick, Mason, & Butler, 1999). However, it was not until recently that researchers have begun to apply motivational interviewing techniques in studies of treatment for comorbid mental health and AOD use problems, including among some people with low mood, either as a stand alone treatment or to enhance engagement and participation in more intensive treatment programs (Baker & Hambridge, 2002; Rollnick et al., 1999).

2.3.2.1.1 Motivational interviewing to increase engagement

Several studies have investigated the effectiveness of motivational interviewing among people with psychosis and AOD use problems (e.g. Carey, Carey, Maisto, & Purnine, 2002; Kavanagh et al., 2004). Although based on small sample sizes (i.e. around 20 participants), these studies indicate that, at least over the short term, motivational interviewing is feasible, accepted well by participants, and can produce improvements in AOD use outcomes.
Little research of this kind has included people with depression and AOD use comorbidity. In one study among psychiatric outpatients (50% with a mood disorder), Humfress and colleagues (2002) recruited 90 participants, around 2% of whom were diagnosed with a “primary” AOD misuse disorder. Participants were randomised to receive usual care versus usual care supplemented by a personal feedback letter, which used motivational interviewing techniques designed to improve attitudes to and compliance with treatment. Results indicated that those participants who received the feedback letter reported increased feelings of satisfaction with care provided, and higher levels of motivation to work on their identified problems. Given 2% of the study sample (n=2/90) reported comorbid AOD use with their mental disorder, the impact of this approach to treatment among a comorbid population remains unclear.

Swanson, Pantalon and Cohen (1999) examined 93 people with comorbid mental health (58% psychotic disorders, 54% affective disorders) and AOD use problems presenting for admission to a psychiatric inpatient facility. Detailed mental health and AOD use assessments were completed, before participants were randomly assigned to the study conditions. Half the sample was provided with one 15-minute session based on feedback from a pre-admission assessment, followed by a 1-hour motivational interview one or two days prior to discharge. The remainder of the sample received treatment as usual. Results indicated that the brief intervention significantly increased attendance at outpatient psychiatric treatment programs (double the rate of the no-treatment control group), regardless of the mental health condition.
Martino and colleagues delivered one session (45-60 minutes) of motivational interviewing to 12 inpatients (around 50% with depression) prior to admission to a hospital day program for comorbid mental health and alcohol/other drug use problems (Martino, Carroll, O'Malley, & Rounsaville, 2000). Results were compared with 11 participants who received treatment-as-usual. Those who received the intervention reported significantly improved attendance patterns at that program (such as a reduction in tardiness and early departures) relative to a no-treatment control group.

In contrast to the above two studies, Baker and colleagues recruited 160 psychiatric inpatients (37% psychosis, 29% affective disorder) with co-occurring AOD abuse or dependence and randomly assigned them to receive one-session of motivational interviewing (30-45 minutes) following an assessment of approximately 1.5-2 hours’ duration (Baker et al., 2002a; 2002b). Those who received the intervention were no more likely than their no-treatment counterparts to attend a specialist outpatient treatment program for people with comorbid problems after discharge from hospital. However, those who received the brief intervention did report significant but modest reductions on an index of polydrug use at the three-month follow-up assessment. This difference was not maintained at the six-month follow-up assessment. It is possible that the assessment was sufficient to promote change among the study participants, regardless of treatment allocation. However, Baker et al. (2002b) suggested that longer, more intensive interventions for this population should also be explored.
2.3.2.1.2 Motivational interviewing to improve outcomes

Only one study has previously included people with depression and AOD use comorbidity in a trial of motivational interviewing as a treatment strategy. Hulse and Tait (2002) recruited 120 people with alcohol use problems from local inpatient psychiatric hospitals. Seventy-five percent of the sample was experiencing affective symptoms and 14% reported psychotic symptoms. Following assessment, participants were randomised to receive motivational interviewing focussed on reduction of alcohol use or an alcohol use information package. At 6-month follow-up, those who received the brief motivational intervention reported significantly lower alcohol consumption than their counterparts. However, these differences were not maintained after five years, nor were there any differences between the groups in terms of re-hospitalisation (alcohol-related, mental health or general, Hulse & Tait, 2003). In addition, the study participants were matched to people on a state-wide health database of hospital morbidity, mental health and mortality, and outcomes were compared over a five-year period (Hulse & Tait, 2003). Data for the original study participants were combined, with this group reporting lower rates and shorter duration of hospitalisation, and a longer time between initiation into the study and first relapse (re-admission to general or mental health hospital), compared to their matched partners. This suggests that a minimal intervention, perhaps one that includes simply providing an information package about harmful alcohol use, can improve alcohol use and mental health outcomes for people with comorbid problems.
2.3.2.1.3 Motivational interviewing - summary

Brief motivational interventions have shown efficacy in improving engagement and adherence with treatment services and, in some cases, have produced short-term improvements in mental health and AOD use outcomes. However, the research described above suggests that benefits are also seen in research participants who receive control treatments, or no treatment apart from completing a thorough assessment and receiving ongoing monitoring. It is suggested that among the active ingredients of response to brief interventions is the provision of formal feedback, presented in a style that is commensurate with the client’s current stage of change, along with the positive interpersonal style associated with motivational interviewing (Zweben & Zuckoff, 2002). It may also be that level of treatment acceptance or readiness to accept help may be the determining factor in whether or not clients make changes to their life circumstances. However, as Moyer, Finney, Swearingen and Vergun (2002) suggest, brief interventions may be most appropriate for people at the mild end of the AOD using and/or depression severity spectrum, and may be best combined with more intensive, longer treatments for people with moderate to severe symptoms. The evidence to support this assertion for people with comorbid depression and AOD use problems is lacking.

2.3.2.2 Cognitive behaviour therapy

Further evidence is emerging that for some people with comorbid mental disorders and AOD use problems, more intensive and longer interventions are required to produce improvements in their symptoms and levels of AOD use (Moggi et al., 1999b).
Intensive interventions are usually regarded as being of eight or more sessions in duration (Babor, 1994), and CBT is one example.

CBT was developed by Aaron Beck in the 1960’s as a time-limited, structured treatment that combined aspects of empirically-based behavioural approaches (such as self-monitoring, pleasant events scheduling) with cognitive strategies to address the person’s perception and beliefs about their world (Beck, Rush, Shaw, & Emery, 1979). It is based on the premise that events or situations are not the cause of feelings or behaviour, rather interpretations (or thoughts/cognitions) about those events will lead to actions and emotions. When people experience mental disorders such as depression, anxiety and psychoses, their interpretation of the world and events within that world will be distorted and dysfunctional, keeping them in a cycle of distress. The overall objective of CBT is to identify and challenge these dysfunctional beliefs that maintain problematic patterns of thought and behaviour, and replace them with more adaptive beliefs (Beck et al., 1979).

CBT has the best-documented efficacy of the non-pharmacological approaches for the treatment of depression (APA, 2000) and has also been used effectively among people with AOD use disorders (Shand et al., 2003), psychotic disorders (Haddock et al., 1998; Kuipers et al., 2002) and anxiety disorders (Andrews et al., 2003). However, very little research exists that examines the effectiveness of CBT for people with these conditions as they co-occur (Modesto-Lowe & Kranzler, 1999). CBT is often rated as the most effective approach to treatment with an AOD-using population (McRae,
Budney, & Brady, 2003; Shand et al., 2003; Weisner, Matzger, & Kaskutas, 2003), has been shown to have equivalent effectiveness to pharmacotherapy, and is accepted well by people receiving this treatment (Baker & Wilson, 1985; Ellis & Smith, 2002; Grant et al., 1996). Furthermore, the benefits of CBT may extend beyond the treatment period, with research revealing that CBT can “protect” clients against relapse or recurrence after treatment termination (Hollon, Haman, & Broan, 2002; McLellan et al., 1994).

While CBT could easily be applied to comorbid issues, the question of how effective CBT is among a comorbid population is currently unclear given that the majority of existing research excludes these groups, and little research to date has focussed specifically on depression and AOD use comorbidity. This practice has obvious implications for the generalisability of results from existing CBT trials, and raises the question of how comorbid depression and alcohol use problems should be managed.

Some researchers are beginning to apply CBT treatment strategies that have shown benefits for people presenting without comorbid conditions to some groups with comorbid mental disorders and AOD use problems. This includes CBT for comorbid anxiety and alcohol use disorders (Randall, Thomas, & Thevos, 2001) and CBT for psychosis and AOD use problems (Barrowclough, Haddock, Tarrier, Moring, & Lewis, 2002). In general, these studies suggest that people with comorbid mental disorders and AOD use problems are able to participate in and respond to conventional treatment programs.
In the area of depression and AOD use comorbidity, researchers have focused on treating one of the co-occurring conditions and monitored the impact of this intervention on depression and AOD use outcomes. For example, Stein and colleagues (2004a) used CBT to treat depression among 53 injecting drug users over eight individual sessions. Pharmacotherapy was also offered for depression over a concurrent three-month period. Outcomes for these participants were compared with 56 “controls” who received usual treatment, which was a combination of follow-up assessments and referral to other agencies when indicated. Results of this study revealed that participants in the CBT condition attended an average of four individual counselling sessions and had higher rates of adherence to the CBT than the pharmacotherapy regimen (Stein et al., 2004a). In addition, both treatment and control groups reported significant reductions in depressive symptoms at three-month follow-up, but improvement was greater for those in the CBT/pharmacotherapy treatment group (Stein et al., 2004b).

In an examination of treatment for AOD use problems, 3,699 male veterans participated in a survey 12-months following discharge from an inpatient AOD abuse treatment facility (Ouimette, Finney, & Moos, 1997). Seventy-eight percent of the sample screened positive for depression on the Brief Symptom Inventory (Derogatis & Melisaratos, 1983). Following discharge, veterans could participate in either 12-step programs, CBT programs or a combination of both; each program focused on reducing AOD use and maintaining abstinence. At the 12-month follow-up assessment
veterans across each of the treatment groups reported similar reductions in AOD use and psychiatric symptoms, with no treatment producing superior outcomes. It should be noted that the content of each treatment condition was not uniform, nor was the extent to which participants accessed each treatment option over the 12-month follow-up period.

In the first treatment study to address both depression and alcohol use problems concurrently, Brown, Evans, Miller, Burgess and Mueller (1997) recruited 35 people with alcohol dependence and scores of 10 or above on the Beck Depression Inventory (BDI-II, Beck et al., 1996) to a study of treatment for depression. In addition to an inpatient treatment for alcohol dependence, participants were randomised to receive eight adjunctive individual sessions of either CBT aimed at reducing depressive symptomatology or a relaxation (control) condition. Results of this small-scale trial indicated that those who received the adjunctive CBT for depression had greater reductions in depressive symptoms, albeit on only one of the several measures of depression that were included in the study. The CBT for depression group reported greater a percentage of days abstinent and significantly better alcohol use outcomes at the six-month follow-up assessment than those who received the standard treatment. In further analyses of the data from this study, Ramsey, Brown, Stuart, Burgess and Miller (2002) revealed that the CBT group also reported improvements in managing situations involving negative mood without drinking, and an increase in negative expectancies for alcohol use following completion of treatment. These two variables were associated with reduced levels of drinking at the six-month follow-up assessment,
a result not found for the relaxation group. Further investigation of the impact of CBT among people with more severe levels of depressive symptomatology is warranted as this study focussed on people with low levels of depression (scores in the minimal range BDI-II) and suffered from several methodological flaws (e.g. small sample size, follow-up assessors not blind to treatment allocation).

2.3.2.3 *Mindfulness-based Stress Reduction*

In recent times, the application of mindfulness-based stress reduction to people experiencing depression and to those with problematic AOD use has occurred with increasing frequency (Baer, 2003). Mindfulness is a meditative practice originating in Buddhism (Linehan, 1993), and involves intentionally bringing one’s attention to a range of physical, emotional and cognitive experiences in the present moment (Segal, Williams, & Teasdale, 2002). Mindfulness training has been used as a stand-alone treatment for the prevention of relapse in depression, and for urge management and relapse prevention in AOD use treatments. In addition, mindfulness has been added to other therapies such as CBT and Dialectical Behaviour Therapy to augment the strategies taught to people with eating disorders and borderline personality disorder (Marlatt et al., 2004).

Mindfulness has never been applied to participants with comorbid depression and AOD use conditions, however mindfulness as a stand-alone treatment for depression has been evaluated in a recent randomised controlled trial among 145 participants with remitted major depression (Teasdale, Williams, Segal, Ridgeway, & Lau, 2000).
Results indicated that those with three or more previous episodes of depression reported significantly lower rates of relapse over a 12-month follow-up period relative to a no-treatment control group.

Further research conducted within the AOD field, examined a program of mindfulness meditation among a sample of prison inmates and among the general community (Marlatt et al., 2004). No alternative treatment condition was compared with the mindfulness treatment. Over the six-month follow-up, participants in both groups reported improved rates of AOD use, improved psychiatric symptomatology and improved readiness and motivation to change problematic AOD use (Teasdale et al., 2000).

2.3.3 Summary

Given the emerging evidence for the preference of psychological treatment approaches by people with comorbidity (Maisto et al., 1999), and the absence of pharmacological research that examines outcomes for people with comorbid depression and AOD use problems, the above review has focussed predominantly on the evidence for psychological treatment approaches for comorbid problems. Chambless et al. (1998) provide a framework for evaluating the evidence for psychological treatments for various conditions. Table 2.1 displays the characteristics of “well-established” and “probably efficacious” treatments according to this framework. Despite the limited evidence from which to draw recommendations for treatment of people with comorbid
depression and AOD use conditions, it is possible to apply this framework to the treatment literature reported above.

Table 2.1 Criteria for Evaluating Treatments (taken from Chambless et al., 1998)

<table>
<thead>
<tr>
<th>Well-Established Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.  At least two good between group design experiments demonstrating efficacy in one or more of the following ways:</td>
</tr>
<tr>
<td>a. Superior (statistically significantly so) to medication or psychological placebo or to another treatment.</td>
</tr>
<tr>
<td>b. Equivalent to an already established treatment in experiments with adequate sample sizes.</td>
</tr>
</tbody>
</table>

**OR**

| II. A large series of single case design experiments \(n > 9\) demonstrating efficacy. |
| These experiments must have: |
| a. Used good experimental designs; and |
| b. Compared the intervention to another treatment, as in Ia. |

**FURTHER CRITERIA FOR BOTH I AND II**

| III. Experiments must be conducted with treatment manuals. |
| IV. Characteristics of the client samples must be clearly specified. |
| V. Effects must have been demonstrated by at least two different investigators or investigating teams. |

<table>
<thead>
<tr>
<th>Probably Efficacious Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Two experiments showing the treatment is superior (statistically significantly so) to a wait-list control group.</td>
</tr>
</tbody>
</table>

**OR**

| II. One or more experiments meeting the “Well-Established” treatment criteria Ia, Ib, III, IV, but not V. |

**OR**

| III. A small series of single case design experiments \(n \geq 3\) otherwise meeting “Well-Established” treatment. |

Based on these criteria, motivational interviewing as a means to enhance engagement of people with comorbid mental disorders and AOD use problems in a treatment
program may potentially be considered well-established, with two studies reporting similarly positive, significant results compared to standard care (Martino et al., 2000; Swanson et al., 1999). However, neither of these studies focussed exclusively on depression and AOD use comorbidity, and furthermore, two studies exist that contradict these results (Baker et al., 2002b; Carey et al., 2002), one of which involved 160 participants (Baker et al., 2002b). Evidence from one study (i.e. Hulse & Tait, 2002) supports the use of motivational interviewing as a treatment to reduce alcohol/other drug use among people with psychiatric conditions. Yet, further follow-up with this study cohort indicated these gains were not maintained over a longer period (Hulse & Tait, 2003). More research is required to establish the efficacy of motivational approaches with a comorbid population, and especially among people with co-occurring depression and AOD use problems.

It may be that motivational approaches are best viewed as having short-term effects, and should be combined with a longer, more intensive program of therapy, such as CBT, in cases where improvement does not occur or is not maintained. Although CBT shows promise as a means to effect reductions in AOD use and, in some cases, depressive symptoms (Carroll, 2004), large well-controlled studies are rare and treatment in this area of comorbidity is in the very early stages of development.

Two studies have focussed on either treatment for depression or alcohol/other drug use problems among people with depression and AOD use comorbidity (Ouimette et al., 1997; Stein et al., 2004a; Stein et al., 2004b). Only one of these studies controlled for
the quality and duration of treatment, and used CBT as a treatment strategy (Stein et al., 2004a; Stein et al., 2004b). In this case, CBT in conjunction with antidepressant medication produced improvements in depression over a three-month period.

Only one study has addressed both depression and alcohol misuse among a comorbid sample, and found that CBT for depression, when added to treatment for alcohol dependence, produced superior outcomes to control therapy for one depression- and several alcohol-related outcomes (Brown et al., 1997; Ramsey et al., 2002). However, both this and the Stein et al. study (Stein et al., 2004a; Stein et al., 2004b) suffered from small sample sizes, other methodological problems, and focussed on different study populations.

Based on this review, CBT cannot be considered a well-established treatment for depression and AOD use comorbidity. However, teaching people to better regulate and manage their mood is an important factor in recovery, as is addressing their perceptions of the role of AOD use, especially as a means to coping with depressive symptoms (Mueser et al., 2003). Hence, CBT is worthy of further evaluation and research attention.

Further, no studies exist that examine the combined effect of motivational interviewing and CBT for a comorbidly depressed, AOD-using group. Currently, there are no standardised, well-tested treatments for depression and AOD use comorbidity that can
be recommended with confidence for improving outcomes (Ley, Jeffrey, McLaren, & Siegfried, 2001). Additional randomised controlled trials that target this increasingly prevalent group are needed.

A meta-analysis conducted by Baer (2003) on mindfulness training as a clinical intervention suggested that its use as a treatment strategy for depression was approaching the level of “probably efficacious” treatment. Despite its increasing use and promising results among people with depression and alcohol use occurring in isolation of each other, there currently exists no evidence for efficacy of this training among people with comorbidity.

Finally, although several studies exist examining the efficacy of computer-based and alternative modes of delivery of the above treatment strategies, they each suffer from small sample sizes, short follow-up periods and exclusion of people with current or moderate-severe symptoms. In addition, only one study has compared computer-based treatment with an alternative treatment control groups, but this was among people with mild depression. No study has examined the use of computer-based therapy among people with comorbid problems, including those with comorbid depression and AOD misuse. Consequently, the potential benefits of this approach among a highly prevalent group with limited access to existing services remains unknown.
Treatment for comorbid depression and AOD use problems remains a strongly contested issue, with suggested treatment approaches lacking an adequate evidence base to support their widespread use. The evidence presented above suggests that motivational interviewing is associated with increased engagement in treatment among people with comorbid depression and AOD use problems. However, other approaches used to treat single disorders, such as motivational interviewing for improved treatment outcomes, CBT and mindfulness techniques, do not have an adequate evidence base to indicate their benefit for people with comorbid depression and AOD use problems. In considering the implementation of these strategies to clinical practice, sequential, parallel and integrated models of treatment are suggested as potential approaches for the treatment of comorbidity. Very little evidence currently exists to indicate which treatment model is suitable for people with depression and AOD use comorbidity. Adding to the complexity is the failure of much existing research to measure the impact of depression on AOD use outcomes in a consistent manner (see Chapter 1). Therefore, it is currently not known whether the presence of depression influences treatment response. As a result, the benefits of focussing in the initial stages of treatment on a single condition (i.e. depression or AOD use) versus an integrated approach remain unclear.

In view of these issues, it is suggested that people with comorbid mental health and AOD use conditions should: (i) be included in treatment studies that test the effectiveness of treatments for either condition, and (ii) researchers should
additionally focus on developing and testing interventions specifically for people with such comorbidity (Hall, 1996; Hasin et al., 1996). Whilst most researchers and clinicians likely agree that these issues are fundamental to the better management and prognosis for people with comorbidity, they currently remain unaddressed, and this group remains largely excluded from treatment research (Proudfoot et al., 2003).

The studies reported in the following chapters will seek to address the gaps in treatment research for people with comorbid depression and AOD use problems. Additional evidence about the response of people with this comorbidity to treatments designed for single conditions will be offered (Chapter 4) and the results of an integrated model of treatment designed specifically to address the unique case of comorbid depression and AOD use problems will be reported (Chapter 5). In addition, the impact of depression on people with comorbid AOD use problems will be examined in Chapter 2.

Central to the development and testing of comorbidity-specific treatment strategies in the following chapters will be the development of accessible, evidence-based treatment programs that are relevant to the unique and complex experiences of people with coexisting depression and AOD use problems, which can be adapted to meet the needs of a large number of people facing a range of service- and individual-barriers to treatment. Therefore, Chapters 5 and 6 will address these issues by reporting on the efficacy of a computer-based integrated treatment for depression and AOD use comorbidity.
Chapter 3

The Impact of Comorbid Depression and Alcohol/Other Drug Use Problems

Studies 1 and 2

3.0 Abstract
This chapter describes two studies of people with depression and alcohol/other drug (AOD) use comorbidity, one sample drawn from AOD treatment services, the other from mental health services in Australia. Results indicated that the presence of depression among people with amphetamine use problems or comorbid psychotic and AOD use disorders was associated with significant reductions in functioning and quality of life, significantly increased psychiatric symptoms, and significantly poorer AOD use outcomes relative to those without comorbid depression. Overall, these results highlight the importance of treating depression and AOD use comorbidity when present, given the impairment experienced when depression is left untreated. Psychological treatment, targeted at depression and AOD use, may be a key approach with this population.
As outlined in Chapter 1, very little consistent information is available about the specific difficulties encountered by people experiencing comorbidity, and how this may impact on quality of life, general functioning, psychological status, alcohol/other drug (AOD) use and various demographic variables such as education, employment, finances etc. Even less is known about the impact of depression and AOD use comorbidity across these domains, despite the high rates of co-occurrence of these two conditions. Knowledge of these issues is fundamental to the development of comprehensive and effective treatment planning and delivery for this increasingly common sub-group.

Recent attention by researchers on comorbid mental disorder and AOD use problems is attempting to address this gap by assessing the impact of comorbidity on various domains of functioning. To date, evidence for the impact of comorbidity on service utilisation and other client variables has largely been based on treatment research, as opposed to epidemiological studies (Burns & Teesson, 2002). Some research has suggested that this presents real issues with generalising the results of such evidence outside of these trials, given the limits of study eligibility criteria, range of recruitment sources etc. associated with such studies (Loughland et al., 2004). Nevertheless, clinical trials can provide important information, and in particular can suggest potential mediators of relapse and response to treatment (Segal, Pearson, & Thase, 2003).

This chapter will report on two studies involving people in treatment for AOD use, drawn from mental health and/or AOD treatment settings. These studies will examine
the impact of the presence of depression at presentation for treatment on a variety of substance use, mental health and functioning outcomes.

3.1 STUDY 1

THE IMPACT OF DEPRESSION ON PEOPLE PRESENTING TO ALCOHOL/OTHER DRUG USE SERVICES FOR TREATMENT

3.1.1 Introduction

In 2001, the Commonwealth Department of Health and Ageing funded the first large-scale evaluation of cognitive behaviour therapy for regular amphetamine users across two sites in Australia (Hunter Region, NSW and Brisbane, Qld). This was in recognition of the increased use of amphetamines in Australia (Makkai, 2001) and worldwide (Klee, Wright, & Morris, 1999; Proudfoot & Teesson, 2000), and increasing concern about the range of adverse psychological outcomes associated with regular amphetamine use (Topp, Day, & Degenhardt, 2003).

Despite knowledge about the problems associated with amphetamine use and the demand for appropriate treatment programs, very little research exists that targets this sub-group of AOD users. This is true for both descriptive and treatment research, and little is known about the particular demographics, psychological characteristics and functioning of regular amphetamine users and how these variables might impact on treatment. Even less is known about the combination of amphetamine use and depression comorbidity, and the impact that this co-occurrence has on other AOD use
and mental health outcomes. This study capitalised on the Commonwealth-funded amphetamine trial, by adding depression-focussed measures into the existing assessment protocol, to address these gaps.

### 3.1.2 Aims and Hypotheses

A sub-sample of participants from the larger amphetamine trial was selected for analysis, on the basis of referral from AOD clinical services. Participants were classified according to the presence of moderate depressive symptoms, and compared on a range of demographic, psychological, AOD use and general well being measures. It was hypothesised that those participants in the comorbid depressed and AOD-using group, relative to their non-comorbid counterparts, would report:

- Lower rates of education, employment, marriage;
- Reduced psychological functioning/outcomes;
- Poorer AOD use outcomes;
- Increased service utilisation; and
- Reduced quality of life.

### 3.1.3 Methods

#### 3.1.3.1 Setting

The study was conducted across two sites: the Hunter Region of New South Wales, and Brisbane.
3.1.3.1.1 Hunter Region

The Hunter Region of New South Wales covers approximately 24,800 square kilometres of industrial, urban and rural areas of the state. The Drug and Alcohol Clinical Service (DACS) of the Hunter forms part of the area’s general health service for a population of 538,000.

DACS provides a range of clinical interventions to Hunter residents with AOD use problems across the spectrum of early intervention, brief and extended treatment programs. Services include community counselling, detoxification (hospital-based and outreach), needle and syringe programs, pharmacotherapy services, a diversional program for young people with AOD use problems and legal issues (MERIT) and general practitioner medical management programs. A central intake service acts as the point of initial contact for access to DACS, with subsequent referrals made to relevant services as appropriate.

3.1.3.1.2 Brisbane

Brisbane is the capital of Queensland, and the health district providing services to the city centres on the Royal Brisbane and Women’s Hospital. The Royal Brisbane and Women’s Hospital Health Service district services a population of over 500,000, and provides additional services to interstate and rural/remote locations, such as Northern New South Wales and the Northern Territory.
The Alcohol and Drug Service operates from Royal Brisbane and Women’s Hospital, and offers a range of inpatient and outpatient treatment programs. These include inpatient medical detoxification, 24-hour acute assessment team and a consultation-liaison service, and provides information and management options for people with AOD-related problems. The Service has firm links with psychiatry and accident/emergency units within the Hospital.

3.1.3.2 Participants

282 participants were referred to the Commonwealth-funded study of treatment for psychostimulant use conducted within the Hunter Area Health Service and the Royal Brisbane and Women’s Health Service District on the basis of having current regular problematic use of amphetamines, defined as use at a minimum of once weekly. Referral to the project was via the relevant treatment agency, or via self-referral in response to project advertising (see Appendix A). Following referral to the project, participants were screened via telephone by the research team to determine eligibility for the study.

Of the total referred, 24% (n=68) were excluded, for reasons which included a failure to meet the minimum amphetamine usage criteria (n=27, 10%) or because they were currently experiencing significant psychotic symptoms (n=16, 6%, Baker et al., 2005). Two hundred and fourteen participants constituted the final study sample referred by the recruitment sources listed in Table 3.1
Table 3.1 – Proportion of participants referred to a study of treatment for psychostimulant use as a function of referral source and recruitment site (N=214)

<table>
<thead>
<tr>
<th>Referral Source</th>
<th>Hunter Region</th>
<th>Brisbane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Alcohol/other Drug Clinical Service</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td>Media via Study Advertisements</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Youth Service</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Mental Health Service</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Probation and Parole</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Self-referral</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>Other Health Service</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

All participants were volunteers who were reimbursed up to $20 AUD for costs incurred in completing clinical assessments with the research team. For the purposes of the current study, a sub-sample of 137 of the original 214 study participants (64%) were selected for further analysis on the basis of presenting to AOD services for treatment.

3.1.3.3 Assessment Instruments

The assessment battery comprised a number of instruments commonly used within AOD and mental health settings, and covered the domains of self-reported AOD use, amphetamine abuse/dependence, readiness to change amphetamine use, levels of craving for amphetamines, general health, quality of life, levels of depression, and personality sub-type. Basic demographic information was collected from participants, along with service utilisation data and information about involvement in criminal activities. Specific instruments are described below.
3.1.3.3.1 Demographic Information

Basic demographic information was collected over the following domains, using the relevant items of the Diagnostic Interview for Psychosis (DIP, Jablensky et al., 2000): age, gender, ethnic background, Aboriginal/Torres Strait Islander background, marital status, living arrangements, employment and education status. In addition, the DIP has a section on service utilisation and rates of medication, which was also included in the current assessment battery.

3.1.3.3.2 Beck Depression Inventory II (BDI-II, Beck, Steer, & Brown, 1996)

The BDI-II is a 21-item self-report questionnaire used to screen for the presence of depressive symptoms over the previous two-week period. Items cover the range of symptoms listed in the DSM-IV (APA, 2000a) for major depressive disorders. The questionnaire has been validated with both adult and adolescent populations (age range 13-80 years), and is commonly used to screen for depressive symptoms among people with drug and alcohol use problems (Dawe, Loxton, Hides, Kavanagh, & Mattick, 2002). The self-report scale is completed in around 15 minutes (Beck et al., 1996). The BDI-II has good internal consistency among psychiatric outpatients (α=0.93) and with non-clinical samples (α=0.93). In addition, test-retest on the BDI-II is suitably high at 0.93. Scores on the BDI-II are categorised according to severity, with high scores associated with major depressive disorder. Scores range from 0 to 63, with the following cut-off points indicative of varying levels of severity of depression: 0-13:
minimal depression; 14-19: mild depression; 20-27: moderate depression; 28 and over: severe depression. High scores on the BDI-II do not imply a diagnosis of depressive disorder, but rather indicate the presence of depressed mood (Beck et al., 1996). Beck and colleagues (1996) recommend that respondents scoring in the clinical range (i.e. 20 points or higher) should be referred for further assessment for major depressive disorder.

3.1.3.3.3 Brief Symptom Inventory (BSI, Derogatis & Melisaratos, 1983)

The BSI is a self-report measure of psychopathology and general stress. Individual items are clustered into nine domains of distress: somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism and a global severity index of general psychiatric distress. Respondents indicate on a five-point Likert scale (0=not at all, 4=extremely) the extent to which each BSI item has distressed or bothered them in the seven days prior to completing the questionnaire. Internal consistency of the scales of the BSI are acceptable (Cronbach's $\alpha$ range=0.71-0.83), and test-retest reliability is good, ranging from 0.68 to 0.91. In addition, the BSI correlates well with the Symptom Checklist-90 (SCL-90) from which it was derived.
3.1.3.3.4 World Health Organisation Quality of Life Scale – Brief Version (WHOQoL-Bref, WHOQoL, 1998)

This 26-item self-report scale is an abbreviated version of the WHOQoL-100-item questionnaire suitable for use among healthy and unwell (including psychiatric) populations (Skevington, Sartorius, & Amir, 2004). Developed by the World Health Organisation, the WHOQoL-Bref provides a brief assessment of quality of life across the four domains of: physical health (pain, energy levels, sleep, mobility, medication, activities, work), psychological health (positive feelings, thinking, esteem, body, negative feelings, spirituality), social relationships (relationships, support, sex), and environmental health (safety, home, finances, services, information, leisure, environment, transport). Participants indicate on a five-point Likert scale (1=not at all, 5=extremely) the extent to which they have experienced certain events (symptoms, feelings, thoughts) over the previous two week period (WHOQoL, 1998). The WHOQoL-Bref has acceptable internal consistency (Cronbach’s $\alpha$ range from 0.66-0.83 across four domain subscales), and scores on each domain discriminate significantly between well and unwell populations (Skevington et al., 2004).

3.1.3.3.5 International Personality Disorder Questionnaire (IPDEQ, Loranger, Janca, & Sartorius, 1997)

The 59-item version of the International Personality Disorder Examination screens for the presence of Axis II personality disorders, based on the International Classification for Disorders, Version 10 (ICD-10). It is a self-report scale developed by the World Health Organisation that asks respondents to indicate (true/false) the extent to which a
particular statement best describes them over the preceding five years. Higher scores indicate an increased likelihood of one of nine personality disorders: paranoid, schizoid, dissocial, impulsive, borderline, histrionic, anancastic, anxious and dependent. In addition, an overall score (average of positive responses) provides a global rating of likely presence of any personality disorder. Internal consistency data are not provided by the publishers of the scale, however test-retest reliability is acceptable (range=0.55-0.84 for the individual disorders, and 0.77 for the overall score.

3.1.3.3.6 Patterns of Alcohol/Other Drug Use

This scale was developed for use in the current study, and asked for information related to the participant’s use of alcohol/other drugs across 12 drug types: alcohol, cannabis, heroin, other opiates, amphetamines, cocaine, hallucinogens, barbiturates, tranquilisers, inhalants, tobacco and caffeine. Specific questions screened for lifetime use, recency of use, mode of use (injection, oral etc.), and drug of choice. In addition, a poly-drug use index was calculated for each participant, by adding together the number of drugs (including alcohol and tobacco) they consumed in the month prior to assessment.

3.1.3.3.7 Structured Clinical Interview for DSM-IV, Research Version (SCID-IV-RV, First, 2001)

The SCID-IV-RV provides a diagnostic, clinician-rated measures of AOD abuse and dependence, based on the criteria set out in the Diagnostic and Statistical Manual of
the Mental Disorders, Fourth Edition (APA, 2000a). The subscale related to amphetamine abuse and dependence criteria was used for the current study. The author of the scale suggests that, given the SCID-IV-RV is a semi-structured interview and relies on clinician judgement to derive a diagnosis, reliability of the scale is related to the context in which it is being used (First, 2001). However, in a multi-site study of 506 pairs of interviews, the SCID reported high test-retest reliability coefficients (range 0.7-1.00). To maximise inter-rater reliability in the current study, an intensive training program occurred involving all research clinicians using the scale. Video-based case studies were presented to the group, who used the SCID to make separate diagnoses of the individuals appearing in the vignettes. Research clinicians discussed their ratings with the group, including the rationale for discrepant ratings, until a consensus was reached.

3.1.3.3.8 Opiate Treatment Index (OTI, Darke, Ward, Hall, Heather, & Wodak, 1991)

The OTI addresses the quantity and frequency of use across 11 substances, including: alcohol, cannabis, heroin, other opiates, amphetamines, cocaine, hallucinogens, barbiturates, tranquillisers, inhalants and tobacco. Each of the 11 drug types are assessed individually, and clients report on their last three using occasions in the month prior to assessment, estimating the amount of drug consumed on each of these occasions. An average use index for the previous month is calculated for each drug. In addition to measuring quantity and frequency of use, the OTI also contains subscales on HIV risk taking behaviours, social functioning, and criminality, and
includes the 28-item General Health Questionnaire (Goldberg & Williams, 1988), which covers physical and mental health.

The scales on the OTI can be used as a whole, or in isolation of each other, without compromising the validity or reliability properties of the scale. For the purposes of the current study, the drug use scale, HIV risk taking behaviour and crime scales were administered to participants. Within the drug use scale, only the following items were included based on the high frequency with which these particular drugs are used among Australians relative to other drugs: alcohol, cannabis, amphetamines, and tobacco.

3.1.3.3.9 Readiness to Change Amphetamine Use (Biener & Abrams, 1991)

This self-assessment tool was adapted from the Biener and Adams (1991) measure of readiness to change for smoking tobacco. The scale assesses stage of change for amphetamine use using a “speed use ladder” based on the framework of the Prochaska and DiClemente (1986) readiness to change model. Statements describing each stage of change are presented to the participant pictorially using a ladder, where each rung represents a different stage of change (i.e. 1=’I have no thought of changing my speed use’ (pre-contemplation); 2=’I’m thinking about quitting or cutting down my speed use’ (contemplation); 3=’I’m getting ready to quit or cut down’ (preparation); 4=’I’ve started to cut down or I’m working on quitting’ (action); 5=’I changed my speed use some time ago and I’ve managed to keep it that way’ (maintenance)).
Participants select which ‘rung’ on the ladder best reflect their current thoughts about amphetamine use. The amphetamine version of the scale has been previously used among regular amphetamine users in a pilot study by Baker et al. (Baker, Boggs, & Lewin, 2001a, 2001b)

3.1.3.3.10 Severity of Dependence Scale (SDS, Gossop et al., 1995)

The SDS is a brief screening instrument used to indicate the presence of drug and alcohol dependence. This five-item self-report scale rates the impact of drug or alcohol use on various aspects of functioning, and corresponds to the criteria for psychological substance dependence outlined in DSM-IV (APA, 2000a). This scale was applied to amphetamine use for the current study. Participants rate each statement according to a four-point Likert scale (0 =never, 3=always), with total scores ranging from zero to 15. A score of four or above indicates severe amphetamine dependence, with higher scores indicating increasing levels of dependence (Topp & Mattick, 1997). The psychometric properties of the SDS are acceptable, with internal consistency coefficients ranging from 0.8 to 0.9 across various drug types, including amphetamines. The scale has been validated among heroin users, people on methadone maintenance and amphetamine users, and is significantly correlate with frequency of use (Gossop et al., 1995).
3.1.3.3.11 Cravings Questionnaire

A self-report questionnaire comprising 20 items related to cravings for amphetamine use. Statements include the psychological (“images and thoughts I have about speed are out of my control”), physical (“I can’t stand the physical symptoms of craving”) and behavioural (“When craving speed, it’s OK to use other drugs to cope”) aspects of craving. Participants rate their agreement on each of these items using a seven-point Likert scale (1=totally disagree, 4=neutral, 7=totally agree), with higher scores indicating more severe beliefs and symptoms of craving for amphetamines.

3.3.3.4 Procedure

Upon recruitment to the study, participants were provided with an information sheet and consent form, summarising their involvement throughout the study period. See Appendix A for a copy of this documentation.

Following the provision of consent to participate in the study, an appointment was arranged at a time convenient to the research participant for commencement of the initial assessment protocol. Where possible, the assessment was conducted at the research rooms particular to the study site (e.g. Centre for Mental Health Studies, University of Newcastle, Royal Brisbane Hospital) or, if preferred by participants, within the service from which they were referred. All research personnel completing initial assessments were psychologists or psychiatric nurses with several years’ counselling experience, who completed a week-long training seminar in the
administration of each of the assessment instruments. The PhD candidate (Frances Kay-Lambkin) assisted in the design of the study, added the depression-related assessment instruments, assisted in the provision of training to research clinicians involved in the trial, and completed a proportion of initial assessments at the Hunter Region site.

Participants completed the assessment battery in 45 minutes to one hour. In cases where participants were unable to read or write sufficiently to complete the self-report measures, research personnel facilitated completion of the instruments by reading the questions and response options aloud. Reimbursement of expenses was provided at the conclusion of the assessment session.

These procedures were carried out in accordance with the National Health and Medical Research Council of Australia’s Statement of Ethical Conduct of Research among Human Participants. Ethics approval was gained from the relevant Human Research Ethics Committees at each study site (HAREC Approval No: 9912153.19, HREC Approval No: H 839 1299).

3.3.3.5 Statistical Analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) for Windows, Version 12.0.
3.3.3.5.1 Characteristics of the Sample

3.3.3.5.1.1 Full Sample (N=214)

Exploratory data analysis was conducted on the full sample of participants (N=214) to examine any differences in presenting characteristics between participants from AOD treatment services versus other referral services. This included basic demographics such as age, gender, marital status, education levels and employment rates, along with levels of depression and AOD use. One-way analysis of variance (ANOVA) was used to examine differences on continuous variables, and chi-squared analysis compared participants on categorical data. As a partial control for the number of statistical tests performed on this data set, an alpha level of 0.01 was used as a minimum threshold of significance. Significance values between p=0.01 and p=0.05 were regarded as non-significant trends.

3.3.3.5.1.2 Study Sub-Sample (N=137)

All remaining data analyses used a sub-sample of the original data pool, incorporating only those participants who were referred from an AOD treatment agencies (n=137). Basic descriptive statistics were performed on the study sub-sample on demographic variables, levels of depressive symptomatology, levels of AOD use and other variables of interest as described above.

Participants from each study site (Hunter Region and Brisbane) were additionally compared on these variables to examine any differences between sites. Using a
significance threshold of $p<0.01$, oneway ANOVAs and chi-squared analyses were used for these comparisons.

3.1.3.5.2 Profile of Participants Based on Comorbid Depressive Symptoms

The final study sub-sample was categorised according to the presence/absence of comorbid depression, as measured by the BDI-II (Beck et al., 1996). Comorbid depression was coded as “present” if BDI-II scores were greater than 20, the cut-off for moderate depressive symptomatology.

A profile of participants in each category (comorbid depression/no depression) was created according to basic demographic information (age, gender, marital status, employment status, living arrangements, education status, service utilisation and rates of medication), and scores on each of the assessment instruments of interest. Differences between the two groups were examined using oneway ANOVAs for continuous variables and chi-squared analyses for categorical variables. The significance threshold was set at $p<0.01$ to partially control for the number of statistical tests performed on this data subset. Significance values between $p=0.01$ and $p=0.05$ were regarded as non-significant trends.
3.1.4 Results

3.1.4.1 Characteristics of the Sample

3.1.4.1.1 Full Sample (N=214)

A full description of the presenting characteristics of the 214 participants recruited to the treatment study for regular amphetamine use is reported elsewhere (see Baker et al., 2004). In summary, the sample comprised 134 males (63%) who had been using amphetamines on a regular basis for an average of 8.98 years. The majority were born in Australia (n=197, 92%) and 13 (6%) were of Aboriginal or Torres Strait Islander descent. One hundred and thirty eight participants (64%) were single, and around 70% (n=150) were living with family members or friends. Half the sample (n=101) had at least one child, and approximately three-quarters of the sample (n=160) were unemployed at the time of recruitment to the study.

As displayed in Table 3.2, those participants presenting to AOD services were similar in their demographic profile to those drawn from other sources. For the most part, participants from AOD treatment agencies were single (n=84, 61%), not in current employment (n=111, 81%), and were of anglo-Australian descent (n=117, 84%, see Table 3.2). In addition, approximately 60% of the sample from AOD services were male (n=81), and had a range of educational experience ranging from not completing secondary school (n=28, 20%) through to completion of a tertiary degree (n=16, 12%).
Table 3.2  Characteristics of a sample of regular amphetamine users recruited to a study of treatments for amphetamine use problems.

<table>
<thead>
<tr>
<th>Referral Source</th>
<th>Alcohol/other Drug Service (n=137)</th>
<th>Other* (n=77)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>81</td>
<td>59</td>
</tr>
<tr>
<td>Females</td>
<td>56</td>
<td>41</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>84</td>
<td>61</td>
</tr>
<tr>
<td>Married/Defacto</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Separated/Divorced/Widowed</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Part-time</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>Nil</td>
<td>111</td>
<td>81</td>
</tr>
<tr>
<td><strong>Qualifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>28</td>
<td>20</td>
</tr>
<tr>
<td>Secondary School</td>
<td>39</td>
<td>28</td>
</tr>
<tr>
<td>Trade</td>
<td>52</td>
<td>38</td>
</tr>
<tr>
<td>Tertiary Degree/Diploma</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td><strong>Cultural Background</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal/Torres Strait Islander</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Anglo-Australian</td>
<td>117</td>
<td>85</td>
</tr>
<tr>
<td>European/Pacific Rim</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years) *</td>
<td>31.60</td>
<td>0.68</td>
</tr>
<tr>
<td>Levels of Depression (BDI-II scores)</td>
<td>26.59</td>
<td>1.12</td>
</tr>
<tr>
<td>Levels of Alcohol Use (OTI scores)</td>
<td>2.29</td>
<td>0.38</td>
</tr>
<tr>
<td>Levels of Cannabis Use (OTI scores) *</td>
<td>4.82</td>
<td>0.84</td>
</tr>
<tr>
<td>Levels of Amphetamine Use (OTI scores)</td>
<td>1.40</td>
<td>0.15</td>
</tr>
<tr>
<td>Poly-drug Use (# drugs in previous month)</td>
<td>4.34</td>
<td>0.1</td>
</tr>
</tbody>
</table>

*Other includes media, self-referral, mental health service, etc., as per Table 3.1

With the exception of age at entry to the study and levels of cannabis use, there were no significant differences on these demographic variables for the sample drawn from AOD treatment services versus other recruitment sources (see Table 3.2). The mean age of participants from the AOD treatments sample was significantly higher than
“other” recruitment sources ($F(1,212)=12.415, p=0.001$), and they smoked cannabis at almost half the level of their counterparts ($F(1,212)=8.501, p=0.004$).

3.1.4.1.2 Study Sub-sample (n=137)

One hundred and thirty seven participants comprised the study sub-sample drawn exclusively from AOD treatment services, and provided the data set for the remaining analyses.

As indicated in Table 3.3, the mean age of this sample was 32 years, and levels of depression were, on average, in the moderate range of severity ($M=26.59, \text{S.E.}=1.12$). According to scores on the OTI, participants in this sub-sample were consuming more than two standard drinks per day ($M=2.29, \text{S.E.}=0.38$), smoked cannabis at a rate of almost five cones (units) per day ($M=4.82, \text{S.E.}=0.84$), and used amphetamines once daily ($M=1.40, \text{S.E.}=0.15$). This was based on their self-reported patterns of use over the previous month. In addition, poly-drug use among the sample was high, with participants using just over four different drugs in the month prior to the study assessment ($M=4.34, \text{S.E.}=0.12$). Within this sub-group of participants, a significantly greater proportion ($n=102, 75\%$) were drawn from the Brisbane site (continuity-corrected $\chi^2=60.63, p=0.000$).
Table 3.3  Profile of participants presenting to alcohol/other drug treatment services for a study of treatment for regular amphetamine use, as a function of study location (Brisbane or Hunter Region, n=137).

<table>
<thead>
<tr>
<th>Study Site</th>
<th>Hunter Region (n=35)</th>
<th>Brisbane (n=102)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>20</td>
<td>57</td>
</tr>
<tr>
<td>Females</td>
<td>15</td>
<td>43</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>26</td>
<td>74</td>
</tr>
<tr>
<td>Married/Defacto</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Separated/Divorced/Widowed</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Part-time</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Nil</td>
<td>31</td>
<td>88</td>
</tr>
<tr>
<td>Qualifications*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td>Secondary School</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Trade</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Tertiary Degree/Diploma</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Cultural Background*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal/Torres Strait Islander</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Anglo-Australian</td>
<td>28</td>
<td>80</td>
</tr>
<tr>
<td>European/Pacific Rim</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>30.16</td>
<td>1.44</td>
</tr>
<tr>
<td>Levels of Depression (BDI-II scores)</td>
<td>26.71</td>
<td>2.53</td>
</tr>
<tr>
<td>Levels of Alcohol Use (OTI scores)</td>
<td>2.30</td>
<td>0.80</td>
</tr>
<tr>
<td>Levels of Cannabis Use (OTI scores)</td>
<td>6.70</td>
<td>1.95</td>
</tr>
<tr>
<td>Levels of Amphetamine Use (OTI scores)</td>
<td>1.45</td>
<td>0.35</td>
</tr>
<tr>
<td>Poly-drug Use (# drugs in previous month)†</td>
<td>3.74</td>
<td>0.23</td>
</tr>
</tbody>
</table>

†p<0.01

On the majority of variables, participants from Brisbane and those from the Hunter Region were similar. However, as Table 3.3 indicates, participants from Brisbane reported a significantly higher mean number of drugs consumed in the month prior to assessment than did their counterparts from the Hunter Region ($F(1,135)=8.795$, 97
In addition, a significantly greater proportion of the Hunter Region sample was of Aboriginal or Torres Strait Islander background (continuity corrected $\chi^2 = 63.405, p = 0.011$). A greater proportion of Hunter Region participants had no qualifications, while significantly more of the Brisbane sample had secondary school qualifications ($\chi^2 = 13.87, p = 0.003$).

### 3.1.4.2 Profile of Participants Based on Comorbid Depressive Symptoms

The sample of was categorised on the basis of reporting current moderate levels of depressive symptoms at the time of assessment. A score of 20 on the BDI-II was used as a nominal threshold above which participants were deemed to have moderate levels of comorbid depression. This corresponds with the guidelines for interpretation of scores on the BDI-II by the authors of the scale (Beck et al., 1996). Over two-thirds of the sample (n=94, 69%) met criteria for moderate comorbid depressive symptoms at the time of assessment. Table 3.4 displays the basic demographic characteristics of the AOD services sub-sample categorised according to the presence of comorbid depression. The presence of comorbid depressive symptoms was not associated with a person’s marital status, employment status or educational experience. The proportion of people from different cultural backgrounds was similar across the depression categories, as was the mean age of participants in each group.
Table 3.4  Demographic profiles of people presenting to alcohol/other drug use services for amphetamine treatment according to the presence of comorbid depressive symptoms (n=137).

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression* (n=94)</th>
<th>No Comorbid Depression* (n=43)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47</td>
<td>50</td>
</tr>
<tr>
<td>Female</td>
<td>47</td>
<td>50</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>55</td>
<td>59</td>
</tr>
<tr>
<td>Married/Defacto</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>Separated/Divorced/Widowed</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Part-time</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Nil</td>
<td>80</td>
<td>85</td>
</tr>
<tr>
<td>Qualifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Secondary School</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>Trade</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td>Tertiary Degree/Diploma</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Cultural Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal/Torres Strait Islander</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Anglo-Australian</td>
<td>78</td>
<td>83</td>
</tr>
<tr>
<td>European/Pacific Rim</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20
\( + \)p<0.01

The distribution of males and females significantly differed across depression categories (see Table 3.4). That is, although gender proportions were equivalent in the comorbid depression group, a significantly greater proportion of males than females did not meet criteria for comorbid depression at the time of assessment (continuity-corrected \( \chi^2 = 9.149 \) p=0.001). Consequently, gender was included as a covariate in subsequent analyses comparing depression categories with continuous outcome measures.
In addition to the basic demographic variables reported for the sample in Table 3.4, other demographic information was compared for people meeting criteria for comorbid depression versus those who did not. These variables include more detailed assessment of the participant’s living situation, income, educational experience etc. as displayed in Table 3.5.

Table 3.5  Detailed demographic information for people presenting to alcohol/other drug use services for amphetamine treatment according to the presence of comorbid depressive symptoms (n=137).

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression* (n=94)</th>
<th>No Comorbid Depression* (n=43)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><strong>Living Situation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Parents/relatives/children</td>
<td>21</td>
<td>26</td>
</tr>
<tr>
<td>Partner</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Friends</td>
<td>21</td>
<td>26</td>
</tr>
<tr>
<td><strong>Current Accommodation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own home</td>
<td>48</td>
<td>51</td>
</tr>
<tr>
<td>Family home</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Rental</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Crisis/Temporary</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td><strong>Medication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>53</td>
<td>56</td>
</tr>
<tr>
<td>One</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Two or more</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td><strong>Current Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage/Salary</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Pension/Benefit</td>
<td>76</td>
<td>84</td>
</tr>
<tr>
<td><strong>Study Site</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunter Region</td>
<td>23</td>
<td>28</td>
</tr>
<tr>
<td>Brisbane</td>
<td>71</td>
<td>76</td>
</tr>
<tr>
<td><strong>Secondary School Completion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>No</td>
<td>57</td>
<td>61</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20
+p<0.01
Approximately one-quarter of participants lived alone, over three-quarters were currently receiving a pension or other benefit, and around 60% did not complete secondary school. These proportions are similar across depression categories, with no significant differences between those participants with depression versus those without depression on any of these variables. In addition, medication rates were similar across depression categories, and no significant differences were detected in rates of depression between study sites. A greater proportion of people with comorbid depression lived in crisis or temporary housing in the month prior to assessment than did people without comorbid depression (21% vs 16%, Pearson $\chi^2=11.612$, $p=0.009$). A higher proportion of people with comorbid depression lived in their own home compared to people without comorbid depression (51% vs 33%, Pearson $\chi^2=11.612$, $p=0.009$).

3.1.4.2.1 Alcohol/other Drug Use Outcomes

3.1.4.2.1.1 Patterns of Alcohol/other Drug Use

Lifetime use of alcohol/other drugs by participants did not differ according to the presence of depressive symptoms. For example, as displayed in Figure 3.1, alcohol, cannabis and amphetamines had each been used at some stage in every participant’s history.
Figure 3.1 – Patterns of use of alcohol/other drugs across the lifespan for people with and without comorbid depression, presenting to alcohol/other drug clinical services for treatment (n=137).

In general, rates of use of each drug type were high, with over 80% of the sample having used heroin, hallucinogens, and tobacco at some stage in the past. Over half the sample had previously used other opiates (such as methadone), cocaine and other inhalants, but rates of use were not significantly different for those with current depression. There was a non-significant trend towards tranquilisers, such as valium, being used more often over the life span for those participants with comorbid depression (92% vs 78%) however this was not statistically significant (continuity-corrected $\chi^2 = 4.403, p=0.036$).
In addition, the ‘drug of choice’ for participants in the study did not significantly differ according to the presence of depressive symptoms (see Figure 3.2).

Despite instructions to nominate one drug type as their preferred drug, around half the sample listed amphetamines as their primary drug of choice, with around three-quarters of the sample preferring heroin. Around one-fifth of the participants without comorbid depression nominated cannabis as their drug of choice, compared with 12% of people with comorbid depression. This difference was not statistically significant (continuity-corrected $\chi^2_1=1.343$, $p=0.247$). Rates of other drug use such as alcohol, other opiates, tobacco etc. were similar between depressed and non-depressed groups, and were selected as the preferred drug between two and four percent of the time.
3.1.4.2.1.2 Service Utilisation

Over one-third of the depressed group had received previous treatment for an AOD use problem, such as pharmacotherapy, counselling, and 12-step programs, compared with around one-quarter of their counterparts without depressive symptomatology. These differences were not statistically significant (36% vs 25%, continuity-corrected $\chi^2 = 1.058$, $p = 0.304$).

As indicated in Figure 3.3, 59% of those participants with comorbid depression had been in AOD treatment three or more times prior to the current service occasion.

![Figure 3.3](image)

**Figure 3.3** Number of previous treatment occasions for alcohol/other drug use problems among people with and without comorbid depressive symptoms (n=137)

In contrast, previous AOD treatment rates were lower for those without comorbid depression, with around 46% of participants receiving treatment on only one prior
occasion. These differences between groups were not statistically significant (Pearson $\chi^2 = 3.545$, $p = 0.170$).

Around 40% ($n=36$) of the participants with comorbid depression were currently receiving pharmacotherapy for their AOD use problems, compared with 28% ($n=12$) of their counterparts without depression. The difference between groups, was not statistically significant (continuity corrected $\chi^2_{1} = 0.980$, $p = 0.322$).

3.1.4.2.1.3 AMPHETAMINE ABUSE/DEPENDENCE

Amphetamine abuse was present at a higher rate for those with comorbid depression, however these rates were not statistically significantly different. For example, rates of amphetamine abuse were 95% for the depressed group versus 84% for the non-depressed group (continuity-corrected $\chi^2_{1} = 3.169$, $p = 0.075$). Similarly, amphetamine dependence was present in a higher proportion of the comorbidly depressed group relative to their counterparts, but these differences failed to reach significance. Twelve-month rates of dependence were 86% for the comorbid depressed group versus 74% for the non-depressed group (continuity-corrected $\chi^2_{1} = 2.065$, $p = 0.151$).

Univariate analysis of covariance (ANCOVA, with gender as a covariate) revealed that the comorbid group reported significantly higher severity of dependence on amphetamines, as reported by scores on the SDS, than did those without depression ($M$(depressed group) = 9.19, $M$(no-depression) = 5.26, $F(2,133) = 20.692$, $p = 0.000$).
3.1.4.2.1.4 Stage of Change for Amphetamine Use

Using gender as a covariate, univariate ANCOVA revealed a non-significant trend towards lower readiness to change among the comorbidly depressed group relative to their counterparts (\(M\)(depressed group)=3.13, \(M\)(no-depression)=3.51, \(F(2,134)=3.511, p=0.033\)). This placed the comorbidly depressed group, on average, closer to the preparation stage of change, and their counterparts closer to the action stage of change for current amphetamine use.

3.1.4.2.1.5 Quantity/Frequency of Recent Alcohol/Other Drug Use

Table 3.6 displays the mean levels of use of alcohol, cannabis, amphetamines and tobacco for the study participants.

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression* ((n=94))</th>
<th>No Comorbid Depression* ((n=43))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.E.</td>
</tr>
<tr>
<td>OTI q-score*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>2.545</td>
<td>0.462</td>
</tr>
<tr>
<td>Cannabis</td>
<td>4.983</td>
<td>0.015</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>1.600</td>
<td>0.180</td>
</tr>
<tr>
<td>Tobacco</td>
<td>18.377</td>
<td>1.164</td>
</tr>
<tr>
<td>Poly-drug use Score~</td>
<td>4.56</td>
<td>0.146</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20
+Opiate Treatment Index (Darke et al., 1991) quotient score, indicating quantity/frequency of use over the month prior to assessment
~Poly-drug use calculated by summing the number of drugs (including alcohol and tobacco) the participant used in the month prior to assessment
Participants were using a mix of alcohol and other drugs at least once every day according to the OTI. For example, comorbid participants were drinking around 2.5 standard drinks per day in the month prior to interview, compared with their counterparts who consumed just below two standard drinks per day ($F(2,134)=0.925$, $p=0.399$). Rates of cannabis use were similar between the two groups, with participants smoking an average of 4.5-5 standard units of cannabis per day for the month leading up to the assessment interview ($F(2,134)=1.941$, $p=0.148$). Amphetamine use was also frequent, with participants in the comorbidly depressed group using amphetamines over 1.5 times daily for the previous month, compared to the non-depressed group who used just under once every day ($F(2,134)=2.230$, $p=0.111$). Average tobacco use for the month prior to assessment was also high for the sample, with the depressed group smoking upwards of 18 cigarettes per day, compared with their counterparts who smoked around 14 cigarettes per day ($F(2,134)=2.413$, $p=0.093$). Despite the trend for the group with comorbid depression to report consistently higher levels of current AOD use across these drug types, these differences were not statistically significant.

Poly-drug use was also higher for the comorbid group. On average, the group without depression used just under four different drugs in the month prior to interview; this was less than their counterparts with depression who used closer to five different drugs over the previous month. However, these differences were not statistically significant ($F(2,134)=3.773$, $p=0.025$).
3.1.4.2.1.6 **Cravings for Amphetamines**

Univariate ANCOVA (using gender as the covariate) indicated that the depressed group reported significantly higher levels of cravings for amphetamines than did the non-depressed group (M(depressed group)=78.22, M(no-depression)=50.58, F(2,134)=19.964, p=0.000). This suggested that the self-reported experience of cravings for the depressed group was significantly more distressing and severe than their counterparts without depression.

3.1.4.2.2 Risk Taking Behaviours

Univariate ANCOVA (with gender as the covariate) examined the extent of HIV risk taking and criminal activity among the study sample, according to depression status. Table 3.7 displays the mean scores for participants with and without comorbid depression on drug use, sexual risk taking and crime according to the OTI subscales examining these issues, with higher scores indicating increasingly risky behaviour.

People with comorbid depression generally scored higher on estimates of criminal activity, sexual risk taking and risky drug use behaviours than did their counterparts without depression. Although these differences were not statistically significant, a non-significant trend was found for both drug use behaviours and criminal activity. That is, people with depression reported participating in criminal activities, such as property crime, dealing, fraud and violent crime, to a greater extent than did their non-depressed counterparts (F(2,134)=3.652, p=0.029).
Table 3.7 Levels of risk taking and criminal activity among participants presenting to alcohol/other drug use services for treatment, according to the presence of comorbid depressive symptoms (n=137).

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression* (n=94)</th>
<th>No Comorbid Depression* (n=43)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.E.</td>
</tr>
<tr>
<td>Crime Total†</td>
<td>1.7</td>
<td>0.19</td>
</tr>
<tr>
<td>Sexual Risk Taking~</td>
<td>4.45</td>
<td>0.405</td>
</tr>
<tr>
<td>Risky Drug Use Behaviours#</td>
<td>6.45</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20
†Crime includes: property crime, dealing, fraud, and violent crime
~Sexual risk taking includes: unsafe sex, multiple partners, prostitution, etc.
#Drug use behaviours include: injecting practices, sharing needles etc.

In addition, people with depression had higher levels of risky drug taking behaviours, such as sharing needles and syringes than did those without depression, although this difference did not reach statistical significance ($F(2,134)=3.516, p=0.032$).

3.1.4.2.3 Mental Health Outcomes

Approximately two-thirds (n=28, 65%) of the participants without comorbid depressive symptoms at assessment had not previously been diagnosed or treated for a mental health problem. A smaller proportion of those with comorbid depression (42%, n=39) had not previously received psychiatric diagnoses or treatment.

3.1.4.2.3.1 Service Utilisation

Service utilisation rates were higher among the comorbid participants. Around 14% (n=6) of those without comorbid depression at entry to the study had previous
treatment for depression, and around 21% (n=9) had a prior history of treatment for another mental health condition, such as psychosis, personality disorder or attention deficit hyperactivity disorder. Participants in the comorbid depression group had high levels of previous treatment for depression (n=34, 36%), and 22% (n=21) had some other mental health diagnosis or treatment history. Pearson chi-squared analysis conducted on these groups indicated that these differences were significant (Pearson $\chi^2 = 8.382, p = 0.015$).

Over one-third (n=34) of the participants in the comorbid depression group had previously been hospitalised in a psychiatric unit for a mental health condition, compared to a rate of hospitalisation of 23% (n=10) among their non-depressed counterparts. This difference in hospitalisation rates was not statistically significant (continuity-corrected $\chi^2 = 1.704, p = 0.192$).

Rates of medication for mental disorders did not significantly differ between people with and without comorbid depressive symptoms. Self-reported medication adherence rates were high among these groups with 94% (n=17) in the non-depressed group versus 87% (n=41) of the depressed group indicating they took their medication as prescribed. These differences were not statistically significant (continuity-corrected $\chi^2 = 0.154, p = 0.695$).
3.1.4.2.3.2 BRIEF SYMPTOM INVENTORY

Figure 3.4 displays the mean scores on each of the subscales of the BSI for people with comorbid depression versus those without depression.

People with comorbid depression scored significantly higher on each of the BSI subscales than did their counterparts without depression. Univariate ANCOVA (with gender as the covariate) indicated that the mean scores for comorbid participants on Somatisation were significantly higher at 1.481, relative to their equivalents who scored 0.635 ($F(2,134)=17.637, p=0.000$). Anxiety subscale mean scores were also significantly higher for people with comorbid depression, including Obsessive-Compulsive ($M$(depressed group)=2.18, $M$(no-depression)=0.996, $F(2,134)=37.213$, $p<0.01$).
p=0.000), Anxiety (M(depressed group)=1.693, M(no-depression)=0.682, F(2,134)=23.493, p=0.000) and Phobic Anxiety (M(depressed group)=1.27, M(no-depression)=0.395, F(2,134)=13.978, p=0.000). Not surprisingly, mean scores on the Depression subscale were significantly higher for the depressed group (M(depressed group)=2.126, M(no-depression)=0.667, F(2,134)=40.922, p=0.000), as were mean scores on Interpersonal Sensitivity (M(depressed group)=1.864, M(no-depression)=0.773, F(2,134)=18.595, p=0.000) and Hostility (M(depressed group)=1.66, M(no-depression)=0.777, F(2,134)=12.383, p=0.000). In addition, comorbidly depressed participants scored 1.706 on the subscale Paranoid Ideation, compared to those without depression who scored 0.93 (F(2,134)=14.131, p=0.000), and significantly higher on Psychoticism (M(depressed group)=1.696, M(no-depression)=0.656, F(2,134)=22.52, p=0.000). Mean scores for depressed participants on the Global Severity Index were in the “Moderate” range and were significantly higher than their counterparts who scored closer to the “a little bit” response category on the BSI (M(depressed group)=1.757, M(no-depression)=0.732, F(2,134)=17.637, p=0.000).

3.1.4.2.3.3 INTERNATIONAL PERSONALITY DISORDER EXAMINATION QUESTIONNAIRE

Figure 3.5 displays the proportion of participants who screened positively for ICD-10 personality disorder according to the IPDEQ. In order to receive a positive screen for a personality disorder, participants answered at least three items of the personality subscale (paranoid, schizoid, dissocial, impulsive, borderline, histrionic, anankastic, anxious and dependent) in the necessary direction.
Rates of positive screens for each personality disorder were high among the sample, with between 40% and 80% of the sample meeting criteria for at least one likely personality disorder. In general, people with comorbid depression screened positive for each personality disorder at higher rates than their counterparts without depression. This was particularly true for anxious personality disorder, with people with comorbid depression meeting criteria for this personality disorder significantly more often than did people without depression (75% depressed group vs 38% non-depressed group, continuity-corrected $\chi^2_{1}=11.612$, $p=0.001$). A nonsignificant trend emerged for borderline personality disorder, with comorbid participants meeting criteria more often than their counterparts (65% depressed group vs 43% non-depressed group, continuity-corrected $\chi^2_{1}=2.991$, $p=0.084$). A similar trend was revealed for impulsive personality,
with comorbid participants meeting criteria more often than their counterparts, although this did not reach statistical significance (71% depressed group vs 50% non-depressed group, continuity-corrected $\chi^2_{1}=3.002$, $p=0.083$).

An overall score was calculated for each participant (range 0-1), based on the average number of items on which they screened positive. Univariate ANCOVA (with gender as the covariate) indicated that scores for the comorbid group were significantly higher on this overall scale than for their non-depressed counterparts ($M$ (depressed group)$=0.491$, $M$ (no-depression)$=0.431$, $F(2,92)=4.428$, $p=0.015$). This indicates that the likelihood of any personality disorder was significantly higher among people with comorbid depression relative to their counterparts. In addition, scores on this overall personality score were compared for each group to the norm among the Australia population (0.19, Lewin, Slade, Andrews, Carr, & Hornabrook, 2005). One-sample t-tests revealed that both the depressed group and the non-depressed group scores on this variable were significantly higher than the general population (depressed group: $t(64)=13.032$, $p=0.000$; non-depressed group: $t(30)=8.294$, $p=0.000$).

### 3.1.4.2.4 Quality of Life Outcomes

Figure 3.6 displays self-reported quality of life for people with and without depression, according to the subscales of the WHO Quality of Life questionnaire. Higher scores on the subscales of this questionnaire indicate increasing satisfaction with and quality of life.
People with comorbid depression consistently rated their quality of life significantly lower than their counterparts without depression on each subscale of the WHO Quality of Life Questionnaire (see Figure 3.6). Specifically, this included their physical health, such as pain, energy levels, sleep etc. ($M_{\text{depressed group}}=19.91$, $M_{\text{no-depression}}=24.64$, $F(2,133)=23.315$, $p=0.000$) and their psychological well being ($M_{\text{depressed group}}=14.12$, $M_{\text{no-depression}}=21.21$, $F(2,133)=49.953$, $p=0.000$). In addition, participants with depression rated their social relationships significantly more poorly compared to their counterparts ($M_{\text{depressed group}}=7.06$, $M_{\text{no-depression}}=10.12$, $F(2,133)=16.721$, $p=0.000$), along with their environmental health.
which included such issues as their safety, finances, leisure time, home life etc. 
\( M(\text{depressed group})=23.24, M(\text{no-depression})=23.62, F(2,133)=20.682, p=0.000 \).

3.1.5 Discussion

Rates of depression were particularly high among the sample, with over two-thirds meeting criteria for moderate depressive symptomatology at the time of assessment. Those participants with comorbid depression reported significantly higher levels of dependence on amphetamines, higher cravings for amphetamines, and increased rates of treatment utilisation. Psychological and other general functioning outcomes were also affected by the presence of depression, with comorbid depression being associated with significantly higher rates of anxious personality disorder, significantly higher likelihood of any personality disorder and significantly higher scores on a range of psychosocial stressors and symptoms, as measured by the BSI. Quality of life was significantly poorer for those with comorbid depression, a result found consistently across physical, social, environmental and psychological domains. A number of non-significant trends emerged for people with comorbid depression and regular amphetamine use. These included a trend towards higher levels of criminal activity and HIV risk taking behaviour, higher rates of tranquilliser use, use of a higher number of different drugs (poly-drug use) and an increased likelihood of borderline personality disorder among those with comorbid depression. Stage of change for amphetamine use was also influenced by comorbid depression, with a non-significant trend suggesting an association between depression and reduced readiness to change. These results are discussed in detail below.
3.1.5.1 Demographics

Several demographic variables were examined according to depression status, including finances, education/qualifications, income, employment, marital status and living arrangements. However, the presence of depression did not differentiate between participants for the majority of these factors. This is in contrast to some previous research among people with comorbid anxiety/depression and AOD use problems (McNamara, Schumacher, Milby, Wallace, & Usdan, 2001).

3.1.5.2 Alcohol/other Drug use outcomes

Lifetime use of alcohol/other drugs did not significantly differ between depressed and non-depressed participants across all drug types. A non-significant trend emerged towards tranquilisers being used more often over the life span for those participants with comorbid depression. In addition, the comorbid group had significantly higher self-reported levels of amphetamine dependence, and significantly more severe cravings for amphetamines than did their counterparts without depression. It may be that this group use tranquilisers at higher rates to assist in the management of these additional amphetamine-related difficulties, a cycle reported by several authors who also suggest an association between these types of medication and poorer mental health outcomes among amphetamine users (Hando, Topp, & Hall, 1997; Vincent, Shoobridge, Ask, Allsop, & Ali, 1998, 1999).
A heightened experience of cravings for alcohol/other drugs was also reported in previous research, which indicates that self-reported ratings of the severity of cravings significantly increases following the induction of negative mood (Cooney, Gillespie, Baker, & Kaplan, 1987). The severity of dependence has not previously been associated with depression (Brown et al., 1995). The finding in the current study that these psychological aspects of dependence are rated significantly more highly among people with depression, coupled with a significantly increased experience of cravings for amphetamines provides some support for considering a psychological model of treatment among people with comorbid mental health and AOD use problems.

Although a higher proportion of people with depression met criteria for amphetamine abuse/dependence in the 12-months prior to assessment (e.g. 99% vs 88%; six-month dependence rates), these rates were not significantly different. Previously, the presence of depression and anxiety-related conditions has been associated with significantly higher rates of abuse and dependence on substances (McNamara et al., 2001). Contrary to the hypotheses, levels of current use of alcohol, amphetamines, cannabis and tobacco did not significantly differ between groups, however people with depression generally reported higher levels of consumption of alcohol, amphetamines and tobacco than did their counterparts. Poly-drug use among the sample as a whole was high, and there was a non-significant trend towards the comorbidly depressed group reporting higher poly-drug use (around five drugs in the previous month) than those without depressive symptomatology (around four drug used in the month prior to assessment). It is unclear whether these results provide support for previous research
indicating that levels of AOD use (including quantity/frequency ratings) is higher for people with comorbid depression (Burns, Teesson, & O'Neill, 2005; McNamara et al., 2001; Zweben et al., 2004), given the power for these analyses in the current study was low (range 0.207-0.480). Alternatively, previous research has suggested that diagnostic levels of depression do not influence alcohol use outcomes (Davidson, 1991), and additionally that there is no relationship between depressive symptoms and quantity/frequency of drinking alcohol (Blume, Schmaling, & Marlat, 2001).

Readiness to change amphetamine use was influenced by the presence of depressive symptomatology at the time of assessment. That is, people with comorbid depression were, on average, more likely to report being at the “preparation” stage of change relative to their counterparts without depression who were closer to the “action” stage. This trend was not significant (p=0.033) however the implications for delivering treatment appropriate to the stage of change of clients with amphetamine misuse, particularly with comorbid depression, is an important consideration for engagement and commitment to treatment. This finding contradicts previous research relating to this issue (Blume et al., 2001), which found that the presence of depression was associated with an enhanced motivation to change relative to people without such comorbidity.

3.1.5.3 Mental health outcomes

In support of the hypotheses of the study, people with depression consistently reported significantly poorer psychological outcomes relative to their non-depressed
counterparts. For example, scores on the BSI were significantly lower for the depressed group, on the domains of somatisation, anxiety (phobic, obsessive compulsive), hostility, depression, interpersonal sensitivity, psychoticism, paranoid ideation and a global severity index. The likely presence of personality disorder among the group as a whole was significantly higher than in the general Australian population (Lewin et al., 2005), and significantly higher for people with comorbid depression. Specifically, the likelihood of anxious personality disorder was significantly higher among the comorbidly depressed participants. This subscale of the IPDEQ has been previously significantly correlated with functional impairment and disability (Lewin et al., 2005). Rates of personality disorder among men with comorbid bipolar disorder and substance use problems has previously been shown to be high (Kosten & Kosten, 2004), however the current study did not have a sufficient sample size to examine this question in detail for people with comorbid depressive symptoms and AOD use problems.

Despite their poorer psychological status, people with comorbid depression were no more likely to be taking medication nor to have been hospitalised for a mental health condition in the months preceding the assessment. This is in contrast to the study hypotheses and previous research with a similar population (McDermut, Mattia, & Zimmerman, 2001). However, when treatment was considered over the lifespan, people with depression reported significantly greater involvement in treatment for depression or some other mental health condition than did their counterparts without depressive symptoms.
3.1.5.4 Other outcomes

The sample as a whole reported engaging in several risk taking behaviours at high rates. This included sexual risk taking, unsafe injecting drug use practices and criminal activities. People with comorbid depression engaged in each of these activities at higher rates than their counterparts, but this difference was not statistically significant. In particular, people with depression shared needles etc. around 1.5 times more often, and participated in criminal activities such as break/enter/stealing, fraud, dealing, and violent crime around 1.5 times more than their counterparts. Previous research among other comorbid populations (i.e. psychosis and substance use) has also reported similar associations (Jerrell, 1996), and Yuen and Lee (2003) found that negative mood increased risk taking tendencies among their Chinese participants. As indicated by Baker et al. (2004), these findings demonstrate the degree of societal problems associated with regular amphetamine use, which may be even more serious for users with depressive symptomatology.

Self-reported quality of life was significantly poorer for people with comorbid depression across every domain assessed. Clearly, the combination of depression and regular amphetamine use has a far-reaching impact on a person’s general health and well being, over and above psychological/drug use morbidity.
3.1.5.4 Limitations

Limitations in the study design are worthy of some discussion, given their potential to influence the results. Of note is that the sample was drawn exclusively from AOD treatment services and met a minimum threshold of regular amphetamine use in order to meet eligibility criteria. Consequently, the sample may not be representative of the wider population of people with substance misuse problems. AOD use among the whole sample was entrenched and they experienced a range of psychological, educational and employment difficulties upon presentation to the study. This likely made it difficult to detect a differential effect of depressive symptoms (present in the majority of cases) on these important outcomes.

In summary, the results of Study 1 suggest that depression is extremely common among regular users of amphetamines and significantly impacts on a range of psychological outcomes, levels of drug dependence and craving experiences. Left alone, it is likely that the combination of depression and AOD use will be associated with more mental health treatment, substandard quality of life across many domains and increased risk taking behaviours relative to people without depressive symptoms. Treatment research is clearly required to investigate appropriate approaches to mitigate these harmful associations.
3.2 Study 2

The Impact of Depression on People Presenting to Australian Mental Health Services for Treatment

3.2.1 Introduction

In 2001, the National Health and Medical Research Council of Australia (NHMRC) supported a large three-year study of psychological treatment for people with psychosis and AOD use comorbidity. This study was one of the first and largest of its kind, and was developed in recognition of the increasing prevalence of psychosis and substance use comorbidity, along with the negative consequences that this particular comorbidity has on a range of social, occupational and prognostic outcomes (Baker et al., in press, January 2005).

Despite the impact of psychosis and AOD use comorbidity, very few studies up until this point had closely examined this group of people outside the inpatient psychiatric hospital setting. This is a concern, considering the move over the last decade towards outpatient community-based treatment for people with serious mental illness, and the likely challenges associated with stigma, access to illicit substances and social, occupational, financial and other functional demands associated with integrating into the community. The potential for depression to further impact on this particular group is substantial, possibly compounding the range of difficulties encountered. Yet even less is known about how the presence of depression influences this particular comorbid
group. Study 2 attempted to address these issues, by adding measures of depression into the existing assessment protocol of the NHMRC-funded trial.

3.2.2 Aims and Hypotheses

This study selected participants from the larger NHMRC-funded treatment study of people with comorbid psychotic and substance use conditions who were referred by Hunter Mental Health Services. This sub-group was divided into two groups based on the presence/absence of moderate depressive symptomatology, and compared on a range of demographic, psychological, AOD use and general well being measures. It was hypothesised that, due to the additional impact of moderate depressive symptomatology, those participants in the depressed group, relative to their non-depressed counterparts, would report:

- Lower rates of education, employment, marriage;
- Reduced psychological functioning/outcomes;
- Poorer AOD use outcomes;
- Increased service utilisation; and
- Reduced quality of life.
3.2.3 Methods

3.2.3.1 Setting

The study was conducted within the Hunter Region of New South Wales, which covers approximately 24,800 square kilometres of industrial, urban and rural areas of the state. Hunter Mental Health operates within the Hunter Area Health Service, and offers a range of public services. These include adult general psychiatric services (community mental health teams, outpatient clinics and public psychiatric inpatient units), a community adolescent team, child psychiatry services, psychiatric assistance service for people up to 25 years (PAS), a neuropsychiatry unit, psycho-geriatric services, dual diagnosis service (inpatient and community units), and psychiatric rehabilitation services.

3.2.3.2 Participants

Participants in the study were 130 people with comorbid psychotic disorders and regular current and problematic use of alcohol, cannabis or amphetamines. To be eligible for the study, people were required to satisfy the following criteria:

a. Presence of a psychotic spectrum disorder currently in a non-acute phase;

b. Current problematic use of at least one of the following: alcohol (i.e. consumption above recommended safe drinking levels as suggested by the NHMRC; equates to 4 standard drinks per day for men or 2 standard drinks per day for women with fewer than 2 alcohol free days per week); cannabis (at least weekly use); or amphetamines (at least weekly use);
c. Absence of a brain injury, organic brain disease and/or significant cognitive impairment;

d. Ability to understand English; and

e. Intention of staying within the Hunter Region for the ensuing 12-month period.

Participants for the study were recruited through a variety of mental health and community sources, using case managers and other health professionals as a point of liaison between potential participants and the research team where possible. Following referral to the project, participants were screened by the research team to determine eligibility for the study. Of the 173 people referred to this project, 130 participants (75%) agreed to the conditions of the study. Of the remainder, eight could not be contacted using the supplied contact information, 30 people refused participation, and 15 did not meet the minimum AOD use criteria. The final study sample was referred from a range of services, as listed in Table 3.8.

Table 3.8 – Participants referred to a study of comorbid psychosis and alcohol/other drug use problems (N=130)

<table>
<thead>
<tr>
<th>Referral Source</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient Psychiatric Unit</td>
<td>43</td>
<td>33</td>
</tr>
<tr>
<td>Psychiatric Assistance Service (PAS)</td>
<td>36</td>
<td>28</td>
</tr>
<tr>
<td>Community Mental Health Team</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Self-referral</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Other Research Projects</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Dual Diagnosis Service</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Psychiatric Rehabilitation Service</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Consumer Advocate Groups</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Court Liaison Services</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
All participants were volunteers who were reimbursed up to $20 AUD for costs incurred in completing clinical assessments with the research team. A sub-sample of 109 of the original 130 study participants (84%) were selected for further analysis on the basis of referral via Hunter Mental Health Services (i.e. current engagement with a mental health service).

3.2.3.3 Assessment Instruments

The assessment battery comprised a number of instruments commonly used within AOD and mental health settings, and covered the domains of self-reported AOD use, AOD abuse/dependence, readiness to change AOD use, reasons for AOD use, general functioning, quality of life, levels of depression, and personality sub-type. Basic demographic information was collected from participants, along with service utilisation data. Specific instruments are described below.

3.2.3.3.1 Demographic Information

Basic demographic information was collected over the following domains, using the relevant subscales of the Diagnostic Interview for Psychosis (DIP, Jablensky et al., 2000), as described in Study 1, above. In addition, the DIP section on self-care based on the World Health Organisation Disability Assessment Scale (WHO, 1988), was also included in the current assessment battery. Using this information from the DIP, two indices of disability were calculated: a personal disability score (range 0-10, comprising participation in household activities, interests, self-care, occupational performance and overall socialising), and a social disability score (range 0-6,
including intimate relationships, deterioration in relationships and social withdrawal). These scores were based on factors derived from a principal components analysis of these DIP items. These indices have been calculated and used elsewhere (Baker et al., in press, January 2005).

3.2.3.3.2 Diagnostic Interview for Psychosis (DIP, Jablensky et al., 2000)

Diagnosis of psychotic disorder was confirmed using the DIP (Jablensky et al., 2000), based on the Operational Criteria for Psychosis (OPCRIT, McGuffin, Farmer, & Harvey, 1991). The diagnoses obtained from this interview were collapsed according to the categories reported in the Low Prevalence Disorders Study of the National Survey of Mental Health and Wellbeing (Jablensky et al., 1999): severe depression with psychosis; bipolar-mania; schizophrenia; schizoaffective disorder; and other psychosis. This mirrors approaches used in similar studies (e.g. Baker et al., in press, January 2005).

3.2.3.3.3 Beck Depression Inventory II (BDI-II, Beck et al., 1996)

The BDI-II is a 21-item self-report questionnaire used to screen for the presence of depressive symptoms over the previous two-week period and has been described in Study 1.
3.2.3.3.4 Brief Psychiatric Rating Scale (BPRS, Ventura, Green, Shaner, & Liberman, 1993)

The BPRS is a 24-item clinician-administered scale measuring the following symptom constructs: somatic concern, anxiety, depression, suicidality, guilt, hostility, elated mood, grandiosity, suspiciousness, hallucinations, unusual thought content, bizarre behaviour, self-neglect, disorientation, conceptual disorganisation, blunted affect, emotional withdrawal, motor retardation, tension, uncooperativeness, excitement, distractibility, motor hyperactivity and mannerisms and posturing. Clinicians rate each construct on a seven-point Likert scale (1=not present, 7=extremely severe) the level of severity that best describes the client’s condition over the past two-weeks (Ventura et al., 1993). Items 7, 12, 13, 15-24 are rated on the basis of observed behaviour and speech, while the remaining items are rated based on a clinical interview conducted with the participant. For the purposes of this study, the 24 items were summed to form a total score (range 24-168), with higher scores indicating increased psychiatric symptomatology.

3.2.3.3.5 Lancashire Quality of Life Profile (LQoLP, Oliver, 1991-1992)

The LQoLP contains several quality of life domains, is based on Lehman’s (1982) quality of life interview (van Nieuwenhuizen, Schene, Koeter, & Huxley, 2001). Initially, participants are asked to answer nine questions relating to how satisfied they are (1=can’t be worse, 7=can’t be better) with: work and education, leisure, religion, finances, living situation, safety, family relations, social relations, and health. In
addition, people use the same seven-point scale to indicate their satisfaction with their life as a whole (“life satisfaction score”). Participants also complete a modified version of the Rosenberg (1965) self-esteem scale, and a global well-being “ladder” adapted from Cantril’s Ladder (van Nieuwenhuizen et al., 2001), which asks them to place themselves between the upper and lower limits of the best and worst life they could imagine for themselves. Internal consistency for each of the nine domains is acceptable ($\alpha \approx 0.07$) (van Nieuwenhuizen et al., 2001), and the scale is valid for use as a measure of improvement in mental health among psychiatric patients, particularly those with schizophrenia (Meijer, Schene, & Koeter, 2002).

3.2.3.3.6 International Personality Disorder Questionnaire (IPDEQ, Loranger et al., 1997)

The 59-item version of the International Personality Disorder Examination screens for the presence of Axis II personality disorders, based on the International Classification for Disorders, Version 10 (ICD-10) and is described in Study 1.

3.2.3.3.7 Patterns of AOD Use

This scale was developed for use in the current study, and asked for information related to the participant’s use of alcohol/other drugs across 12 drug types: alcohol, cannabis, heroin, other opiates, amphetamines, cocaine, hallucinogens, barbiturates, tranquilisers, inhalants, tobacco and caffeine. See Study 1 for a detailed description of this scale.
3.2.3.3.8 Structured Clinical Interview for DSM-IV, Research Version (SCID-IV-RV, First, 2001)

The SCID-IV-RV provides a diagnostic, clinician-rated measures of AOD abuse and dependence, based on the criteria set out in the Diagnostic and Statistical Manual of the Mental Disorders, Fourth Edition (APA, 2000a). See Study 1 for a detailed description of this scale.

3.2.3.3.9 Opiate Treatment Index (OTI, Darke et al., 1991)

The OTI addresses the quantity and frequency of use across 11 substances and is explained in detail in Study 1. For the current study, the following items from the drug use scale were included: alcohol, cannabis, amphetamines, and tobacco.

3.2.3.3.10 Readiness to Change Alcohol/other Drug Use (Rollnick, Heather, Gold, & Hall, 1992)

The Readiness to Change questionnaire is based on the stage of change model (Prochaska & DiClemente, 1986). The questionnaire is completed by clients in around five minutes and scored by the clinician according to an algorithm designed by the authors of the scale. Clients complete one questionnaire for each drug they are currently using (alcohol, cannabis and/or amphetamines) and rate their agreement with 15 statement relating to their current AOD use according to a five-point Likert scale (1=strongly disagree, 5=strongly agree).
The scale is divided into three subsections which relate to the following stages of change: pre-contemplation, contemplation and action. Scores are totalled for the items particular to each subsection. For pre-contemplation, items 1, 4, 7, 10 and 13 are added together; contemplation is the sum of 2, 5, 8, 11 and 14; and action is the sum of items 3, 6, 9, 12, and 15 above. The subsection with the highest total score is the client’s current stage of change for that drug. Analysis of the psychometric properties of this scale, as applied to people using alcohol, indicate it has good internal consistency (Cronbach’s $\alpha$ range: 0.73-0.85 across the three stages of change subscales) and acceptable test-retest reliability (range: 0.78-0.82 across the stages of change subscales) (Rollnick et al., 1992). The scale was additionally validated against other measures of readiness to change, including a cartoon-based representation of the stages of change model (Prochaska & DiClemente, 1986). Results indicated general agreement between the stage of change selected via these alternative measures and the stage of change detected by the readiness to change questionnaire (Rollnick et al., 1992).

3.2.3.3.11 Drug Use Motives (Cooper, Russell, Skinner, & Windle, 1992)

Participants discussed their drug use motives for each drug they were currently using (alcohol, cannabis, or amphetamines). The Drug Use Motives scale presented the person with a list of 17 potential reasons for using a particular drug and asked them to rate their agreement with each statement (0=never, 4=almost always) according to how
often they used AOD for that particular reason. Items are divided into three motive subscales, and participants given an average score on each subscale: social (celebrate, join in with friends), coping (cheer up a bad mood, relax, and forget worries), and pleasure enhancement (like the feeling, to get high). Internal consistency is acceptable for the scale, (α range: 0.77-0.85), and validity analysis indicated that the subscales predicted 15-26% of the variance in alcohol use indicators (such as quantity, frequency of use). Confirmatory factor analysis with the Study 2 dataset revealed four factors best explained the drug use motive reported by this sample, and as such the subscale of ‘illness’ (reduce mental health symptoms, reduce medication side effects) was calculated. These items were previously part of the ‘coping’ subscale.

3.2.3.3.12 Global Assessment of Functioning (GAF, APA, 1994)

The GAF provides in index of overall psychological functioning incorporating the domains of psychological, social and occupational status, and forms the fifth axis of diagnosis within the DSM-IV (APA, 2000a). Scores are divided into ten ranges of functioning (1-10, 11-20, 21-30 etc.) with higher scores indicating better functioning. GAF ratings are assigned by a qualified clinician, and are made based on the level of functioning at the time of evaluation, and is important to re-administer over time, and following completion of a treatment program (APA, 2000a).
3.2.3.4 Procedure

Referral to the project was either via mental health treatment services, or participants could self-refer in response to project advertising (see Appendix B). Eligible participants were provided with an information sheet and consent form summarising their involvement throughout the study period. Parental/guardian consent was additionally sought for participants under the age of 18 years. See Appendix B for a copy of this documentation.

The initial assessment was commenced with consenting participants using available research rooms or, if preferred by participants, within the service from which they were referred. In a few cases, home visits were conducted. All research personnel completing initial assessments were psychologists or intern psychologists who completed a week-long training seminar in the administration of each of the assessment instruments. The PhD candidate (Frances Kay-Lambkin) assisted in the design of the study, added the depression-related assessment instruments, and completed a proportion of initial assessments at the Hunter Region site.

Participants completed the assessment battery over two one-hour sessions, one week apart. In cases where participants were unable to read or write sufficiently to complete the self-report measures, research personnel facilitated completion of the instruments by reading the questions and response options aloud. Reimbursement of expenses of up to $20 AUD was provided at the conclusion of the second assessment session.
These procedures were carried out in accordance with the National Health and Medical Research Council of Australia’s Statement of Ethical Conduct of Research among Human Participants. Ethics approval was gained from the relevant Human Research Ethics Committees (HAREC Approval No: 9912153.21, HREC Approval No: H 827 1299).

3.2.3.5  *Statistical Analysis*

Data were analysed using the Statistical Package for Social Sciences (SPSS) for Windows, Version 12.0.

3.2.3.5.1  *Characteristics of the Sample*

3.2.3.5.1.1  *Study Sub-sample (N=109)*

Given the majority (84%) of participants were from mental health services, the full sample was not analysed according to referral source. All data analyses used the sub-sample of the original data pool, incorporating only those participants who were referred via mental health services within the Hunter Region of NSW (n=109). Exploratory data analysis examined basic demographics, levels of depressive symptoms, levels of AOD use and other variables of interest.
3.2.3.5.2 Profile of Participants Based on Comorbid Depressive Symptoms

The final study sub-sample was categorised according to the presence/absence of comorbid depression, as measured by the BDI-II (Beck et al., 1996). As per Study 1, comorbid depression was coded as “present” if BDI-II scores were greater than 20, the cut-off for moderate depressive symptomatology.

A profile of participants in each category (comorbid depression/no depression) was created according to basic demographic information and scores on each of the assessment instruments of interest. Differences between the two groups were examined using one-way ANOVAs for continuous variables and chi-squared analyses for categorical variables. The significance threshold was set at $p<0.01$ to partially control for the number of statistical tests performed on this data subset. Significance values between $p=0.01$ and $p=0.05$ were regarded as non-significant trends.

3.2.4 Results

3.2.4.2 Characteristics of the Sample

3.2.4.2.1 Study Sub-sample (n=109)

The sub-sample of participants referred to the study from public mental health services (n=109) comprised 84 males (77%) and were, on average, 27 years of age (range: 16-61 years). Depression levels among the sample were in the mild range, with the average total score on the BDI-II being 17.34 (range: 0-52).
3.2.4.1 Profile of Participants Based on Comorbid Depressive Symptoms

The sample of participants presenting to mental health services (n=109) was categorised on the basis of reporting current, moderate levels of depressive symptoms at the time of assessment. A score of 20 on the BDI-II was used as a nominal threshold above which participants were deemed to have moderate levels of comorbid depressive symptomatology. This corresponds with the guidelines for the interpretation of BDI-II scores (Beck et al., 1996).

Approximately one-third of the sample (n=41, 38%) met criteria for comorbid depressive symptoms at the time of assessment. Table 3.9 displays the basic demographic characteristics of the mental health services sub-sample categorised according to the presence of comorbid depression.

People with comorbid depression did not significantly differ from their counterparts without depression across a range of demographic variables. This included gender (continuity-corrected $\chi^2_{1}=2.121, p=0.145$) and age distributions ($F(1,107)=0.226, p=0.636$), marital status (Pearson’s $\chi^2_{2}=0.730, p=0.694$), cultural background (Pearson’s $\chi^2_{2}=3.321, p=0.128$), and employment (continuity-corrected $\chi^2_{1}=0.458, p=0.499$).
Table 3.9  Characteristics of a sample of people involved in research on comorbid psychosis and alcohol/other drug use problems who were referred via mental health services, according to depression status (n=109).

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression* (n=41)</th>
<th>No Comorbid Depression* (n=68)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>28</td>
<td>68</td>
</tr>
<tr>
<td>Females</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>30</td>
<td>73</td>
</tr>
<tr>
<td>Married/Defacto</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Separated/Divorced/Widowed</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Currently Employed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>16</td>
<td>39</td>
</tr>
<tr>
<td>Secondary School</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>Trade</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Tertiary Degree/Diploma</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>Cultural Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal/Torres Strait Islander</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Anglo-Australian</td>
<td>34</td>
<td>83</td>
</tr>
<tr>
<td>European/Pacific Rim</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.E.</th>
<th>Mean</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>27.63</td>
<td>1.57</td>
<td>26.76</td>
<td>1.06</td>
</tr>
<tr>
<td>Global Assessment of Functioning+</td>
<td>64.02</td>
<td>2.05</td>
<td>72.24</td>
<td>1.34</td>
</tr>
<tr>
<td>Personal Disability+</td>
<td>1.07</td>
<td>0.17</td>
<td>0.63</td>
<td>0.10</td>
</tr>
<tr>
<td>Social Disability+</td>
<td>1.80</td>
<td>0.12</td>
<td>0.76</td>
<td>0.24</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20
+p<0.01

General functioning among the sample, as measured by the GAF, was relatively high, although people with depression scored significantly lower on this clinician-rated measure (F(1,107)=12.217, p=0.001). In particular, people with depression scored in the range indicating the presence of some mild symptoms or some difficulty in social, occupational or school functioning, but generally functioning well with some
meaningful interpersonal relationships. People without depression scored in a higher category, indicating that the presence of symptoms is only transient and expectable reactions to psychosocial stressors and no more than slight impairment in social, occupational or school functioning.

Levels of social and personal disability among the sample were at the low end of the spectrum (maximum disability score was six and ten respectively). People with depression experienced significantly more personal disability than did their counterparts, in terms of their ability to participate in household activities, developing and maintaining interests, time devoted to self care and occupational participation \((F(1,104)=6.359, p=0.013)\). Similarly, the presence of depression was associated with greater social disability, such as deterioration in intimate and social relationships, and increased social withdrawal compared to people without depression \((F(1,104)=17.982, p=0.000)\).

Additional demographic information relating to the sub-sample, such as current living situation, accommodation arrangements, current income and educational experience is contained in Table 3.10, which compares these variables for people with and without comorbid depressive symptomatology. The profile of people with comorbid depression did not significantly differ from their counterparts across each of these demographic variables.
Table 3.10  Detailed demographic information for people with comorbid psychosis and alcohol/other drug use problems presenting to mental health services according to depression status (n=109).

<table>
<thead>
<tr>
<th>Living Situation</th>
<th>Comorbid Depression* (n=41)</th>
<th>No Comorbid Depression* (n=68)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Alone</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>Parents/relatives/children</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>Partner</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Friends</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Current Accommodation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own home</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Family home</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>Rental</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Crisis/Temporary</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Current Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage/Salary</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Pension/Benefit</td>
<td>37</td>
<td>90</td>
</tr>
<tr>
<td>Secondary School Completion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>No</td>
<td>28</td>
<td>68</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20

Despite the two groups reporting similar completion rates of secondary school (continuity-corrected $\chi^2_1 = 0.894, p = 0.169$), a non-significant trend emerged for the mean age at which each group left secondary school. That is, those with depression left school around six months earlier than their counterparts, although this was not statistically significant ($M$(depressed) = 15.59, $M$(non-depressed) = 16.18, $F(1,104) = 3.993, p = 0.048$).
3.2.4.1.1 Alcohol/other Drug Use Outcomes

3.2.4.1.1.1 Patterns of Alcohol/other Drug Use

Lifetime use of a range of alcohol/other drugs did not significantly differ for the subsample, according to the presence of depressive symptomatology. As Figure 3.7 indicates, 100% of the sample had used alcohol and cannabis at some stage in their lives, and most had smoked cigarettes.

A high proportion of the sample had used amphetamines in the past (68% people with depression, 77% without) and the majority had also experimented with hallucinogens such as ecstasy (56% people with depression, 54% without). In addition, around one-
third of each group had previously used heroin and/or inhalants, and use of tranquilisers and cocaine had previously been used by between 24% and 34% of participants at some stage in the past.

3.2.4.1.1.2 SERVICE UTILISATION

Despite the use of alcohol/other drugs among the sample, engagement in current treatment for AOD use problems was rare. For example, only 7% of the depressed group and 16% of the non-depressed group were currently enrolled in treatment for AOD misuse. People without depression participated in AOD treatment at over twice the rate of their counterparts with depression, but this difference was not statistically significant at the 0.01 level (continuity-corrected $\chi^2 = 1.089$, $p = 0.297$). Previous AOD treatment experience was also low for the sample. That is, both groups, on average, reported less than one previous treatment occasion ($M_{\text{depressed}} = 0.512$, $M_{\text{non-depressed}} = 0.677$, $F(1, 108) = 0.690$, $p = 0.404$).

3.2.4.1.1.3 ALCOHOL/OTHER DRUG ABUSE AND DEPENDENCE

As indicated in Figure 3.8 displays, 12-month rates of abuse and dependence on alcohol, cannabis and amphetamines was high.
Figure 3.8  Rates of DSM-IV alcohol/other drug abuse or dependence among people with comorbid psychosis and alcohol/other drug use problems presenting to mental health services according to depression status (n=109).

Generally, the rate at which people with and without depression met criteria for cannabis and amphetamine abuse/dependence did not significantly differ for the 12-month period prior to assessment. This is despite a higher proportion of people with depression meeting criteria for cannabis dependence compared to their counterparts (78% versus 65%, respectively, Pearson’s $\chi^2=2.796$, $p=0.247$). In contrast, rates of 12-month amphetamine dependence were higher for people without depression (35% versus 29%, Pearson’s $\chi^2=1.276$, $p=0.528$). The presence of depression was significantly associated with rates of alcohol dependence. That is, people with depression reported almost twice the rate of alcohol dependence for the 12-months prior to assessment relative to their counterparts (71% versus 43%), a result that was statistically significant (Pearson’s $\chi^2=9.324$, $p=0.009$).
3.2.4.1.4 Quantity/Frequency of Recent Alcohol/Other Drug Use

Table 3.11 displays the level of use of alcohol, cannabis, amphetamines and tobacco for the sub-sample.

Table 3.11  Levels of use of alcohol, cannabis, amphetamines and tobacco among participants with comorbid mental health and AOD use problems presenting to mental health services for treatment, according to depression status (n=109).

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression* (n=41)</th>
<th>No Comorbid Depression* (n=68)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.E.</td>
</tr>
<tr>
<td>OTI q-score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>3.76</td>
<td>1.92</td>
</tr>
<tr>
<td>Cannabis</td>
<td>4.54</td>
<td>1.02</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>0.13</td>
<td>0.09</td>
</tr>
<tr>
<td>Tobacco</td>
<td>17.55</td>
<td>2.02</td>
</tr>
<tr>
<td>Poly-drug use Score</td>
<td>2.93</td>
<td>0.18</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20

+Opiate Treatment Index (Darke et al., 1991) quotient score, indicating quantity/frequency of use over the month prior to assessment.

~Poly-drug use calculated by summing the number of drugs (including alcohol and tobacco) the participant used in the month prior to assessment.

Current use of alcohol, cannabis, amphetamines and tobacco was relatively high among the study participants, and the presence of depression did not affect the quantity or frequency of use of any of these substances. Average levels of alcohol consumption in the month prior to assessment was around four standard drinks per day for the people with depression, and around five standard daily drinks for people without depression (F(1,107)=0.042, p=0.838). Similarly, people with comorbid depression used around five standard units of cannabis per day at entry to the study, compared
with a daily rate of around four standard units of cannabis for their counterparts
($F(1,107)=0.485, p=0.488$). Amphetamine use was just under a once weekly rate for
both depressed and non-depressed groups ($F(1,107)=0.123, p=0.726$), and tobacco was
smoked at between 16-18 cigarettes per day ($F(1,107)=0.395, p=0.531$). In addition,
both depressed and non-depressed groups were using around three substances in the
month prior to assessment ($F(1,107)=0.130, p=0.720$).

In addition, a hazardous use aggregate score was calculated as a global index of
hazardous use of ten substances, excluding tobacco, in the month prior to the initial
assessment (see Baker et al., in press, January 2005). As described in Baker et al. (in
press, January 2005), this aggregate score was the sum of the number of days in the
previous month at which the participant’s use of alcohol (standard drinks) exceeded
recommended guidelines and the number of days at which their illicit substance use
occasions were more than 0.14 on the OTI. If participants were using more than one
substance at any one assessment occasion, their aggregate use score for the previous
month exceeded a score of 28 (maximum 280 days hazardous use). Participants with
comorbid depression reported an average hazardous use index of 32.49 days (S.D.
17.16), compared with their counterparts without depression, who scored a mean of
25.04 (S.D. 11.77) on this global index. This difference was statistically significant
($F(1,108)=7.203, p=0.008$).
3.2.4.1.1.5 Stage of Change

Figure 3.9 displays the rates of pre-contemplation, contemplation and action stages of change for alcohol use among depressed and non-depressed participants, and includes only those people who met the study criteria for harmful use of alcohol (that is, above NHMRC recommended safe drinking guidelines).

Contemplation was the most common stage of change for alcohol use among people with depression (53%), whereas pre-contemplation was most common for people without depression (54%). These differences were statistically significant (Pearson’s $\chi^2 = 10.465, p = 0.005$).
Readiness to change for people who met criteria for harmful cannabis use at entry to the study (i.e. used at least once weekly) is displayed in Figure 3.10, according to levels of depression. As with alcohol, the highest proportion of people with depression in this group were in the contemplation stage of change (54%), however this was also true for people without depression (44%, Pearson’s $\chi^2 = 0.719$, $p = 0.698$).

![Figure 3.10](image)

**Figure 3.10** Readiness to change current cannabis use among people with comorbid psychosis and alcohol/other drug use problems presenting to mental health services according to depression status (n=65, only those meeting criteria for harmful cannabis use).

Figure 3.11 displays the stages of change for people meeting criteria for harmful use of amphetamines according to the presence of depression. The majority of people with depression (60%) were in the contemplation stage of change for their amphetamine use. In contrast, the majority of people without depression were at the action stage of change for this substance (50%). Differences between depressed and non-depressed groups were not statistically significant (Pearson’s $\chi^2 = 1.432$, $p = 0.489$), however this
analysis only included the 17 people who met criteria for harmful amphetamine use (i.e. weekly use) at entry to the study.

![Bar chart showing readiness to change current amphetamine use among people with comorbid psychosis and alcohol/other drug use problems presenting to mental health services according to depression status (n=17, only those meeting criteria for harmful amphetamine use).](chart.png)

**Figure 3.11** Readiness to change current amphetamine use among people with comorbid psychosis and alcohol/other drug use problems presenting to mental health services according to depression status (n=17, only those meeting criteria for harmful amphetamine use).

### 3.2.4.1.1.6 DRUG USE MOTIVES

Motives were grouped into four subscales for each drug type (alcohol, cannabis, amphetamines) and average scores on each subscale were calculated for each participant who was using that particular drug at harmful levels. Table 3.12 displays the mean subscale scores for each drug type, categorised according to depression status, for people meeting harmful use criteria for alcohol, cannabis and amphetamines.
Table 3.12 Drug use motives for participants with comorbid mental health and alcohol/other drug use problems presenting to mental health services for treatment, according to depression status and harmful use of alcohol, cannabis and amphetamines.

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression*</th>
<th>No Comorbid Depression*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.E.</td>
</tr>
<tr>
<td>Alcohol use motives (n=48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>2.64</td>
<td>0.19</td>
</tr>
<tr>
<td>Coping*</td>
<td>2.92</td>
<td>0.15</td>
</tr>
<tr>
<td>Pleasure Enhancement</td>
<td>2.53</td>
<td>0.22</td>
</tr>
<tr>
<td>Illness</td>
<td>1.61</td>
<td>0.25</td>
</tr>
<tr>
<td>Cannabis use motives (n=42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>1.96</td>
<td>0.26</td>
</tr>
<tr>
<td>Coping</td>
<td>2.43</td>
<td>0.25</td>
</tr>
<tr>
<td>Pleasure Enhancement</td>
<td>2.38</td>
<td>0.21</td>
</tr>
<tr>
<td>Illness</td>
<td>1.47</td>
<td>0.35</td>
</tr>
<tr>
<td>Amphetamine use motives (n=4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>3.00</td>
<td>-</td>
</tr>
<tr>
<td>Coping</td>
<td>3.00</td>
<td>-</td>
</tr>
<tr>
<td>Pleasure Enhancement</td>
<td>3.80</td>
<td>-</td>
</tr>
<tr>
<td>Illness</td>
<td>2.00</td>
<td>-</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20
+p<0.01

Participants using cannabis and amphetamines at harmful levels at assessment did so for similar reasons, regardless of the presence of depressive symptoms. For people meeting criteria for harmful alcohol use at the time of assessment, those with depressive symptoms reported that they used drinking as a coping mechanism significantly more often than did their counterparts without depression (F(1,46)=11.922, p=0.001). In addition, there was a non-significant trend towards people with depression using alcohol as a means to mitigate the effects of their mental health problems relative to their counterparts, however this was not significant at p=0.01 (F(1,46)=4.924, p=0.031).
3.2.4.1.2 Mental Health Outcomes

The majority of participants received a diagnosis of schizophrenia or a psychotic disorder along the schizophrenic spectrum (e.g. schizoaffective disorder, 80%). There were no significant differences between people with and without depressive symptomatology in relation to psychotic diagnosis (continuity-corrected $\chi^2=0.012$, $p=0.912$). In contrast, when assessing current symptoms according to the BPRS, people with depression scored significantly higher than their counterparts on the overall mean BPRS score, reporting twice the rate of psychiatric symptoms ($M$(depressed)=16.29, $M$(no depression)= 8.64, $F(1,107)=9.608$, $p=0.002$).

Figure 3.12 displays the mode of onset of psychotic disorder reported by the sub-sample of participants, according to their depression levels.

![Chart showing mode of onset of psychosis](https://example.com/chart.png)

**Figure 3.12** Mode of onset of psychotic disorder among people with comorbid alcohol/other drug use problems presenting to mental health services according to depression status (n=109).
The majority of participants without depression recalled the onset of their psychosis as acute (n=17, 25%) or abrupt (n=19, 28%). On the contrary, people with depression remembered the onset of their psychotic condition as being either gradual (n=11, 27%) or insidious (n=18, 44%). These differences between the two depressed groups was not statistically significant (Pearson’s $\chi^2 = 6.228$, $p=0.101$). There were no significant differences in the average age at onset of psychotic disorder according to the presence of depression ($F(1,107) = 1.036$, $p=0.311$), which for most people commenced between the ages of 17 and 19 years ($M$(depressed) = 17.83, $M$(non-depressed) = 19.04).

3.2.4.1.2.1 Service Utilisation

As indicated in Table 3.13, participants were taking a number of medications including antipsychotic and antidepressant/mood stabiliser prescription drugs. No significant differences existed between depressed and non-depressed participants in the number of medications they were taking upon assessment (Pearson’s $\chi^2 = 0.383$, $p=0.826$), the type of medication they were prescribed (continuity-corrected $\chi^2 = 1.068$, $p=0.301$), or whether or not they were taking their medication correctly (continuity-corrected $\chi^2 = 0.321$, $p=0.571$).

Around one-third of people without depression had participated in mental health rehabilitation programs over previous 12 months (n=24, 35%), whereas the rate of participation for people with depression was 17% (n=7). This difference was not statistically significant (continuity-corrected $\chi^2 = 3.325$, $p=0.068$).
Table 3.13  Medication characteristics of people with comorbid psychosis and substance use problems presenting to mental health services for treatment, according to depression status (n=109).

<table>
<thead>
<tr>
<th>Depression Status</th>
<th>Comorbid Depression* (n=41)</th>
<th>No Comorbid Depression* (n=68)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Number of medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>One</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td>Two or more</td>
<td>17</td>
<td>42</td>
</tr>
<tr>
<td>Type of medication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>18</td>
<td>56</td>
</tr>
<tr>
<td>Antidepressant/mood stabiliser</td>
<td>14</td>
<td>44</td>
</tr>
<tr>
<td>Take medication as prescribed?</td>
<td>22</td>
<td>67</td>
</tr>
</tbody>
</table>

*Comorbid depression present if BDI-II score ≥ 20

The total number of hospital admissions related to mental health problems was approximately equal between people with and without depression, with both groups reporting around one hospital visit over the previous 12-month period (M(depressed)=1.29, M(non-depressed)=1.07, F(1,109)=0.870, p=0.353). The presence of depression was related to the number of treatment occasions in 12 months prior to assessment, with the comorbidly depressed group reporting visits to health professionals (general practitioners, case managers, psychiatrists etc.) close to twice as often as their counterparts without depression (M(depression)=24.94, M(no depression)=14.78, F(1,107)=6.231, p=0.014).
Figure 3.13 displays the rates of positive screens for each of the ICD-10 personality disorders according to levels of depression. The likelihood of personality disorder among the sample as a whole was high, with upwards of 30% of participants screening positive for at least one personality disorder. This was particularly true for people with comorbid depression, with over 60% screening positive for at least one personality condition.

![Figure 3.13](image)

Figure 3.13 Rates of positive screens for personality disorder among people with comorbid psychosis and alcohol/other drug use problems presenting to mental health services according to depression status (n=109).

With the exception of histrionic personality disorder, people with comorbid depression screened positive for personality disorder significantly more often than their counterparts on the following ICD-10 personality disorders: paranoid (continuity-corrected $\chi^2=9.678$, $p=0.002$), schizoid (continuity-corrected $\chi^2=17.821$, $p=0.000$), 7.211, $p=0.007$), borderline (continuity-corrected $\chi^2=32.614$, $p=0.000$), anankastic...
An overall score was calculated for each participant (range 0-1), based on the average number of items on which they screened positive. Oneway ANOVA indicated that scores for the comorbid group were significantly higher on this overall scale than for those without depression ($M$(depressed group)=0.584, $M$(no-depression)=0.357, $F$(1,107)=93.118, $p=0.000$). This indicates that the likelihood of any personality disorder was significantly higher among people with comorbid depression relative to their counterparts. Scores on this overall personality score were also compared for each group to the norm among the Australia population (0.19, Lewin et al., 2005). One-sample t-tests revealed that both the depressed group and the non-depressed group scores on this variable were significantly higher than the general population (depressed group: $t$(40)=26.334, $p=0.00$; non-depressed group: $t$(67)=10.530, $p=0.000$).

3.2.4.1.3 Quality of Life

Figure 3.14 displays the self-reported ratings of participants with and without depression on various aspects of their current lifestyle. Participants with comorbid depression rated their current quality of life significantly lower across every domain assessed. Specifically, this included work/education ($F$(1,107)=11.054, $p=0.001$), leisure time ($F$(1,107)=9.340, $p=0.003$), religious beliefs ($F$(1,107)=10.850, $p=0.001$), financial situation ($F$(1,107)=9.914, $p=0.002$), living situation ($F$(1,107)=10.455, $p=0.002$), personal safety ($F$(1,107)=19.922, $p=0.000$), family relationships
When asked to rate their life from an overall perspective, people with depression scored almost two points lower than did people without depression (M(depression)=3.24, M(no depression)=5.06), a difference that was statistically significant (F(1,107)=44.778, p=0.000). Overall well being was also assessed via using a “ladder”, which asked participants to rate their current life in between the top rung (10=“the best possible outcome”) and the bottom rung (0=“the worst possible outcome”). Oneway ANOVA revealed that people with depression rated their overall well being significantly lower than did their counterparts without depression (F(1,107)=46.453, p=0.000), with an average two points lower on the “ladder” than people without depression (M(depressed)=4.10, M(non-depressed)=6.35).
Self-concept scores were also significantly lower among people with depression ($F(1,108)=103.749$, $p=0.000$). The mean total self concept score for people with depression was over four points lower than for those people without comorbid depression ($M=13.56$ versus $M=17.93$).

### 3.2.5 Discussion

The results of Study 2 indicate that a sample of people with comorbid psychotic and AOD use disorders presenting to mental health services for treatment will report at least moderate levels of depressive symptoms in approximately one-third of cases. The presence of depression among these people was associated with significantly poorer general functioning, significantly increased levels of personal and social disability, significantly higher rates of service utilisation and significantly reduced quality of life and self-concept relative to people without comorbid depression.

Depression was also associated with a significantly increased likelihood of a range of personality disorders. AOD use outcomes were also affected by the presence of depression, with significantly higher rates of alcohol dependence, significantly higher levels of hazardous use of substances and significantly increased use of alcohol as a coping mechanism reported among those with comorbid depressive symptoms. People with depression were significantly more likely to be in the contemplation stage of change for alcohol use, with their counterparts more likely to report pre-contemplation.

These results are discussed in detail below.
3.2.5.1 Demographics

The demographic variables examined in the current study were not affected by the presence of comorbid depression. This was true across the range of cultural background, employment, education history, living situation, income, age and gender. Previous research has suggested that among people with comorbid psychosis and AOD use problems, financial difficulties, unemployment, marital and social problems are extremely common (Laudet, Magura, Vogel, & Knight, 2000). As such, the presence of depressive symptoms in the current study may not necessarily differentiate between participants who already experience a range of challenges in these domains. Although the majority of people in the study were male, males and females were equally distributed across the depressed/non-depressed groups, and the proportion of males to females was typical of projected figures for this particular population (Jablensky et al., 1999).

3.2.5.2 Alcohol/other Drug use outcomes

The study results were mixed in their support of the hypothesis that the presence of comorbid depression would be associated with reduced AOD use outcomes. For example, diagnostic levels of alcohol dependence over the previous 12-months were significantly higher for people with comorbid depression than for people without. However, current levels of AOD use were not affected in either direction by the presence of comorbid depression symptoms. This was true for current use over the month prior to assessment, and also lifetime use across a range of alcohol and other substances. Poly-drug use over the previous month was equivalent for depressed and
non-depressed groups and rates of 12-month cannabis and amphetamine abuse/dependence did not differ according to depression status. This supports some previous research, which indicates that depression does not significantly impact on AOD use outcomes (Brown et al., 1995; Sellman & Joyce, 1996; Zweben et al., 2004). In contrast, however, people with comorbid depression reported a significantly greater number of days of hazardous use of substances over the month prior to survey than did their counterparts without depression. This finding suggests that although the number of substances used by people may not affected by the presence of depression, it may be that when they do use, it is at a significantly more hazardous level than if depression was not present.

The presence of depression had a significant impact on the stage of change for alcohol use reported by the participants in the study. People with depression were significantly more likely to be at the contemplation stage of change for their alcohol use than their counterparts, who more commonly reported being in the pre-contemplation stage of change. This result may reflect the ruminative nature of depression (Segal et al., 2003; Segal, Williams, & Teasdale, 2002), where people experience an ongoing, immobilising cycle of evaluation of thoughts, feelings and behaviours that makes the movement into action (treatment seeking, for example) likely difficult. This cycle may also lead to people with depression more readily attributing their symptoms to their problematic use of alcohol, serving to tip the balance towards the negative consequences of drinking. Coupled with the finding that people with depression were significantly more likely to report drinking alcohol as a means to cope with stressful
situations and thoughts and to a lesser extent self-medicate symptoms of their illness, the unique relationship between depression and alcohol use problems warrants further exploration. This is particularly true when considering some evidence which suggests that the relationship between drinking and depression may change over a person’s drinking career. That is, at low-levels, drinking has been associated with the relief of depressive-type symptoms and the progression to high-level use of alcohol (Crum, Brown, Liang, & Eaton, 2001). However, once consuming alcohol at high levels, the consequences of this hazardous use seems to contribute to depressive symptoms, rather than the reverse (Crum et al., 2001).

3.2.5.3 Mental health outcomes

Contrary to the study hypotheses, diagnosis of mental health disorder was not affected by the presence of comorbid depressive symptoms. It is important to note, however, that this sample does not accurately represent the range of people presenting to mental health services for treatment, rather only those satisfying the eligibility criteria for the study (i.e. comorbid psychosis and substance use conditions). The presence of depression did not seem to significantly affect the onset of psychotic illness among the study sample. However, the majority of people with depression reported a gradual or insidious onset of their first psychotic episode, as opposed to an acute or abrupt onset reported by their counterparts. Although this difference was not statistically significant, this may be a clinically important finding, potentially providing opportunities for close monitoring and early intervention for psychosis among people reporting depressive symptoms.
Levels of current psychiatric symptoms, as measured using the BPRS, were significantly higher for people with comorbid depression, who reported twice the severity of symptoms at assessment than did their counterparts. This supports previous research findings among other comorbid populations (McNamara et al., 2001). In further support of the hypotheses for this study, rates of likely personality disorder were significantly higher for people with comorbid depression, and occurred among this group at around twice the rate of their counterparts without depression. This effect was in addition to the high rates of overall personality disorder detected in the study population, with the group as a whole reporting significantly higher levels of likely personality disorders compared to the Australian population.

3.2.5.4 Other outcomes

Service utilisation among the sample as a whole was low, especially for AOD treatment. This is despite long histories of AOD use and current levels of use above harmful thresholds. Only 16% of people without depression were currently receiving AOD treatment, twice the rate of people with comorbid depression. Previous AOD treatment was also low (less than one treatment occasion in the person’s lifetime). Given the sample was drawn from mental health services, it may be that for this sample, the psychotic disorder had been prioritised for treatment, with AOD use considered ‘secondary’ to these symptoms. In addition, although not significant, participation in rehabilitation programs was less for people with depression (67% versus 75%). Related research supports these findings, indicating that people with
depression and AOD use comorbidity are significantly less likely to receive care than are their counterparts with depression alone (ten Have, de Graaf, Vollebergh, & Beekman, 2003), and that people with psychosis and AOD use problems report increasing difficulties accessing treatment that considers their AOD use problems (Jerrell, 1996). This is a concern given the significantly poorer levels of general functioning, significantly more severe social and personal disablement, significantly poorer self-concept and significantly worse quality of life across every domain reported by the study sample with comorbid depressive symptoms and in the results of several other studies in this area (e.g. Burns et al., 2005; McDermut et al., 2001; McNamara et al., 2001).

When other treatment occasions were considered, such as community-based case management, general practitioner visits etc. people with depression reported significantly greater use of these services than did their counterparts (25 versus 15 occasions in previous 12 months). In their epidemiological research, Burns et al. (2005) reported similar results, indicating that people with comorbid depression/anxiety conditions and AOD use problems are four times more likely to have seen any health professional over the previous 12-month period relative to their non-comorbid counterparts. Overall, these results suggest that the presence of depression, in addition to other serious mental disorders (psychosis, substance misuse), has the potential to significantly impact disability and levels of general functioning, possibly limiting the capacity of people with this comorbidity to participate in
specialised treatment targeted to their needs (i.e. substance use, mental health counselling etc.).

3.3 Summary and Conclusions

Studies 1 and 2 indicated an association between depressive symptoms and significantly increased severity of psychiatric symptoms and personality disorder, significantly decreased social, occupational functioning and significantly reduced quality of life among people with regular amphetamine use or comorbid AOD use and psychotic disorder. In addition, current depression was associated with a significant increase in the experience of cravings and self-reported dependence on amphetamines. These difficulties were over and above the already high rates of disability and distress reported by each sample as a whole.

Treatment for depression was rare among the study participants, with around 40% of the AOD sample reporting no previous mental health treatment. Among the mental health sample (Study 2), involvement in AOD treatment was rare despite participants meeting criteria for hazardous use of alcohol, cannabis or amphetamines as part of the eligibility criteria for the study. This provided further evidence of the relative treatment priorities associated with AOD and mental health treatment services, regardless of the presence of moderate-severe levels of comorbidity. Given the extent of disability (personal, social, quality of life) experienced by the samples and particularly by the people who met criteria for comorbid depression, these results
provide a strong rationale for the development of an appropriate treatment protocol for depression and AOD use comorbidity.

Studies 1 and 2 highlight the vulnerabilities for people with comorbid mental health and substance use problems who present to treatment in the mental health or AOD use setting, and in particular how depression is significantly associated with disability and other challenges experienced by these people. Information gained via clinical research of this type can be useful in identifying potential mediators of relapse and response to treatment (Segal et al., 2003), however, the importance of depression and other characteristics in predicting treatment response has not previously been clearly identified (Charney, Paraherakis, Negrete, & Gill, 1998). In contrast to much of the previous research in this area, Studies 1 and 2 have used depressive symptom severity (as opposed to lifetime or diagnostic rates of depressive disorder) to explore associations between the above variables and comorbidity status. Several authors have argued that this approach is preferable, given the direct links between depressive symptomatology at entry to treatment and subsequent treatment retention and outcomes (Degenhardt, 2002; McNulty & Kouimtsidis, 2001).

Segal and colleagues (2003) stress the importance of linking characteristics associated with increased risk of relapse and associated vulnerabilities to treatment development and planning. In addition, knowledge of the characteristics of people seeking treatment for comorbid problems is fundamental to the development of a comprehensive and effective treatment program for this common comorbid group
(Arendt & Munk-Jorgenson, 2004). The differences in outcomes for people with depression reported in Studies 1 and 2 provide insights into the potential targets for treatment among this comorbid group. In particular, treatment geared towards the psychological aspects of depression and comorbid AOD use problems seems important to explore.

Baker at al. (in press, February 2005) suggest that consideration must also be given to designing treatment programs that more appropriately target and encourage people with high levels of disability into AOD treatment and other rehabilitation services, such as people with comorbid mental and AOD use disorders. This is particularly important given conditions such as depression and AOD misuse can be responsive to psychological and pharmacological treatment (APA, 1995, 2000b). The following chapters examine these ideas in more detail, and test the efficacy of a range of approaches to treatment among people with mental health and AOD use comorbidities.
Chapter 4

Treating Comorbid Depression and Alcohol/Other Drug Use Problems

Testing Single-Focussed Treatment Approaches

Studies 3 and 4

4.0 Abstract

This chapter presents the results of two studies that examine the response of people with comorbid depression and substance use problems to a treatment that targets alcohol/other drug (AOD) use. A treatment effect was not detected across the studies, nor was there a consistent association found between the presence of comorbid depression and key AOD and psychiatric outcomes over the study periods. Participants in both studies reported improvements across a range of variables, regardless of treatment exposure or depression status. Despite these general improvements, people with depression in both studies continued to report higher levels of depression, poly-drug use, amphetamine dependence, hazardous use of a range of substances, HIV risk taking and criminal activity and lower levels of functioning and self-concept than did their counterparts. These residual symptoms are a concern, given research to suggests that the levels at which these symptoms continued to be present in study participants, places them at an increased risk of relapse to AOD use and continued morbidity. Implications of these findings are discussed.
People with comorbid mental health and alcohol/other drug (AOD) use disorders experience many disadvantages, including limited access to treatments that are tailored specifically to their unique needs. Evidence from trials which may inform treatment is sparse, given that comorbidity is usually an exclusion criterion. Thus, for treatment providers, choosing an evidence-based approach to treatment for people presenting with comorbid problems is difficult. In light of this, Hall (1996) suggests that comorbidity research should focus on two specific areas; one of which is to examine the efficacy of treatments designed for people with single disorders (e.g. depression or AOD use) among comorbid populations.

Chapter two described the range of treatment strategies, pharmacological and psychological, that currently exist to treat depression, AOD use problems and the combination of both conditions. In general, motivational interviewing and cognitive behaviour therapy (CBT) show promise as psychological treatment approaches for managing depression and AOD use comorbidity. However, rarely have these been applied to people with comorbid problems. At present, these approaches cannot be recommended with sufficient empirical or clinical confidence as efficacious treatments among this population, despite the abundance of research attesting to the use of motivational interviewing and CBT among people with depression or AOD use problems occurring in isolation of each other.

Additionally, as Ouimette and colleagues (1999b) report, both mental health and drug and alcohol services are faced with increasing pressures to contain costs of treatment, to deliver short-term interventions and be accountable for the outcomes of these programs.
Treatment for comorbid clients realistically cannot be delayed until sufficient evidence exists to suggest an appropriate comorbidity-specific treatment model. However, should non-specialised treatments be efficacious among people with comorbid depression and AOD use problems, these strategies can be transferred into clinical practice almost instantaneously. This is particularly important, given the increased disability and symptom severity and reduced quality of life reported by participants in Studies 1 and 2 with comorbid depression and AOD use problems.

The remainder of this chapter describes two studies that examine the impact of treatment for substance use problems among people presenting with comorbidity to mental health or AOD treatment services in the Hunter Region of New South Wales and Brisbane.

4.2 Study 3

The Impact of Treatment for Substance Use on Depression Among a Sample Presenting to Alcohol/Other Drug Use Services for Treatment

4.2.1 Introduction

Study 1 reported on the presenting characteristics of 137 regular amphetamine users presenting to AOD treatment services in the Hunter (NSW) and Brisbane (Qld), as part of a larger study examining the efficacy of treatment with this population. The results of this larger study (N=214) have appeared elsewhere (Baker et al., 2004b, 2005). Study 3 will report on the outcomes of the sample of regular amphetamine users drawn from
AOD clinical services (n=137) following completion of the treatment phase of the Commonwealth-funded study.

4.2.2 Aims and Hypotheses

This study examined the efficacy of brief psychological interventions focussed on reducing amphetamine use among a sample of regular amphetamine users presenting to AOD treatment services. The group was classified according to the presence of depressive symptoms. It was hypothesised that participants with comorbid depression would report a poorer response to treatment for amphetamine use in terms of:

- Poorer amphetamine use outcomes at follow-up assessment (abstinence, severity of dependence, cravings, stage of change, levels of use);

- Poorer AOD use outcomes at follow-up assessment (poly-drug use, use of alcohol, cannabis and tobacco);

- Poorer mental health outcomes at follow-up assessment (levels of depression, levels of general symptomatology); and

- Poorer outcomes in other domains at follow-up assessment (quality of life, risk taking and criminal behaviours).
4.2.3 Methods

4.2.3.1 Setting

The study was conducted across two sites: the Hunter Region of New South Wales, and Brisbane. See Study 1 (Chapter 3) for a description of each site.

4.2.3.2 Participants

A sample of 137 regular amphetamine users formed the eligible study pool. These participants were recruited on the basis of presenting to AOD services for participation in a larger study of treatment for problematic use of amphetamines. To satisfy eligibility criteria in the study, participants were required to be regular users of amphetamines (at least weekly use in the month prior to baseline assessment). Study 1 (Chapter 3) contains a detailed description of the 137 participants in the current study.

4.2.3.4 Assessment instruments

A range of assessment instruments was completed, incorporating those commonly used in both mental health and AOD use fields. The instruments included:

- Demographic Information;
- Beck Depression Inventory II (BDI-II, Beck, Steer, & Brown, 1996);
- Brief Symptom Inventory (BSI, Derogatis & Melisaratos, 1983);
- World Health Organisation Quality of Life Scale – Brief Version (WHOQoL-Bref, WHOQoL, 1998);
- International Personality Disorder Questionnaire (IPDEQ, Loranger, Janca, & Sartorius, 1997);
- Structured Clinical Interview for DSM-IV, Research Version (SCID-IV-RV, First, 2001);
- Opiate Treatment Index (OTI, Darke, Ward, Hall, Heather, & Wodak, 1991): Drug use scale, HIV risk-taking scale, Crime scale;
- Readiness to Change Amphetamine Use (adapted from Biener & Abrams, 1991);
- Severity of Dependence Scale (SDS, Gossop et al., 1995); and
- Cravings Questionnaire.

Refer to Study 1 (Chapter 3) for a detailed description of these instruments.

4.2.3.4 Procedure

Eligible participants were recruited into the study as per the details provided in Chapter 3 (see Study 1), where the contribution of the PhD candidate (Frances Kay-Lambkin) is also described. In addition to these activities, the PhD candidate contributed significantly to the development of the treatment manual described below, and was a research clinician on the trial, implementing the treatment protocols.

Following completion of the initial assessment, each participant was randomly assigned to one of three treatment conditions: treatment as usual (control, no further counselling), two sessions of psychological treatment, or four sessions of psychological treatment. The content of psychological treatment is described below.
Randomisation was conducted from the Brisbane site using a centralised service completely separate from the research project and occurred once the initial assessment had been completed. The randomisation procedure was stratified according to study site, gender and involvement in methadone maintenance programs. If a participant was allocated to two- or four-session treatment, the first session was conducted immediately following randomisation.

At the conclusion of the four-week treatment period, all participants, regardless of allocation, entered the follow-up phase of the study. This involved meeting with a different research clinician at post-treatment (five weeks following initial assessment) and again at six-months following the initial assessment to complete a follow-up evaluation using the instruments described above. Follow-up assessors were intern psychologists, blind to treatment allocation, who completed a two-day training seminar in the administration of each of the assessment instruments.

At no stage were participants discouraged from accessing additional treatments outside this study. This study did not exclude people on the basis of suicidal ideation. Only those persons judged as being at serious risk for suicide had their participation suspended and were referred on to the relevant clinical service. Those people unable to return to the study after a maximum of one month from suspension were classified as a “treatment dropout”. This did not occur for any Study 1 participant.
4.2.3.4.1 Content of the interventions

4.2.3.4.1.1 TREATMENT AS USUAL

Participants allocated to this condition received the initial assessment and follow-up at five-weeks and six-months post-recruitment to the study. In addition, each participant received a copy of the self-help booklet titled “A User’s Guide to Speed”, published by the National Drug and Alcohol Research Centre, the University of New South Wales (available at http://ndarc.med.unsw.edu.au/ndarc.nsf/website/Publications.resources).

This booklet detailed the common features of amphetamine use, ways to reduce harms associated with use and strategies for cutting down and quitting.

Following randomisation and provision of self-help material, no further treatment was provided. The research clinician reviewed the amphetamine status of the participant to determine the need for further intervention from another source. Referral to available treatment sources in the community was arranged where appropriate.

4.2.3.4.1.2 ACTIVE TREATMENT

The treatment manual for this study has been published (Baker, Kay-Lambkin, Lee, Claire, & Jenner, 2003) and is available at:

In general, treatment focused on amphetamine use and a harm reduction approach to reducing the quantity and frequency of use of amphetamines was emphasised. This is in line with recommendations from state health departments in Australia (e.g. NSW Health, 2000). CBT and motivational interviewing techniques were combined in each session of treatment. As described in Chapter 2, motivational interviewing is compatible with the stages of change model (Prochaska & DiClemente, 1982), which describes a cycle by which people move towards making decisions/behaviour changes. The intervention included various CBT approaches, adapted from Graham (2004), Beck et al. (1993) and (Tarrier & Wells, 1998).

Treatment in this study consisted of between two and four individual sessions of therapy with the same research clinician who completed the assessment session with the participant. Upon random allocation to active treatment, participants commenced session one immediately. Session two followed one week later and participants allocated to the four-session intervention received their treatment sessions at one-week intervals thereafter. Treatment focused entirely on amphetamine use, encouraging a reduction in use. Treatment was manualised (Baker et al., 2003) and is summarised as follows:

Session 1: Phase one and two motivational interviewing strategies that build motivation to change and strengthen commitment to change behaviour, self-monitoring was commenced for triggers for amphetamine use/cravings and a case formulation were made;
Session 2: Strategies for coping with cravings were discussed (including the provision of education about cravings, describing urges to use and developing a craving plan). Dealing with lapses and discussion of the abstinence/rule violation effect were also included and treatment formally terminated for those participants allocated to the two-session intervention;

Session 3: Discussed the cognitive model in relation to cravings and triggers for amphetamine use. Seemingly irrelevant decisions were discussed and pleasant event scheduling introduced; and

Session 4: Amphetamine refusal skills were taught and practiced and a relapse prevention plan was developed in relation to amphetamine use. Treatment was terminated formally and the research clinician reviewed amphetamine use status of the participant to determine the need for further intervention from another source. Referral to available treatment sources in the community was arranged where appropriate.

4.3.2.4.1.3 TREATMENT DROPOUT

Assertive follow-up of participants was required to encourage continued participation in the treatment programs. Stein et al. (2004a) and Desmond et al. (1995) recommend the following procedures to maximise retention:
a. Collecting next of kin information at the commencement of the study and gaining consent to contact this person in the event that the participant could not be located using their last known contact information;

b. Informing participants about follow-up assessments and appointments at every opportunity, including the use of written confirmation of appointment time/day and confirming attendance on the day of the scheduled appointment with a phone call;

c. Being flexible and supportive around appointment scheduling;

d. Providing resources for travel to attend initial assessment and follow-up sessions; and

e. Hiring experienced staff sensitive to the importance of assertive outreach.

These strategies were implemented for this study. However, participants were classed as a treatment dropout if they failed to attend three consecutive appointments. In these cases, participants were not assertively followed for further treatment. All participants, regardless of missed appointments, continued to receive follow-up on each of the assessment occasions. In addition, all participants were advised to maintain close contact with their general practitioner to ensure any physical symptoms of withdrawal were managed appropriately. The above procedures were carried out in accordance with the National Health and Medical Research Council of Australia’s Statement of Ethical Conduct of Research among Human Participants. Ethics approval was gained from the relevant Human Research Ethics Committees at each study site (HAREC Approval No: 9912153.19, HREC Approval No: H 839 1299).
4.2.3.5 Statistical analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) for Windows, Version 12.0. As a partial correction for the number of statistical tests performed on the data set, a significance level of $p=0.01$ was set as a minimum threshold for statistical significance. Significance values between $p=0.01$ and $p=0.05$ were regarded as non-significant trends.

Only those people who were referred from AOD use services and completed both the five-week and six-month follow-up assessments were included in the analysis. All repeated measures analyses co-varied for the effects of gender and pharmacotherapy status. In addition, treatment allocation and depression status were entered as between-subjects factors into these analyses. Treatment allocation was a three-level variable (control, two-session treatment, four-session treatment) and participants were classified according to the treatment to which they were allocated following completion of the initial assessment (as opposed to the number of treatment sessions attended). Depression status was a two-level variable (comorbid depression, no comorbid depression) and was based on scores on the BDI-II at initial assessment, as per Study 1, Chapter 3 (comorbid depression $= \text{BDI-II} \geq 20$).

4.2.3.5.1 Patterns of participation

Participants who completed both the five-week and six-month follow-up assessments (“completers”) were compared with those who did not (“non-completers”) on a range of
baseline characteristics. One-way analysis of variance (ANOVA) compared completers and non-completers on age at initial interview, along with baseline levels of depression, amphetamine use and involvement in pharmacotherapy. In addition, continuity-corrected chi-squared analysis examined the gender distribution and pattern of treatment attendance for completers and non-completers of the follow-up assessments.

4.2.3.5.2 Amphetamine use outcomes

Repeated measures ANOVAs examined the relationship between the presence of comorbid depression at entry to the study with a range of amphetamine use outcomes. Two between subjects factors (intervention status and initial depression status) and one within subjects factor (time – initial, five-week and six-months) were entered into the analysis, which examined changes in cravings, levels of amphetamine use, severity of dependence on amphetamines and stage of change for amphetamine use across the follow-up time points. Scheffé follow-up tests were conducted on any changes in outcome variables that reached significance at p=0.01.

Chi-squared analysis examined the relationship between rates of amphetamine abuse and dependence, abstinence and reduction status for amphetamine use at five-weeks and six-month follow-up assessment time points for participants with and without comorbid depression.
4.2.3.5.3 Alcohol/other Drug use outcomes

Outcomes for drugs in addition to amphetamines were explored using a 2 (intervention status) x 2 (depression status) x 3 (assessment time point) repeated measures ANOVA with levels of alcohol use, cannabis use, tobacco and poly-drug use. Scheffè follow-up tests were used as a correction for significant outcomes. Continuity-corrected chi-squared analysis examined depression status at five-weeks and six-months follow-up for participants who were drinking alcohol or using cannabis at a threshold requiring intervention (i.e. above recommended safe drinking guidelines of four standard drinks per day for men or two standard drinks per day for women with fewer than two alcohol free days per week; or more than weekly use of cannabis).

4.2.3.5.4 Mental health outcomes

Repeated measures ANOVAs examined changes in depression (according to the BDI-II) and in the global severity of general symptoms (global severity index, BSI) across the assessments, and according to initial depression status and treatment allocation. In addition, a BDI-II Fast Screen total was calculated using the sum of the BDI-II items related to: sadness, pessimism, past failure, loss of pleasure, self-dislike, self criticalness and suicidal thoughts/wishes at each assessment timepoint. These seven items related entirely to the psychological symptoms of depression, and excludes the physical and/or biological signs common to the condition that may overlap with symptoms of AOD use or withdrawal (Beck, Steer, & Brown, 2000). Changes in BDI-II fast screen totals were examined over time according to a 2 (intervention status) x 2 (initial depression status) x
3 (assessment timepoints) repeated measures ANOVA. Scheffè follow-up tests further examined significant outcomes.

4.2.3.5.5 Other outcomes

Changes in other domains were examined using the 2x2x3 repeated measures ANOVA described above, and included quality of life (physical health, social relationships, psychological health, and environmental health), risk taking behaviour and criminal behaviour. Scheffè follow-up tests were used to further analyse significant outcomes. Further, Pearson chi-squared analysis compared the proportion of people who completed the full complement of treatment sessions to which they were allocated according to initial depression status. Pearson correlations were also conducted between changes in amphetamine use and depression at six-month follow-up assessment timepoints to explore the association, if any, between reductions in amphetamine use and reduction in depressive symptoms. Similarly, changes in poly-drug use were correlated with changes in depression and amphetamine use at the six-month follow-up assessment to further explore this relationship.

4.2.4 Results

4.2.4.1 Patterns of participation

Of the 137 participants referred from AOD treatment agencies, 72 (53%) completed all phases of assessment (initial, five-week and six-month follow-up). These “completers” were compared with their 65 counterparts who did not complete all follow-up
assessments (“non-completers”) on a range of presenting characteristics. One-way ANOVAs revealed that no significant differences existed between completers and non-completers at initial assessment according to age ($F(1,135)=0.003, p=0.959$), levels of depression ($F(1,135)=0.000, p=0.984$), levels of amphetamine use ($F(1,135)=1.338, p=0.249$) and extent of involvement in pharmacotherapy such as methadone maintenance ($F(1,135)=4.361, p=0.039$). Equal proportions of males and females fell into each category of completion, with chi-squared analysis indicating that no significant differences existed in the distribution of gender across completers and non-completers ($\chi^2=1.141, p=0.285$).

Treatment attendance was converted into a dichotomous variable (attended all sessions to which allocated versus not). Continuity-corrected chi-squared analysis indicated a significantly greater proportion of the follow-up completers also completed their allocated number of treatment sessions relative to their counterparts (88% versus 66%, $\chi^2=7.713, p=0.005$).

4.2.4.2 Amphetamine use outcomes

Changes in amphetamine use (as measured by the OTI, Darke et al., 1991) across follow-up occasions are displayed in Figure 4.1 as a function of comorbid depression and treatment allocation.
Figure 4.1  Average daily use of amphetamines over a 12-month period for participants in a study of amphetamine treatment who completed all phases of assessment, according to depression status at initial assessment and treatment allocation (n=72).

As displayed in Figure 4.1, mean self-reported use of amphetamines decreased across time, regardless of treatment allocation or the presence of comorbid depression at initial assessment. Table 4.1 details the mean amphetamine use levels reported by participants at each assessment timepoint as per Figure 4.1 above.

Repeated measures ANOVA revealed a significant main effect of time on changes in levels of amphetamine use as measured by the OTI ($F(2,64)=7.104, p=0.001$).

Generally, this result suggested that levels of amphetamine use decreased significantly across the assessment timepoints. However, Scheffé follow-up tests failed to identify the particular pairs of assessment timepoints at which this significant difference
occurred. Further, there were no significant associations between changes in amphetamine use and intervention status over time ($F(4, 64) = 0.225, p = 0.924$) or comorbid depression at entry to the study across the follow-up assessments ($F(2, 64) = 0.763, p = 0.468$). The interaction between depression status, intervention status, time and changes in amphetamine scores was also non-significant ($F(4, 64) = 0.160, p = 0.958$).

Table 4.1 Average daily use of amphetamines (OTI q-scores, Darke et al., 1991) over the month prior to assessment across time, and as a function of depression and intervention status for participants completing all follow-up assessments in a treatment trial for regular amphetamine users.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>5-week follow-up</th>
<th>6-month follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Comorbid Depression*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>1.38</td>
<td>1.40</td>
<td>0.64</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>0.97</td>
<td>0.94</td>
<td>0.44</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>1.69</td>
<td>2.48</td>
<td>0.54</td>
</tr>
<tr>
<td>No Comorbid Depression*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>1.05</td>
<td>0.78</td>
<td>0.55</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>0.97</td>
<td>1.00</td>
<td>0.60</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>1.34</td>
<td>1.36</td>
<td>0.25</td>
</tr>
</tbody>
</table>

*A score of 0.14 on the OTI equates to weekly use on average over the month prior to survey. A score of 1 equates to daily use, 2 to twice daily, etc.

Rates of reduction of amphetamines were calculated at the six-month follow-up assessment. At the six-month follow-up assessment, 65% (15/23) of those without comorbid depression reported a 50% reduction in their amphetamine use, compared with 69% (34/49) of those with comorbid depression. These rates were similar across depressed groups (continuity-corrected $\chi^2_{1} = 0.007$, $p = 0.934$). Rates of abstinence were also calculated for participants at the six-month assessment timepoint. Among those
without comorbid depression, 39% (9/23) reported total abstinence from amphetamines in the month prior to assessment, compared with 46% (23/49) of people with comorbid depression. Continuity-corrected chi-squared analysis revealed these rates of abstinence were not significantly different from each other ($\chi^2_1=0.135, p=0.713$).

The presence of amphetamine abuse and dependence was measured at initial and six-month assessments. At the six-month assessment, 70% of the people without comorbid depression (n=16/23) met diagnostic criteria for amphetamine abuse, compared with 78% (n=38/49) of those with comorbid depression at the initial assessment. Continuity-corrected chi-squared analysis revealed that these rates were not significantly different from each other ($\chi^2_1=0.192, p=0.662$). Similarly, six-month follow-up rates of amphetamine dependence were 57% (13/23) for the non-depressed group and 76% (37/49) for those with comorbid depression at the initial assessment. Continuity-corrected chi-squared analysis indicated that these rates were not statistically significantly different from each other ($\chi^2_1=1.840, p=0.175$).

Severity of dependence on amphetamines was measured via self-report at the initial and six-month follow-up assessments. Table 4.2 displays the mean severity of dependence on amphetamines for participants as a function of their treatment allocation and depression status.
Table 4.2  Self-reported severity of dependence on amphetamines for participants completing all follow-up assessments in a treatment trial for regular amphetamine users, according to treatment allocation and depression status.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th></th>
<th>6-month follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Comorbid Depression*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>10.43</td>
<td>2.79</td>
<td>6.14</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>7.50</td>
<td>3.38</td>
<td>7.06</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>10.06</td>
<td>2.77</td>
<td>6.76</td>
</tr>
<tr>
<td>No Comorbid Depression*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>3.00</td>
<td>1.79</td>
<td>4.83</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>5.00</td>
<td>4.19</td>
<td>4.27</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>4.00</td>
<td>1.41</td>
<td>3.50</td>
</tr>
</tbody>
</table>

Severity of dependence on amphetamines was higher at both assessment timepoints for those with comorbid depression, relative to their counterparts (range 1.31-3.26 points higher at six-month follow-up than those without depression). These differences were not statistically significant ($F(1,64)=4.669$, $p=0.034$). Repeated measures ANOVA indicated that severity of dependence scores did not significantly vary as a function of time ($F(1,64)=2.225$, $p=0.141$), according to treatment allocation over time ($F(2,64)=0.113$, $p=0.893$), or the combination of time, depression status and treatment allocation ($F(2,64)=2.417$, $p=0.097$).

Figure 4.2 displays the mean stage of change for participants with and without comorbid depression across the assessment timepoints, according to their participation in treatment. Scores on the stage of change measure correlated with readiness to change amphetamine use in the following way: 1=pre-contemplation, 2=contemplation, 3=preparation, 4=action, 5=maintenance.
Figure 4.2 Variations in readiness to change amphetamine use among people participating in a study of treatment for regular amphetamine use who completed all phases of assessment, as a function of treatment allocation and comorbid depression status (n=72).

Participants in each intervention group reported movement in their readiness to change amphetamine use towards the action and maintenance stages of change. At the six-month follow-up assessment, participants, on average, reported being in at least the action stage of change for amphetamine use, regardless of their depression or intervention status. Table 4.3 illustrates these patterns in more detail. Repeated measures ANOVA indicated a significant main effect for time on changes in readiness to modify amphetamine use behaviours ($F(2,64)=9.90, p=0.000$). Scheffè follow-up tests indicated that this difference was statistically significant for the initial and six-month follow-up assessment timepoints ($F(2,64)=20.166, p<0.01$). However, treatment
allocation (F(4,64)=0.273, p=0.895) and the presence of comorbid depression at initial assessment (F(2,64)=0.433, p=0.650) was not significantly related to changes in readiness to change amphetamine use, nor was the interaction between time, intervention status or depression status statistically significant (F(2,64)=0.034, p=0.998).

Table 4.3  Mean stages of change scores for amphetamine use across each assessment timepoint according to depression and intervention status for participants completing all follow-up assessments in a treatment trial for regular amphetamine users.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Comorbid Depression*</th>
<th>No Comorbid Depression*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Initial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>3.07</td>
<td>1.21</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>2.59</td>
<td>0.71</td>
</tr>
<tr>
<td>5-week follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>4.00</td>
<td>0.96</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>4.43</td>
<td>0.85</td>
</tr>
<tr>
<td>6-month follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>4.33</td>
<td>1.97</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>3.27</td>
<td>1.28</td>
</tr>
</tbody>
</table>

*According to the stage of change questionnaire, 1=pre-contemplation, 2=contemplation, 3=preparation for change, 4=action and 5=maintenance.

In addition to the stage of change, participants rated the severity of their cravings for amphetamines at each assessment timepoint. Figure 4.3 displays the changes in mean craving scores for amphetamines over time, and according to the presence of comorbid depression at the initial assessment.
Self-rated perceptions of cravings changed for most groups of participants across the follow-up timepoints. Table 4.4 displays the mean craving ratings (and standard deviations) for participants as a function of their depression and intervention status. Total craving scores for amphetamines decreased over time in most instances. This is with the exception of those in the control group who did not report comorbid depression at entry to the study. Repeated measures ANOVA indicated that the changes in cravings scores over time was statistically significant ($F(2,62)=7.411, p=0.001$). Scheffè follow-up tests indicated that this difference was significant when comparing craving scores at initial with those at the six-month follow-up assessment ($F(2,62)=12.477, p<0.01$). That is, mean craving scores decreased significantly between the initial and six-month follow-up assessments.
Table 4.4  Mean craving total scores for participants completing all follow-up assessments in a treatment trial for regular amphetamine users, according to initial depression and intervention status.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial Mean</th>
<th>Initial S.D.</th>
<th>5-week follow-up Mean</th>
<th>5-week follow-up S.D.</th>
<th>6-month follow-up Mean</th>
<th>6-month follow-up S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comorbid Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>81.29</td>
<td>24.90</td>
<td>67.57</td>
<td>29.49</td>
<td>56.86</td>
<td>27.81</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>72.24</td>
<td>19.33</td>
<td>63.94</td>
<td>14.86</td>
<td>58.82</td>
<td>19.94</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>80.35</td>
<td>25.85</td>
<td>50.88</td>
<td>20.87</td>
<td>52.24</td>
<td>22.88</td>
</tr>
<tr>
<td><strong>No Comorbid Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>33.80</td>
<td>19.93</td>
<td>31.40</td>
<td>18.52</td>
<td>39.20</td>
<td>24.64</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>42.13</td>
<td>22.62</td>
<td>46.93</td>
<td>26.12</td>
<td>38.47</td>
<td>23.56</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>67.50</td>
<td>3.54</td>
<td>60.00</td>
<td>15.56</td>
<td>52.50</td>
<td>4.95</td>
</tr>
</tbody>
</table>

A statistically non-significant trend emerged between changes in cravings scores and the presence of comorbid depression at the initial assessment. That is, those with comorbid depression generally reported higher mean craving scores, however this was not statistically significant ($F(2,62)=3.713, p=0.027$). No significant associations were found between change in craving scores and intervention status ($F(4,62)=0.964, p=0.430$), or the interaction between depression status, intervention status and time ($F(4,62)=0.985, p=0.418$).

4.2.4.3 Alcohol/other Drug use outcomes

A range of AOD use outcomes were measured over the study period, including levels of alcohol use, cannabis use, tobacco use and poly-drug use. Repeated measures ANOVA revealed that no significant differences existed for time, depression, treatment allocation,
or the interaction of these variables on alcohol use, cannabis use, and tobacco use. See Appendix C for the data relating to these analyses.

An index of poly-drug use was calculated by summing the number of drugs, including alcohol and tobacco, a person consumed in the month prior to each assessment. Table 4.5 displays the mean poly-drug use scores for participants in the study over time, and according to treatment allocation and comorbid depression status.

Table 4.5 Mean number of drug classes, including alcohol and tobacco used by participants completing all follow-up assessments in a treatment trial for regular amphetamine users, as a function of treatment allocation and initial depression status.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial</td>
<td>5-week follow-up</td>
<td>6-month follow-up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td><strong>Comorbid Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>4.36</td>
<td>1.28</td>
<td>4.07</td>
<td>1.39</td>
<td>2.93</td>
<td>1.33</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>4.61</td>
<td>1.58</td>
<td>4.17</td>
<td>1.15</td>
<td>3.56</td>
<td>1.50</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>4.47</td>
<td>1.66</td>
<td>3.94</td>
<td>1.48</td>
<td>3.35</td>
<td>1.46</td>
</tr>
<tr>
<td><strong>No Comorbid Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>3.33</td>
<td>1.21</td>
<td>3.83</td>
<td>1.33</td>
<td>3.83</td>
<td>1.17</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>3.60</td>
<td>1.50</td>
<td>3.53</td>
<td>1.69</td>
<td>3.40</td>
<td>1.92</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>5.00</td>
<td>2.83</td>
<td>3.00</td>
<td>0.00</td>
<td>4.00</td>
<td>1.41</td>
</tr>
</tbody>
</table>

*A score of 1 indicates 1 drug was used in the month prior to survey. A score of 2 indicates 2 drugs were used, etc.

At the initial assessment, those with comorbid depression reported a higher mean number of drug classes used in the month prior to survey than did the majority of their counterparts without depression. This was still true at the five-week follow-up assessment. By the six-month assessment both comorbid depressed and non-depressed groups reported a similar rate of poly-drug use in the previous month. Repeated
measures ANOVA revealed that this trend was not significant ($F(2,64)=3.322, p=0.039$). However, a non-significant trend was observed for time ($F(2,64)=4.20, p=0.017$), indicating the group as a whole tended to report reduced poly-drug use rates at the six-month assessment relative to the other assessment timepoints. There was no significant interaction between time and intervention status ($F(4,64)=0.988, p=0.417$), nor between time, intervention status, depression status and poly-drug use ($F(2,64)=0.868, p=0.485$).

4.2.4.4 Mental health outcomes

The presence of depression at entry to the study was not significantly associated with rates of treatment attendance. That is, 57% (13/23) of people without depression attended all treatment sessions to which they were allocated, compared with 61% (30/49) of people with comorbid depression. (continuity-corrected $\chi^2=0.706, p=0.702$).

Figure 4.4 displays the patterns of change in depression scores (as measured by the BDI-II) over the assessment time points, according to treatment allocation (control, two-sessions, four-sessions).
Levels of depression generally decreased across the follow-up assessments regardless of treatment allocation. Repeated measures ANOVA indicated a significant main effect of time on depression scores ($F(2,64)=6.406, p=0.002$). Scheffé follow-up tests specifically revealed that BDI-II scores at the six-month follow-up assessment were significantly less than those at the initial assessment ($F(2,64)=11.006, p<0.01$), but no significant differences were detected at any other combination of assessment occasions. Table 4.6 lists the mean BDI-II scores across each assessment timepoint according to depression and intervention status.

Figure 4.4 Mean depression scores over time, according to treatment allocation and depression status, among people participating in a study of treatment for regular amphetamine use who completed all phases of assessment (n=72).
Table 4.6  Mean depression scores (BDI-II, Beck et al., 1996) across each assessment timepoint according to depression and intervention status for participants completing all follow-up assessments in a treatment trial for regular amphetamine users.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>5-week follow-up</th>
<th>6-month follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>33.93</td>
<td>9.87</td>
<td>31.21</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>33.11</td>
<td>10.13</td>
<td>21.72</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>34.24</td>
<td>10.96</td>
<td>16.59</td>
</tr>
<tr>
<td>No Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>12.67</td>
<td>5.13</td>
<td>13.83</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>10.67</td>
<td>5.84</td>
<td>11.20</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>12.00</td>
<td>4.24</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Depression scores for the comorbidly depressed group remained above the no-depression group across the assessment timepoints. This was particularly the case at the six-month follow-up where, although reduced relative to the initial assessment level, BDI-II scores for the depressed group remained above 20 (the threshold for moderate depressive symptomatology, Beck et al., 1996), while those in the non-depressed group reported BDI-II scores around 10 (the threshold for minimal depression). Six-month follow-up BDI-II scores were two points lower for those in the depressed group who received either two- or four-sessions of treatment compared to people with depression who did not receive treatment. Repeated measures ANOVAs revealed that these differences were not statistically significant according to the time by treatment allocation interaction ($F(4,64)=1.284, p=0.280$), or the interaction between time and depression status at initial assessment ($F(2,64)=2.017, p=0.137$). In addition, there were no significant four-way interactions between intervention status, depression status, time and BDI-II scores ($F(4,64)=0.447, p=0.774$).
BDI-II Fast Screen items (Beck et al., 2000) were examined for initial depression status, and treatment allocation. Table 4.7 displays the mean BDI-II Fast Screen items for participants across the follow-up timepoints.

Table 4.7  Mean BDI-II Fast Screen scores for participants completing all follow-up assessments in a treatment trial for regular amphetamine users, as a function of intervention status and the presence of comorbid depression at initial assessment.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial Mean</th>
<th>Initial S.D.</th>
<th>5-week follow-up Mean</th>
<th>5-week follow-up S.D.</th>
<th>6-month follow-up Mean</th>
<th>6-month follow-up S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comorbid Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>10.71</td>
<td>3.93</td>
<td>9.86</td>
<td>6.21</td>
<td>6.57</td>
<td>5.40</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>10.22</td>
<td>3.95</td>
<td>7.44</td>
<td>4.84</td>
<td>5.94</td>
<td>4.14</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>11.47</td>
<td>3.64</td>
<td>5.76</td>
<td>4.19</td>
<td>6.47</td>
<td>5.06</td>
</tr>
<tr>
<td><strong>No Comorbid Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>4.50</td>
<td>2.07</td>
<td>3.83</td>
<td>2.86</td>
<td>2.33</td>
<td>2.58</td>
</tr>
<tr>
<td>2-session Intervention</td>
<td>3.07</td>
<td>2.99</td>
<td>3.33</td>
<td>3.56</td>
<td>4.13</td>
<td>4.10</td>
</tr>
<tr>
<td>4-session Intervention</td>
<td>2.50</td>
<td>0.71</td>
<td>1.50</td>
<td>2.12</td>
<td>1.50</td>
<td>0.71</td>
</tr>
</tbody>
</table>

*BDI-II Fast Screen range = 0-21; 0-3=minimal depression, 4-6=mild depression, 7-9=moderate depression, 10-21=severe depression.

BDI-II Fast Screen scores followed a similar pattern of reduction as did scores on the full BDI-II scale, and were consistently higher at each assessment point for those people identified as having comorbid depression at their initial assessment, relative to their non-depressed counterparts. At the six-month follow-up assessment, Fast Screen scores were in the moderate range for those with depression, compared with minimal-mild among those without depressive symptoms at the initial assessment. The interaction between time, depression status and BDI-II Fast Screen scores was not statistically significant ($F(2,64)=2.491$, $p=0.087$). Levels of depression according to the BDI-II Fast
Screen did however decrease significantly over time ($F(2,64)=5.055, p=0.008$). Scheffé follow-up tests revealed that BDI-II Fast Screen scores were significantly less at six-month follow-up than scores on the initial assessment across the treatment and depression groups ($F(2,64)=8.843, p<0.01$). There was no time by intervention effect on BDI-II Fast Screen scores ($F(4,64)=0.788, p=0.535$), nor was the interaction between time, depression status, intervention status statistically significant for this outcome variable ($F(4,64)=0.520, p=0.721$).

Global severity subscale scores were calculated from individual BSI items (Derogatis & Melisaratos, 1983) and used as an index of psychiatric severity. These scores did not significantly change over time, or as a function of depression or intervention status, or the interaction between these variables (see Appendix C).

4.2.4.5 Other outcomes

Quality of life was measured across the following domains: physical health, social relationships, psychological health and environment. Repeated measures ANOVA indicated that no significant differences existed between changes in these scores over time, or according to depression or intervention status, nor as a function of the interaction between these factors. See Appendix C for the data relating to this analysis.

Risk-taking behaviour was measured by the OTI (Darke et al., 1991), with high scores on this subscale indicative of increasingly risky injecting and sexual behaviours. No
significant differences existed between changes in these scores and time, comorbid depression, treatment allocation or the interaction between these terms. Data relating to this analysis is contained in Appendix C.

Pearson correlations compared changes in amphetamine use from initial to six-month follow-up with changes in depression scores over the same period. A positive association between changes in amphetamine use and changes in depressive symptoms was identified, but this did not reach statistical significance (Pearson’s r=0.248, p=0.036). Changes in amphetamine use between initial and six-month assessments were positively correlated with changes in poly-drug use (Pearson’s r=0.345, p=0.003). A significant positive correlation was also found between changes in poly-drug use at six-months and changes in depression scores over the same time period (Pearson’s r=0.302, p=0.010).

4.2.5 Discussion

The results of Study 3 indicate that the presence of comorbid depression is not significantly associated with a differential response to a single-focussed treatment for amphetamine use. The study sample as a whole, regardless of the presence of comorbid depression or exposure to treatment for amphetamine use, reported significant reductions in amphetamine use, a significant reduction in the experience of amphetamine cravings, and significant reductions in depression over a six-month follow-up period. In addition, readiness to change amphetamine use significantly increased over the study period for all study participants. Reductions in poly-drug use
between the initial and six-month follow-up assessments were significantly associated with reductions in depressive symptoms over the same time period, and a non-significant trend indicated that decreases in amphetamine use over six-months were associated with decreases in depressive symptoms. A non-significant trend suggested that participants with comorbid depression reported higher levels of cravings for amphetamines relative to their non-depressed counterparts over course of the study. These findings are discussed in detail below.

4.2.5.1 Alcohol/other Drug use outcomes

Over time, levels of amphetamine use decreased for the study sample as a whole, regardless of exposure to treatment for amphetamine use and/or the presence of comorbid depression at entry to the study. In addition, the proportion of people who achieved a 50% reduction in amphetamine use at the six-month follow-up, as well as those people who achieved total abstinence from amphetamines, did not significantly differ between those with and without depression. The rates of abstinence achieved by the sample at six-month follow-up (39% of people without depression, 46% of people with depression) were similar to those reported by other researchers (e.g. 30% abstinence from alcohol in Miller, Walters, & Bennett, 2001), regardless of the high levels of depression reported by some participants the Study 3 sample.

The finding that involvement in treatment in this study did not differentially predict improvements in amphetamine-related outcomes is consistent with the results of other studies. For example, Orford (2001) suggests that many findings from randomised
controlled trials and other research programs report that the control or no-treatment participants experience success with quite brief interventions, or with simple advice or encouragement, in addition to assessment. In Study 3, participants each completed an extensive assessment phase prior to randomisation to treatment, and all were provided with self-help material targeted at reducing amphetamine use. It may be that for some people, including the control participants, these experiences were sufficient to promote change in the direction of moderation of amphetamine use or abstinence (Kay-Lambkin, Baker, & Lewin, 2004). As Orford (2001) explains, given the “right conditions”, people can mobilise the necessary existing skills and resources to bring about change. These conditions may have been provided for some people in this study by completing the assessment processes. It is noteworthy that the presence of depressive symptoms did not significantly impact on these reductions in amphetamine use, even for people who were allocated to the control condition. Thus, a single-focussed treatment may have been sufficient to produce the “right conditions” for people with the added complexities ofr depression and AOD use comorbidity.

Other amphetamine-use outcomes suggest a different picture of the impact of depression among the study sample, although these differences were not statistically significant. For example, rates of amphetamine dependence at the six-month follow-up assessment were higher for people with comorbid depression (76%) relative to those without depression (57%). Further, self-reported severity of dependence on amphetamines did not significantly change over time for people in treatment relative to controls, or for people with and without depression. All groups reported reductions in severity of their
dependence on amphetamines across the study period, and at each assessment timepoint. People with comorbid depression experienced greater self-reported severity of amphetamine dependence relative to their counterparts, scoring between one and three points higher on this scale. In addition, there was a significant reduction in self-reported cravings for amphetamines among the study sample as a whole, between the initial and six-month follow-up assessments. People with comorbid depression consistently rated their experiences of cravings for amphetamines higher than did their counterparts without depression. Although it is unclear whether these differences influenced amphetamine use, it seems that particularly for the subjective aspects of amphetamine use, depression may serve to intensify a person’s amphetamine use and related experiences, irrespective of treatment. In these cases, depression may act to increase cravings for amphetamine use, leading to increased use of amphetamines, potentially leading to increased levels of depression.

People with depression reported a different pattern of reduction in alcohol use than did those without depression across the assessment occasions, although these differences were not statistically significant. For example, those people with depression who were allocated to receive four sessions of CBT reported increases in alcohol use across the follow-up assessment period. In contrast, people without depression who received the four-session treatment reported a peak in alcohol use at the post-treatment assessment relative to the other groups, but by six-months reported equivalent levels of alcohol use as did people in the two-sessions and control conditions. Furthermore, tobacco use and poly-drug use did not significantly change over the study period, according to
depression or treatment status. However, in each case people with comorbid depression at entry to the study reported higher levels of tobacco use and higher levels of poly-drug use (at the five-week assessment) than did their counterparts without comorbid depression. Taken together, these results suggest that, although not statistically significant, the presence of depression may keep a person in the cycle of increased cravings, leading to increased use and increased depression. Single-focussed treatment may not enable them to make improvement across mental health and AOD use outcomes at the level of their counterparts without depression. This issue warrants further investigation.

4.2.5.2 Mental Health Outcomes

In contrast to the suggestion that the presence of concurrent depression influences treatment retention (Degenhardt, 2002), this study found that participation in treatment was not different between depressed and non-depressed groups. Moreover, despite the focus of treatment on reducing amphetamine use, participants generally reported significant decreases in their self-reported levels of depression at the six-month follow-up, relative to the initial assessment. This was true for people with and without comorbid depression, and also when the BDI-II Fast Screen items were considered. Thus, although treatment did not directly target depressive symptoms, treatment did seem to generalise to influence this variable.

There was some evidence that treatment in this study produced an accelerated reduction in depressive symptoms for people with comorbid depression, in which depression
levels at five-week follow-up were lower for people in the two- and four-treatment conditions relative to controls, although this was not statistically significant. Despite these reductions, people with comorbid depression reported consistently higher levels of depression at each follow-up assessment than did their counterparts without depression, and at the six-month follow-up were still scoring over an average of 20 on the BDI-II, indicative of moderate levels of depression. This was in contrast to people without depression who were well below the minimal cut-off for depression at six-months (around 10 on the BDI-II). Although this difference was not statistically significant, it is suggestive of the need to address depression when present among AOD users.

4.2.5.3 Other Outcomes

Self-rated quality of life scores varied over the follow-up period for all groups within the study. Again, people with comorbid depression continued to rate their quality of life consistently poorer than their counterparts without depression at each follow-up occasion, however this was not statistically significant. People in the control condition with comorbid depression reported reduced rates of improvement in the quality of life domains compared with those allocated to treatment, and experienced reductions in social relationships across the follow-up period. This was not a statistically significant difference, but perhaps suggests an additional benefit of the therapy for people with comorbid depression.
4.2.5.4 Limitations

Several limitations exist with Study 3 that are worthy of note. Firstly, the sample size for this study may have affected the ability to detect significant differences between the various study groups. On many measures (e.g. cravings scores, alcohol use, cannabis use, tobacco use, quality of life scores etc.) there was high variation in responses within groups, as evidenced by high standard deviations for many of the key outcome variables. Furthermore, many people within the study met criteria for comorbid depression (around two-thirds of participants) and also had long amphetamine use histories. This too may have influenced the ability to effect change using a relatively brief intervention over a short-term period, and indeed to detect any small changes in the outcomes of interest. Almost half of the original sample was excluded from the analysis, as they did not complete all the assessment measurements over the course of the study (53% retention). Although analyses indicated that “completers” and “non-completers” were similar at the initial assessment in terms of their age, gender distribution, pharmcotherapy status and amphetamine use, it is not known whether those who dropped out of the study remained similar to those who were retained. For example, treatment completion rates were significantly higher among those who completed all follow-up assessments, and the improvements in the variables reported above may have been enhanced by this increased “dose” of therapy.

Despite this, it is possible to suggest that the presence of comorbid depression did not significantly impact on response to treatment for amphetamine use, in terms of levels of use, reduction status, and rates of abstinence. This is in contrast to some research
suggesting that the presence of mental symptoms impedes response to substance use treatment (e.g. Marks, 1990). Even though people with comorbid depression reported similar reduction profiles across many of the variables of interest compared to those without depression, they continued to score more highly across several key domains. It is unclear what the impact of these differences is, if any, on the longer-term outcomes of this important group, given follow-up only occurred over a six-month period. Future studies should consider tracking treatment response over a longer period of time to address these outstanding questions.

4.3 Study 4

The Impact of Treatment for Substance Use on Depression Among a Comorbid Sample Presenting to Mental Health Services for Treatment

4.3.1 Introduction

Study 2 (Chapter 3) reported on the baseline characteristics of a sample of people with comorbid psychosis and AOD use problems drawn from public mental health services in the Hunter Region of Australia (n=109). This study was part of a larger project funded by the National Health and Medical Research Council of Australia (NHMRC), which offered substance use treatment for people with psychotic disorders who also met criteria for problematic use of alcohol, cannabis or amphetamines (N=130). The results of this larger trial have been published elsewhere (Baker et al., in press, January 2005). Study 4 focuses on the sample of participants in the larger study drawn from mental
health services (n=109) and reports on the treatment outcomes for this group following completion of the substance use treatment program as a function of depression status.

4.3.2 Aims and Hypotheses

This study expanded on the results of Study 2 by reporting on the response to substance use treatment among people with comorbid psychosis and AOD use problems recruited from mental health services. Participants were categorised into two groups, according to the presence/absence of comorbid depressive symptomatology at initial assessment. It was hypothesised that participants with comorbid depression would report a poorer response to treatment for AOD use in terms of:

- Poorer AOD use outcomes at follow-up assessment (abstinence, levels of use, stage of change, rates of abuse/dependence, poly-drug use);
- Poorer mental health outcomes at follow-up assessment (levels of depression, levels of psychiatric symptomatology); and
- Poorer other outcomes at follow-up assessment (quality of life, general functioning).

4.3.3 Methods

4.3.3.1 Setting

As in Study 2, the current study was conducted within the was the Hunter Region of New South Wales. Study 2 describes the site at which this research was conducted.
4.3.3.2 Participants

A detailed description of the baseline characteristics of the study sample is contained in Study 2 (Chapter 3).

One hundred and nine study volunteers were recruited to the current study via public mental health services. Participants met the following study eligibility criteria:

a. Presence of a psychotic spectrum disorder currently in a non-acute phase;

b. Current problematic use of at least one of the following: alcohol (i.e. consumption above recommended safe drinking levels as suggested by the NHMRC; equates to 4 standard drinks per day for men or 2 standard drinks per day for women with fewer than 2 alcohol free days per week); cannabis (at least weekly use); or amphetamines (at least weekly use);

c. Absence of a brain injury, organic brain disease and/or significant cognitive impairment;

d. Ability to understand English; and

e. Intention of staying within the Hunter Region for the ensuing 12-month period.

4.3.3.3 Assessments

A number of mental health and AOD assessments were completed for Study 4. These included the following:

- Demographic Information;
Beck Depression Inventory II (BDI-II, Beck et al., 1996);
Brief Psychiatric Rating Scale (BPRS, Ventura, Green, Shaner, & Liberman, 1993);
Lancashire Quality of Life Profile (LQoLP, Oliver, 1991-1992);
Structured Clinical Interview for DSM-IV, Research Version (SCID-IV-RV, First, 2001);
Opiate Treatment Index (OTI, Darke et al., 1991);
Readiness to Change AOD Use (Rollnick, Heather, Gold, & Hall, 1992); and
Global Assessment of Functioning (GAF, APA, 1994).

Each of these assessments was used at the initial assessment, and on each follow-up occasion, which occurred at the following timepoints taken from completion of the initial assessment: three-months (post-treatment), six-months (three-months post-treatment) and 12-months (nine-months post-treatment). Study 2 describes these instruments in more detail.

4.3.3.4 Procedure

Participants were referred to the study from a variety of mental health sources, as described in Study 2 (Chapter 3), where the contribution of the PhD candidate (Frances Kay-Lambkin) is also described. In addition to these activities, the PhD candidate contributed significantly to the development of the treatment manual described below, and was a research clinician on the trial and implemented the treatment protocol.

Randomisation to the study treatment conditions occurred following completion of the second assessment session. Participants and research clinicians were blind to treatment
allocation until the point of randomisation. This occurred via the participant, who drew a treatment allocation (A or B) from a secured box brought into the session by the research clinician. ‘A’s’ were allocated to the active treatment condition, while ‘B’s’ were allocated to treatment as usual (control).

Following randomisation, participants either had no further involvement in the treatment phase of the study (treatment as usual) or were invited to attend ten individual sessions of psychological treatment (as described below) aimed at reducing AOD use (Health Sketch treatment). At the conclusion of the ten-week treatment period, all participants, regardless of treatment allocation entered the follow-up phase of the study. This involved meeting with a different research clinician, blind to treatment allocation, over the following nine-months at these intervals: three-months following recruitment (post-treatment), six-months (three-months post-treatment) and 12-months (nine-months post-treatment) following completion of the initial assessment. Follow-up assessors were intern psychologists, who completed a two-day training seminar in the administration of assessment instruments. Participants received up to $20 AUD as reimbursement of travel expenses associated with attending these follow-up appointments.

Participants were not discouraged from accessing additional treatments outside this study. People taking medication at entry to the study were screened to determine whether they were stabilised on their current dosage. If a person was taking a therapeutic dose for a period of two months or more, with no plans to change their dose, and still met the inclusion criteria for the project, they were deemed eligible for
participation. If this was not the case, recruitment to the project was suspended until
these additional criteria were met.

Provision was made for people who became a serious risk for suicide over the course of
assessment/treatment. In these cases, participation was suspended and people were
referred on to the relevant professional. Those people unable to return to the study after
a maximum of one month from suspension would be classified as a “treatment dropout”.
This was not necessary for any Study 2 participant.

People who were recruited via inpatient psychiatric units had their participation in the
study delayed until two months had passed following discharge from hospital. Evidence
suggests that AOD use tends to be low in the month following discharge from hospital
and as such may provide a false representation of the response to hospitalisation (Baker
et al., 2002a; Baker et al., 2002b).

4.3.3.4.1 Content of the interventions

The treatment manual used in this study has been published elsewhere (Baker, Bucci, &
Kay-Lambkin, 2004a) and is available at:
http://ndarc.med.unsw.edu.au/ndarc.nsf/website/Publications.reports). Participants were
encouraged to set their own goals for treatment, including establishing their own targets
for reduction in their use of alcohol/other drugs. A range of motivational and CBT
strategies were incorporated into the active treatment (entitled Health Sketch treatment) evaluated in this study.

4.3.3.4.1.1 TREATMENT AS USUAL

Participants allocated to this condition received only the initial assessment and follow-up at three-, six- and 12-months post-recruitment to the study. In addition, as explained by Baker et al. (in press, January 2005), participants were informed that they were using substances at above recommended levels, and were provided with a self-help booklet on substance use (CEIDA, 2000). This booklet detailed the harms associated with AOD use in the context of a serious mental illness. Following randomisation and provision of self-help material, no further treatment was provided. The research clinician reviewed the AOD status of the participant to determine the need for further intervention from another source. Referral to available treatment sources in the community was arranged where appropriate.

4.3.3.4.1.2 HEALTH SKETCH TREATMENT

Health Sketch treatment consisted of ten individual sessions of psychological treatment, using motivational interviewing and CBT techniques. Sessions were around 60 minutes in duration and occurred at once weekly intervals. Each of the ten sessions was structured and delivered following a treatment manual (Baker et al., 2004a), and focussed on the participant’s hazardous use of alcohol, cannabis or amphetamines (whichever was relevant), given these substances are the most commonly used among
Australians (Andrews, Hall, Teesson, & Henderson, 1997). The following description of treatment is taken from Baker et al. (in press, January 2005):

Sessions 1-4: These sessions were delivered flexibly, according to the stage of change of the participant in relation to the AOD use. In general, research clinicians implemented the four general principles of motivational interviewing outlined by Miller and Rollnick (1991), expressing empathy, developing discrepancy, rolling with resistance and supporting self-efficacy as appropriate. Participants were also provided with feedback regarding their current AOD use, delivered using a personal feedback report discussing current substance use and safer consumption levels where appropriate. Throughout these sessions, participants completed a self-monitoring record (Jarvis, Tebbutt, & Mattick, 1995) for AOD use in order to prepare them for the subsequent transition into CBT. When a participant was assessed as having reached the ‘action’ stage of change (Prochaska & DiClemente, 1982), CBT commenced. This could occur at any stage within the first four sessions. Motivation enhancement was provided through the remainder of treatment as required.

Session 5: Presented the rationale for CBT and the process of treatment, including a description of the cognitive model of problematic substance use (Graham et al., 2004) and discussion of specific techniques that could be used to more effectively manage AOD use. Situational triggers and thoughts/feelings that could lead to substance use were identified, along with high-risk situations (Monti, Abram, Kadden, & Cooney, 1989) that could lead to maintenance of substance use;
Session 6: Seemingly irrelevant decisions (Monti et al., 1989) was introduced, along with a six-step problem solving task and identification and management of “unhelpful” patterns of thinking (Jarvis et al., 1995);

Session 7: Described cravings for AOD and helped the participant to develop a craving plan (Graham et al., 2004; Monti et al., 1989). The abstinence/rule violation effect was raised and activity scheduling of pleasurable and achievement tasks completed;

Session 8: Rehearsed drink/drug refusal skills (Monti et al., 1989) and discussed other lifestyle issues (including weight control and exercise);

Sessions 9 & 10: The rationale for relapse prevention was discussed and a relapse prevention plan developed that was tailored to the participant’s needs and stage of change (Graham et al., 2004).

4.3.3.4.1.3 TREATMENT DROPOUT

As in Study 3, assertive follow-up of participants was required to encourage continued participation in the treatment programs. The procedures suggested by Stein et al. (2004a) and Desmond et al. (1995) to maximise retention and that were implemented in Study 3 above were also used in this study. This included the classification of treatment dropouts as those people who missed three consecutive appointments despite
repeated attempts to re-schedule. All participants, regardless of missed appointments, continued to receive follow-up on each of the assessment occasions.

4.3.3.4.2 Exacerbation of symptoms

Participants judged as being at high risk for suicide at any stage during the project had their participation suspended and were referred to crisis care. Participants were also instructed to contact their local Community Mental Health Team in between sessions should they require crisis intervention. Subject to participant approval, case managers, treating psychiatrists and general practitioners were informed of the person’s involvement in the study and results of the initial assessment. All participants were advised to maintain close contact with their general practitioner to ensure any physical symptoms of AOD withdrawal were managed appropriately.

The above procedures were carried out in accordance with the National Health and Medical Research Council of Australia’s Statement of Ethical Conduct of Research among Human Participants. Ethics approval was gained from the relevant Human Research Ethics Committees (HAREC Approval No: 9912153.21, HREC Approval No: H 827 1299).

4.3.3.5 Statistical analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) for Windows, Version 12.0. As a partial correction for the number of statistical tests
performed on the data set, a significance level of $p=0.01$ was set as a minimum threshold for statistical significance. Significance values between $p=0.01$ and $p=0.05$ were regarded as non-significant trends.

Only those people who were referred from public mental health services and who completed all follow-up assessments (post-treatment, six- and 12-months) were included in the repeated-measures analysis. In addition, treatment allocation and depression status were entered as between-subjects factors into these analyses. Treatment allocation was a two-level variable (control, ten-sessions of treatment) and participants were classified according to the treatment to which they were allocated following completion of the initial assessment (as opposed to the number of treatment sessions attended). Depression status was a two-level variable (comorbid depression, no comorbid depression) and was based on scores on the BDI-II at initial assessment, as per Study 2, Chapter 3 (comorbid depression $= \text{BDI-II} \geq 20$).

4.3.3.5.1 Patterns of participation

Participants who completed all follow-up assessments (“completers”) were compared with those who did not (“non-completers”) on a range of baseline characteristics. One-way analysis of variance (ANOVA) compared completers and non-completers on age at initial interview, age at onset of psychiatric problems, baseline levels of depression, baseline levels of psychiatric symptomatology, use of alcohol, cannabis, amphetamines, tobacco and poly-drug use at initial assessment. In addition, Pearson chi-squared analysis examined the rates of AOD abuse and dependence, presence of
comorbid depression, gender distribution, treatment allocation and pattern of treatment attendance for completers and non-completers of the follow-up assessments.

4.3.3.5.2 Alcohol/other drug use outcomes

An aggregate global AOD use score was calculated for all participants, which estimated the number of days in the previous month at which participants consumed alcohol/other drugs at hazardous levels (see Baker et al., in press, January 2005). As described in Baker et al. (in press, January 2005), this aggregate score was calculated based on the participant’s use of ten substances, excluding tobacco (i.e. including alcohol, cannabis, amphetamines, heroin, other opiates, hallucinogens, inhalants, barbiturates, sedatives, and tranquilisers) over the previous 28-day period. For alcohol, the number of standard drinks was the unit of measurement, whilst for all other substances, the number of use occasions was calculated. If participants were using more than one substance at any one assessment occasion, their aggregate use score for the previous month exceeded a score of 28 (maximum 280 days hazardous use).

Repeated measures ANOVAs examined the relationship between the presence of comorbid depression at entry to the study and a range of AOD use outcomes. Given treatment targeted problematic use of alcohol, cannabis, or amphetamines, analyses conducted on changes in AOD use only included the sub-sample of participants who initially met criteria for problematic use of each of these substances. Due to the small number of people using amphetamines at harmful levels in the sample (n=12) this class of drug was not included in further separate analyses.
Two between subjects factors (intervention status and initial depression status) and one within subjects factor (time – initial, three-months, six-months and 12-months) were entered into the analysis, which examined changes in levels of alcohol/cannabis use, stage of change for alcohol/cannabis use, poly-drug use, and levels of tobacco use, across the follow-up time points. Scheffè follow-up tests were conducted on any changes in outcome variables that reached significance at p=0.01.

Chi-squared analysis examined the relationship between rates of abuse and dependence, abstinence and reduction status for alcohol and cannabis use for participants with and without comorbid depression.

4.3.3.5.3 Mental health outcomes

Repeated measures ANOVAs examined changes in depression (according to the BDI-II) and in the total scores on the Brief Psychiatric Rating Scale (BPRS) across the assessments, and according to initial depression status and treatment allocation. In addition, a BDI-II Fast Screen total was calculated and changes in these totals were examined over time according to a 2 (intervention status) x 2 (initial depression status) x 4 (assessment timepoints) repeated measures ANOVA. Scheffè follow-up tests further examined significant outcomes.
4.2.3.5.6 Other outcomes

Changes in other outcomes were examined using the 2x2x4 repeated measures ANOVA described above, and included the Lancashire quality of life scale and the global assessment of functioning. Scheffé follow-up tests were used to further analyse significant outcomes. Further, Pearson chi-squared analysis compared the proportion of people who completed the full complement of treatment sessions to which they were allocated according to initial depression status.

Pearson correlations were conducted between changes in alcohol/cannabis/amphetamine use and depression at six-month follow-up assessment timepoints to explore the association, if any, between reductions in AOD use and reduction in depressive symptoms. Similarly, changes in poly-drug use were correlated with changes in depression and amphetamine use at the six-month follow-up assessment to further explore this relationship.

4.3.4 Results

4.3.4.4.1 Patterns of participation

Of the 109 participants referred from public mental health services, 78 (72%) completed all follow-up assessments (“completers”). Seventy-seven percent (n=60) of completers were male, 41% (n=32) were allocated to the treatment condition, and the group reported a mean age of 25 years. Continuity-corrected chi-squared analysis indicated that no significant differences existed between completers and non-completers in the
gender distribution \(\chi^2_1=0.000, \ p=1.000\), and treatment allocations \(\chi^2_1=2.890, \ p=0.089\) for the study. In addition, oneway ANOVAs revealed that the completers and non-completers did not significantly differ in terms of their current age \(F(1,108)=0.041, \ p=0.840\), age of onset of psychiatric symptoms \(F(1,108)=0.013, \ p=0.911\), current levels of psychiatric symptomatology \(F(1,108)=2.331, \ p=0.130\), current levels of depression \(F(1,108)=0.228, \ p=0.634\), or current consumption of alcohol \(F(1,108)=3.819, \ p=0.053\) or cannabis \(F(1,108)=2.462, \ p=0.120\). Table 4.8 displays the characteristics of completers and non-completers according to these variables.

Table 4.8  Presenting characteristics of completers* and non-completers+ in a treatment trial for people with comorbid psychotic disorders and current problematic alcohol/other drug use.

<table>
<thead>
<tr>
<th>Participates</th>
<th>Completers*</th>
<th>Non-completers+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Age (years)</td>
<td>27.21</td>
<td>9.57</td>
</tr>
<tr>
<td>Age (years) at onset of psychiatric symptoms</td>
<td>18.63</td>
<td>6.07</td>
</tr>
<tr>
<td>Current levels of psychiatric symptoms</td>
<td>37.14</td>
<td>14.06</td>
</tr>
<tr>
<td>Current levels of depression</td>
<td>17.71</td>
<td>12.96</td>
</tr>
<tr>
<td>Current levels of alcohol use</td>
<td>3.50</td>
<td>4.76</td>
</tr>
<tr>
<td>Current levels of cannabis use</td>
<td>3.40</td>
<td>5.69</td>
</tr>
<tr>
<td>Males</td>
<td>60</td>
<td>77</td>
</tr>
<tr>
<td>Allocated to treatment</td>
<td>32</td>
<td>41</td>
</tr>
<tr>
<td>Comorbid depression present</td>
<td>31</td>
<td>40</td>
</tr>
<tr>
<td>Alcohol use disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Alcohol dependence</td>
<td>45</td>
<td>58</td>
</tr>
<tr>
<td>Cannabis use disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannabis abuse</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Cannabis dependence</td>
<td>49</td>
<td>63</td>
</tr>
</tbody>
</table>

*“Completers” are those participants who completed each of four follow-up assessments (three-, six- and 12-months following initial assessment).
+ “Non-completers” did not complete all four follow-up assessments.
Rates of cannabis abuse and dependence were not significantly different for completers and non-completers of the follow-up assessments ($\chi^2_1=6.214$, $p=0.045$), nor was the incidence of alcohol abuse and dependence among the sample ($\chi^2_1=2.755$, $p=0.252$).

4.3.4.4.2 Alcohol/other drug use outcomes

4.3.4.4.2.1 Alcohol Consumption outcomes

Rates of abstinence from alcohol among the sample were calculated at each assessment occasion. Chi-squared analysis indicated that no significant differences existed between depression and non-depressed participants in terms of abstinence at any follow-up occasion. See Appendix D for the detailed analysis.

Thirty-seven people (47%) met criteria for hazardous consumption of alcohol (i.e. above recommended safe drinking guidelines) at entry to the study. These people formed the sample on which the remaining analyses in this section were conducted.

Current consumption of alcohol was assessed at each follow-up for the month prior to survey. Mean alcohol consumption, as a function of treatment allocation and depression status at initial assessment is displayed in Table 4.9. Levels of alcohol consumption tended to decrease across the sample over the follow-up period.
Table 4.9 Mean alcohol consumption* in the month prior to assessment for people participating in a study of substance use treatment for coexisting psychosis and substance use disorders, according to treatment allocation and depression status. Note that these data represent only those people who met criteria for harmful consumption of alcohol at entry to the study (n=37).

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>4.58</td>
<td>1.88</td>
<td>5.67</td>
<td>3.14</td>
</tr>
<tr>
<td>Control</td>
<td>7.25</td>
<td>6.27</td>
<td>3.39</td>
<td>2.31</td>
</tr>
<tr>
<td>No Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>10.19</td>
<td>10.62</td>
<td>1.93</td>
<td>1.85</td>
</tr>
<tr>
<td>Control</td>
<td>6.48</td>
<td>5.87</td>
<td>4.02</td>
<td>2.45</td>
</tr>
</tbody>
</table>

* A score of 1 equates to once daily use over the month prior to survey. A score of 2 equates to two standard drinks per day, 3 to three standard drinks per day, etc.

Figure 4.5 displays the pattern of alcohol reduction according to these groups below.

Repeated measures ANOVA revealed a significant time effect existed for changes in alcohol consumption over the study period ($F(3,33)=8.816, p=0.000$). Scheffé follow-up tests revealed that alcohol consumption for the group was statistically significantly lower than at the initial assessment at the six-month ($F(3,33)=18.298, p<0.01$) and 12-month follow-up assessments ($F(3,33)=13.362, p<0.01$).
Treatment allocation was not associated with changes in alcohol consumption over time ($F(3,33)=0.665$, $p=0.576$), nor was the presence of comorbid depression at entry to the study ($F(3,33)=1.494$, $p=0.221$). However, a non-significant trend emerged for the interaction between time, intervention status, depression status and changes in alcohol consumption ($F(3,33)=2.700$, $p=0.050$). This trend suggested that, in contrast to all other groups who reported reductions in use, people with comorbid depression who received treatment, did not report the same pattern of change in alcohol consumption over the study period, relative to the other treatment conditions.
Alcohol-consumption status was calculated at the 12-month follow-up for those people meeting hazardous alcohol consumption criteria at entry to the study, as a function of comorbid depression. Among people with depression (n=15), just over one-quarter were abstinent at 12-months (n=4), a further one-quarter were using above the threshold for hazardous consumption, and around 48% (n=7) were using below a hazardous threshold. Of those without depression (n=22), around two-thirds were drinking alcohol below the threshold for hazardous consumption at the 12-month follow-up assessment, compared with 14% (n=3) who were abstinent, and four people (18%) who continued to use above the hazardous threshold. Pearson chi-squared analysis indicated no significant differences existed between depressed and non-depressed participants at the 12-month follow-up assessment in terms of their alcohol consumption status ($\chi^2=1.792$, $p=0.408$).

Rates of alcohol abuse and dependence were examined for people with and without depression at the six-month and 12-month follow-up assessments. Pearson chi-squared analysis indicated no significant differences existed between groups at either follow-up assessment. These analyses are contained in Appendix D.

Stage of change for alcohol use was also examined for the sub-group of participants meeting criteria for hazardous alcohol consumption at entry to the study. No significant differences existed between depressed and non-depressed participants on this outcome measure (see Appendix D).
4.3.4.4.2.2 Cannabis use outcomes

As for alcohol, rates of self-reported abstinence from cannabis among the sample as a whole were calculated at each follow-up assessment timepoint. Rates of abstinence did not significantly differ according to depression status at any follow-up assessment timepoint. See Appendix D for the detailed analyses of these variables.

Forty-four people (56%) met criteria for hazardous use of cannabis (i.e. above once weekly use) at entry to the study. These people formed the sample on which remaining analyses in this section were conducted.

Levels of cannabis use were compared over time for people with and without depression and according to treatment allocation. Repeated measures ANOVA revealed no significant differences existed between these groups over time (see Appendix D). Cannabis use status (abstinent, use above/below harmful level) was also calculated at each follow-up occasion, according to depression status. Chi-squared analysis indicated that no significant differences existed in this outcome variable according to the presence of depression at any follow-up assessment. Likewise, rates of cannabis abuse and dependence did not significantly differ as a function of depression status at the six- or 12-month follow-up assessments. See Appendix D for a detailed description of these analyses.
Aggregate stage of change scores were calculated for cannabis use at each assessment timepoint for those participants meeting criteria for harmful use of cannabis at the initial assessment. Changes in these aggregate scores over time are displayed in Figure 4.6.

Figure 4.6  Variation in readiness to change cannabis use, according to treatment allocation and depression status, among people with a psychotic disorder, participating in a study of treatment for problematic alcohol/other drug use. Data represents participants who completed all phases of assessment and who met criteria for harmful use of cannabis at the initial assessment (n=44).

No clear pattern of change emerged in stage of change aggregate scores according to treatment or depression status. This was confirmed by repeated measures ANOVA, which indicated no significant main effects on stage of change scores for time ($F(3,30)=2.014$, $p=0.118$), nor treatment allocation over the follow-up period ($F(3,30)=2.323$, $p=0.080$). In addition, the combined effects of time, depression status and treatment allocation on stage of change aggregate scores was also not significant.
(F(3,30)=1.020, p=0.387). A non-significant trend for the influence of depression on stage of change scores over time emerged for those people using cannabis at harmful levels at entry to the study (F(3,30)=3.553, p=0.018). That is, there was a tendency for people with comorbid depression at entry to the study to report higher stage of change scores over time than their counterparts without depression. Higher stages of change scores are indicative of increasing intention to change cannabis use.

In addition to aggregate stage of change scores for cannabis use, readiness to change was categorised according to three stages of change: pre-contemplation, contemplation and action. Table 4.10 displays the proportion of people using cannabis at harmful levels at the initial assessment, who reported being in each of these stages of change at each follow-up assessment.

Table 4.10  Stage of change for cannabis use for people participating in a study of substance use treatment for coexisting psychosis and substance use disorders, according to treatment allocation and depression status. Note that these data represent only those people who met criteria for harmful use of cannabis at entry to the study (n=44).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precontemplation</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Contemplation</td>
<td>9</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Action</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>No Comorbid Depression</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>5</td>
<td>20.8</td>
<td>17.4</td>
</tr>
<tr>
<td>Contemplation</td>
<td>8</td>
<td>33.2</td>
<td>21.7</td>
</tr>
<tr>
<td>Action</td>
<td>11</td>
<td>45.8</td>
<td>60.9</td>
</tr>
</tbody>
</table>
People with comorbid depression at initial assessment reported being in the contemplation or action stage of change at the three-month follow-up occasion. This was similar to those without comorbid depression, one-third of whom were in contemplation at the three-month follow-up, while a further 46% reported being in the action stage of change for their cannabis use. Pearson chi-squared analysis indicated no significant differences existed for people with and without depression at this follow-up occasion on this measure ($\chi^2 = 2.391$, $p = 0.303$).

At the six-month assessment, stage of change remained reasonably consistent for people with comorbid depression with the three-month follow-up. In contrast, 61% of people without depression reported being in the action stage of change for their cannabis use, although Pearson chi-squared analysis revealed no significant differences existed between depression and non-depressed groups at six-months ($\chi^2 = 2.422$, $p = 0.298$). By the final follow-up assessment, the majority of people without comorbid depression reported being in the pre-contemplation stage of change (41%), while those with comorbid depression were equally divided between contemplation and action. Pearson chi-squared analysis indicated that these differences in stage of change between depressed groups was statistically significant ($\chi^2 = 8.620$, $p = 0.013$).

4.3.4.4.2.2 Other Alcohol/other drug use outcomes

The number of days in the month prior to assessment at which the participants used alcohol/other drugs at harmful levels was converted into a “hazardous use aggregate score”. Mean scores on this outcome variable are displayed in Table 4.11.
Table 4.11  Hazardous use aggregate scores* for participant alcohol/other drug use in the month prior to assessment over time and according to treatment allocation and initial depression status, as reported by participants who completed all follow-up assessments in a trial of substance use treatment among people with co-existing psychotic and alcohol/other drug use problems.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial Mean</th>
<th>Initial S.D.</th>
<th>3-months Mean</th>
<th>3-months S.D.</th>
<th>6-months Mean</th>
<th>6-months S.D.</th>
<th>12-months Mean</th>
<th>12-months S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>39.81</td>
<td>12.71</td>
<td>32.31</td>
<td>14.70</td>
<td>23.88</td>
<td>12.80</td>
<td>24.13</td>
<td>19.53</td>
</tr>
<tr>
<td>No Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Range 0-280 days.

People with comorbid depression generally reported a pattern of increased hazardous use of substances across time relative to their counterparts without depression. However, repeated measures ANOVA revealed no significant effect of comorbid depression over the follow-up assessment occasions ($F(3,68)=0.517$, $p=0.671$).

Hazardous use aggregate scores did change significantly over time ($F(3,68)=9.338$, $p=0.000$), with Scheffé follow-up tests indicating that hazardous index scores were statistically significantly reduced at the three-month follow-up ($F(3,68)=23.355$, $p<0.01$), and the six-month follow-up occasions ($F(3,68)=22.844$, $p<0.01$), relative to the initial assessment. Figure 4.7 displays these data below.

Although treatment in the current study did not significantly effect scores on the hazardous use index ($F(3,68)=1.839$, $p=0.141$), the interaction between time, depression status and treatment allocation was statistically significant ($F(3,68)=3.598$, $p=0.014$).
Scheffè follow-up tests revealed that, left untreated, people with comorbid depression reported significant increases (around 12 points) in their hazardous use aggregate scores between the three-month and six-month follow-up assessment occasions ($F(3,68)=14.415$, $p<0.01$). In contrast, those people with comorbid depression who were allocated to treatment reported an eight-point reduction in their hazardous use aggregate scores over the same time period.

![Graph showing hazardous use of alcohol/other drugs over time, according to treatment allocation and depression status.](image)

**Figure 4.7** Hazardous use of alcohol/other drugs (aggregated index scores) over time, according to treatment allocation and depression status, among people with a psychotic disorder, participating in a study of treatment for problematic alcohol/other drug use. Data include people who completed all phases of assessment (n=78).

Treatment did not seem to effect hazardous use aggregate scores for people without depression, with those in treatment reporting a two-point increase in this index between the three- and six-month follow-up assessments, relative to their control counterparts.
who actually reduced their scores by approximately six-points over the same time period.

Poly-drug use, that is the number of alcohol/other drugs (including tobacco) consumed in the month prior to assessment, was calculated for participants at each assessment timepoint. Mean poly-drug use over time is displayed in Figure 4.8 as a function of treatment allocation and depression status.

![Figure 4.8](image)

**Figure 4.8** Mean levels of poly-drug use (or number of drug classes during the month preceding assessment), according to treatment allocation and depression status, among people with a psychotic disorder, participating in a study of treatment for problematic alcohol/other drug use who completed all phases of assessment (n=78).

Repeated measures ANOVA revealed significant changes in poly-drug use occurred for the sample over the initial and follow-up assessment occasions ($F(3,74)=4.002,$
p=0.008), however post-hoc Scheffé analysis failed to indicate at which follow-up assessment this significant change occurred. In addition, treatment was significantly associated with reductions in poly-drug use scores across the assessment timepoints \( F(3,74)=3.665, p=0.013 \), however again, Scheffé follow-up tests did not where the difference existed. Comorbid depression at initial assessment did not influence poly-drug use scores across the follow-up occasions \( F(3,74)=1.200, p=0.311 \), nor was the interaction between time, depression status and treatment allocation and poly-drug use scores statistically significant \( F(3,68)=1.608, p=0.188 \). These data are also presented in Table 4.12 below.

Table 4.12 Poly-drug use scores for participants in the month prior to assessment as reported by participants who completed all follow-up assessments in a trial of substance use treatment among people with co-existing psychotic and alcohol/other drug use problems.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>3.17</td>
<td>1.10</td>
<td>2.94</td>
<td>1.30</td>
</tr>
<tr>
<td>Control</td>
<td>2.15</td>
<td>0.80</td>
<td>1.77</td>
<td>0.93</td>
</tr>
<tr>
<td>No Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>3.00</td>
<td>0.78</td>
<td>2.64</td>
<td>0.84</td>
</tr>
<tr>
<td>Control</td>
<td>2.83</td>
<td>0.75</td>
<td>2.61</td>
<td>0.93</td>
</tr>
</tbody>
</table>

4.3.4.4.3 Mental health outcomes

Changes in psychiatric symptoms were examined using total scores from the BPRS. Repeated measures ANOVA revealed no significant changes occurred in this variable as a function of time, depression status, treatment allocation, or the interaction between these factors (see Appendix D).
Depression was measured at each assessment using the BDI-II (Beck et al., 1996), and the mean depression scores over time are displayed in Table 4.13.

Table 4.13  Mean depression ratings over time for participants completing all follow-up phases in a study of substance use treatment for people with coexisting psychotic and substance use disorders.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>32.89</td>
<td>9.15</td>
<td>22.61</td>
<td>13.95</td>
</tr>
<tr>
<td>Control</td>
<td>28.62</td>
<td>7.29</td>
<td>15.85</td>
<td>9.86</td>
</tr>
<tr>
<td>No Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>9.64</td>
<td>4.34</td>
<td>9.14</td>
<td>5.39</td>
</tr>
<tr>
<td>Control</td>
<td>8.87</td>
<td>6.24</td>
<td>9.64</td>
<td>10.22</td>
</tr>
</tbody>
</table>

Those with comorbid depression at the initial assessment continued to report consistently higher levels of depression throughout the follow-up period than did their counterparts without depression. This trend is also evident in Figure 4.9, which displays the depression scores over time for people as a function of their depression and treatment status.
Repeated measures ANOVA revealed a significant main effect of time on depression scores ($F(3,74)=10.411, p=0.000$), with Scheffé follow-up tests indicating that the three-month ($F(3,74)=22.761, p<0.01$), six-month ($F(3,74)=31.706, p<0.01$), and 12-month ($F(3,74)=20.719, p<0.01$) depression scores for the group as a whole were significantly lower than at the initial assessment. In addition, comorbid depression at the initial assessment significantly interacted with BDI-II scores over the assessment period ($F(3,74)=8.792, p=0.000$). Scheffé follow-up tests revealed that people with comorbid depression at the initial assessment reported significantly reduced levels of depression according to the BDI-II at the three-month follow-up ($F(3,74)=25.220, p<0.01$) and at the six-month follow-up ($F(3,74)=24.273, p<0.01$) and 12-month assessment occasions.
(F(3,74)=12.183, p<0.01). People without comorbid depression did not make similar changes in the BDI-II scores over time, however remained well within the “minimal depression” threshold according to this scale (i.e. scores less than 14). In contrast, despite improvements in BDI-II ratings across the assessments, people with comorbid depression rated at best within the “mild” range of depressive symptoms (BDI-II scores between 14-19). Treatment was not significantly associated with BDI-II scores across the assessment period (F(3,74)=0.542, p=0.654), nor was the interaction between time, treatment allocation and comorbid depression statistically significant for this outcome variable (F(3,74)=0.249, p=0.862).

4.3.4.4 Other outcomes

Participation in treatment was not significantly related to the presence of comorbid depressive symptoms at entry to the study. Among those participants allocated to the treatment condition, 71% (n=10) of people without depression attended all ten sessions of treatment compared to 83% (n=15) of people with depression. Continuity-corrected chi-squared analysis indicated these treatment completion rates were not significantly different from each other (\(\chi^2_{1}=0.142, p=0.142\)).

General functioning was measured by the global assessment of functioning scale (GAF, APA, 1994). Repeated measures ANOVA indicated no significant interactions existed between changes in GAF scores, time, treatment allocation or the presence of comorbid depression (see Appendix D). Although not statistically significant, people with
comorbid depression at entry to the study reported consistently lower levels of functioning at each assessment timepoint than did those without comorbid depression.

In addition, quality of life was measured using several scales from the Lancashire Quality of Life Scale (LQoL, Oliver, 1991-1992). Participants with comorbid depression consistently rated their “life as a whole” lower than did their counterparts across the initial assessment and follow-up occasions. However, repeated measures ANOVA, failed to show any significant associations between changes in quality of life, time, depression or treatment status. These analyses are detailed in Appendix D.

Self-concept scores were also collected at each assessment timepoint, and the mean scores for this variable are displayed over time in Figure 4.10 for the group according to treatment allocation and comorbid depression status. Repeated measures ANOVA revealed a significant main effect of time existed for changes in self-concept scores ($F(3,71)=5.135, p=0.002$). More specifically, the interaction between time and comorbid depression status and changes in self-concept scores was statistically significant ($F(3,71)=5.482, p=0.001$). Scheffè follow-up tests revealed that the differences in self-concept scores were most evident when comparing people with/without depression at the initial and the six-month follow-up assessments ($F(3,71)=13.606, p<0.01$). That is, people with comorbid depression made significant improvements in their self-concept scores from the initial to the six-month follow-up assessment occasions relative to their counterparts without depression.
Figure 4.10 Mean self-concept ratings over time, according to treatment allocation and depression status, among people with a psychotic disorder, participating in a study of treatment for problematic alcohol/other drug use who completed all phases of assessment (n=78).

Despite this improvement, people with comorbid depression at the initial assessment reported self-concept scores between two and five-points lower than did those people without depression across the assessments. Treatment was not associated with changes in self-concept scores, with the interaction between time and treatment allocation and changes in self-concept not statistically significant ($F(3,71)=1.165, p=0.324$). The same was true for the combined influence of time, depression status and treatment allocation ($F(3,71)=0.180, p=0.910$). These data are displayed in Table 4.14.
Table 4.14  Mean self-concept scores (Lancashire Quality of Life Profile, Oliver, 1991-1992) over time and as a function of treatment allocation and initial depression status for participants completing all follow-up phases in a study of substance use treatment for people with coexisting psychotic and substance use disorders.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>13.67</td>
<td>2.11</td>
<td>14.89</td>
<td>3.29</td>
</tr>
<tr>
<td>Control</td>
<td>12.92</td>
<td>2.78</td>
<td>14.77</td>
<td>2.09</td>
</tr>
<tr>
<td>No Comorbid Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>18.50</td>
<td>1.70</td>
<td>17.71</td>
<td>3.43</td>
</tr>
<tr>
<td>Control</td>
<td>17.87</td>
<td>2.15</td>
<td>18.28</td>
<td>2.30</td>
</tr>
</tbody>
</table>

Change scores were calculated for alcohol use, cannabis use, depression and hazardous use of AOD for each follow-up assessment paired with the initial assessment (i.e. initial and three-month, initial and six-month, initial and 12-month). Pearson correlational analysis indicated that a significant negative relationship existed between changes in alcohol use between the initial and six-month follow-up assessments and changes in depression over the same time period (Pearson’s $r=-0.276$, $p=0.014$). That is, positive changes in alcohol use over this six-month time period were significantly related to negative changes in depression scores. In addition, positive changes in alcohol use between the initial and six-month follow-up assessment were significantly positively correlated with changes in cannabis use over this time (Pearson’s $r=0.681$, $p=0.000$). As changes in alcohol use increased over the first six months of the study, so too did changes in cannabis use for the same period of time. Changes in depression were also significantly correlated with changes in cannabis use between the initial and six-month follow-up assessment (Pearson’s $r=-0.305$, $p=0.007$). Increasing positive changes in cannabis use between initial and six-month follow-up were significantly associated with
decreasing changes in depression scores. No other correlations between any of these change variables were statistically significant at any other timepoint.

4.3.5 Discussion

Study 4 examined the association between comorbid depression and response to treatment for AOD use among a sample of participants with psychotic and AOD use disorders. Results indicated that the sample, regardless of depression or treatment status, experienced significant reductions in levels of daily alcohol use (evidenced at six- and 12-months following initial assessment), significant decreases in their overall hazardous use of substances (three- and six-month follow-up assessments) and significant reductions in poly-drug use. Levels of depression improved significantly for all participants over time, with those experiencing comorbid depression reporting significantly great improvements in symptoms over the course of the study independent of treatment status. The presence of depression was associated with significantly higher stages of change for cannabis use and, if treated, with significant reductions in the hazardous use of substances. Additionally, comorbid depression was associated with significant improvements in self-concept scores, although this was not related to treatment allocation. These results are discussed in more detail below.

4.3.5.1 Alcohol/Other Drug Use Outcomes

The sample as a whole reported reduced AOD use over the course of the follow-up assessments, but these reductions did not differ according to the participant’s depression
status nor exposure to treatment for substance use. For example, no significant
differences in abstinence rates were reported among those people meeting criteria for
harmful alcohol use or hazardous use of cannabis at entry to the study, regardless of
their treatment allocation, or the presence of comorbid depressive symptoms. The one
exception to this was for alcohol abstinence at the three-month follow-up assessment,
where control group (no treatment) participants with comorbid depression reported
significantly lower rates of abstinence than did their counterparts without depression.

In contrast, the sample reported significant reductions in hazardous use of alcohol at six-
and 12-month follow-up assessments. A non-significant trend in these reductions
suggested that treatment for substance use had a different effect for people with and
without comorbid depression. That is, within the treatment group, hazardous use of
alcohol remained relatively constant, whilst the non-depressed group reported reductions
in the rates at which they used alcohol at harmful levels (not statistically significant). In
other words, the relationship between depression and alcohol use seemed such that a
singular focus of treatment on substance use did not seem to provide participants with
comorbid depression enough incentive or skill base to benefit from therapy in the same
way that people without depression did for their alcohol use.

Similarly, in an aggregate index of hazardous use across a range of ten substances in the
previous month, significant reductions were reported by the sample as a whole over the
follow-up period, particularly at the three- and six- month assessments. Treatment for
substance use enabled people with comorbid depression to make non-significant
reductions in their hazardous use of substances, while those in the control group with comorbid depression reported increases in the hazardous use index over the same time period. The same pattern was not detected among people without comorbid depression. This finding suggests that substance use treatment is generalisable enough to people with comorbid depression to enable them to make some improvements in substance use patterns. However, left untreated, people with comorbid depression seem less able to muster the skills and impetus for change (Orford, 2001) as are people without depression, and thus not able to make the same gains.

4.3.5.2 Mental Health and Other Outcomes

As with many outcomes in the current study, despite reductions in hazardous use of substances across the study period, people with depression reported elevated levels of hazardous use at each follow-up assessment than did their counterparts without depression, although these increased levels were significantly different. This was also true for rates of alcohol dependence (40% versus 27% at 12-month follow-up), cannabis dependence (68% versus 40% at 12-month follow-up), and psychiatric symptomatology (according to BPRS total scores at each follow-up assessment). Similarly, general functioning (as measured by the GAF) was consistently lower for the depressed group at each follow-up assessment (not statistically significant), as were ratings of quality of life and self-concept scores. For example, people with comorbid depression rated their current general well being one-two points lower on a ten-point scale at each assessment timepoint than did their counterparts without depressive symptomatology.
While people with depression reported significant improvements across the domains of depressive symptoms and self-concept, treatment for substance use did not moderate these changes, and at 12-month follow-up, people with depression still remained highly symptomatic relative to their non-depressed counterparts. For example, a significant improvement in BDI-II scores was reported over time for people with depressive comorbidity, but the majority still scored in the mild-moderate threshold for depressive symptoms at the 12-month follow-up assessment, compared to the non-depressed controls who remained in the no- or minimal symptom category. Likewise, people with comorbid depression made significant improvements in their self-concept between the initial and six-month assessments. However, they continued to report poorer self-concept scores between two and five points lower than did their counterparts without depression at each assessment timepoint, with no measurable impact of treatment on these scores for either group.

An important finding in the context of these results relates to the patterns of change reported over time in alcohol use, cannabis use and symptoms of depression. In assessing the changes between initial and six-month follow-up assessments, a significant relationship was observed, indicating a decrease in alcohol use was associated with an increase in depressive symptoms. In the same way, decreases in cannabis use between the initial and six-month assessment were significantly associated with increases in depression. Although these associations did not appear to translate into significant differences in abstinence rates or differences in the reduction rates of alcohol or
cannabis, this finding suggests that managing depression in the context of treatment for reducing substance use problems needs to be considered.

4.3.5.3 Limitations

Several limitations exist with Study 4 that may have affected these results. As with Study 3, the small sample size of participants completing all the follow-up assessments, meant that responses on the key outcome variables were highly variable, with large standard deviations often being reported. This may have affected the detection of significant differences between the various study groups, should they have existed. Although the rates at which people completed all follow-up assessments in Study 4 was higher than in Study 3 (72% versus 53%), it is likewise not known whether those people lost at follow-up assessment were those who were more depressed at those timepoints, functioning less well or using alcohol/other drugs at higher rates than those who remained engaged with the study. It should be noted, however that analyses indicated that “completers” and “non-completers” were similar at the initial assessment across these domains.

4.4 Summary and Conclusions

Despite a range of psychological and pharmacological treatments being available to treat depression or AOD use occurring in isolation of each other, little evidence exists to suggest how well these treatment strategies generalised to people experiencing these conditions as they co-occur. This is also at odds with the recommendations made almost a decade ago by Hall (1996) that urgent action was required to test the application of
existing treatment programs to people with comorbid conditions. Studies 3 and 4 responded to this by examining the response to psychological treatment for AOD use among people with and without comorbid depression, drawn from AOD treatment agencies or mental health services, providing some of the first available data on these issues. In addition, a combination of motivational interviewing and CBT strategies were adapted and applied to a comorbid population in some the first studies of this kind.

In general, people with comorbid depression in Studies 3 and 4 were not significantly different in their participation and response to a program of substance use treatment relative to people without depression. For example, depressed participants were able to make some positive changes in AOD use and mental health outcomes over the course of the study periods and were willing to present at and complete a program of regular weekly treatment sessions extending up to ten weeks in duration. The completion rates for treatment in Studies 3 and 4 were higher then those obtained in other treatment research. For example, in a study of depression treatment for injecting drug users, Herman et al. (2004) reported that 50% of the sample attended the full complement of treatment sessions, compared to rates of between 66% and 88% in Studies 3 and 4. These results are encouraging, in light of assertions that depression impacts negatively on retention in treatment and motivation to change once engaged in a treatment program (Miller, Yahne, & Tonigan, 2003).

Further to this, motivation to change problematic amphetamine, alcohol or cannabis use was not moderated by the presence of depressive symptoms in either of Studies 3 or 4.
Study 3 participants reported increased readiness to change amphetamine use (in the direction of taking action) for the sample as a whole across the follow-up assessments, regardless of the presence of depression, or indeed participation in treatment. Moreover, Study 4 revealed that the presence of depression was associated with a significantly higher stage of change for cannabis use at the 12-month follow-up relative to participants without depressive symptoms. These results are similar to those of Humfress et al. (2002) whose sample of psychiatric outpatients (2% of whom met criteria for AOD abuse) reported increased motivation to change and increased satisfaction with care after receiving a program of motivational interviewing. Although the specific benefits of the individual treatment components (i.e. motivational interviewing and CBT strategies) cannot be determined from the results of Studies 3 and 4, it seems that the experiences of study participants were sufficient enough to promote treatment attendance and motivation to change.

Participants in both Studies 3 and 4 reported improvements in abstinence and reductions in their levels of use of some drugs as a function of participating in the study. This was true for people with and without depression, and equally across the treated and untreated participants. For example, the psychological aspects of amphetamine dependence decreased for all participants in Study 3 over the follow-up time period, as did their subjective rating of the severity of their cravings for amphetamines. Similarly, amphetamine use also decreased over time in Study 3, although this was not related to participation in treatment, or the presence of depression. The abstinence rates obtained across samples at the 12-month follow-up (e.g. Study 3: 36% without depression, 46%
with depression; Study 4: one-third abstinence from cannabis regardless of comorbid depression) were similar to the rates of abstinence reported in other studies of substance use treatment. For example, Miller, Walter and Bennet (2001) in a meta-analysis of alcohol treatments, reported average rates of abstinence following treatment of the order of 30%. In addition, Ouimette, Gima, Moos and Finney (1999a), reported that the rates of improvement in abstinence and substance-related problems at a 12-month follow-up of substance abusers were similarly equivalent for the one-third sub-group with comorbid mental health problems compared to those without such comorbidity. According to these outcomes, people with current depression who also use alcohol/other drugs at hazardous levels report similar benefits from an assessment and treatment program for substance use problems as do people without comorbid depression.

Previous research suggests that abstinence alone among people with comorbid problems will not lead to normal psychological functioning (Weaver, Haston-Turner, Kristi, & O'Dell, 2000). The results from Studies 1 and 2 coupled with available evidence suggests that depression is linked to poorer physical and emotional health and social and personal functioning. In addition, Study 4 revealed a significant negative correlation existed between changes in alcohol use and depression and changes in cannabis use and depression. That is, participants did not reduce their depressive symptoms at the same rate as they did their problematic use of alcohol or cannabis. Overall, these results suggest that AOD use treatment, when co-occurring depressive symptoms are evident, may need to be augmented in some way to promote continuing change.
A treatment effect was generally not evident for the participants in Studies 3 and 4. The lack of an association between AOD use treatment and abstinence rates or reductions in AOD use is in contrast to previous research. AOD treatment produced improved abstinence rates and reductions in the level of cannabis use among 229 cannabis users (Copeland, Swift, Roffman, & Stephens, 2001), although mental disorders among the sample were in remission at the point of recruitment to the study. Hulse and Tait (2003) reported a decrease in alcohol use at six-month follow-up among participants with alcohol abuse and mental health problems following completion of a motivational interview. Further, while Stein et al. (2004b) reported improvements in depression among their comorbid participants for both CBT-treated and control groups, this was enhanced among people who received the CBT program. It may be in Studies 3 and 4 that the high proportion of current comorbidity (current levels of depression, current levels of problematic AOD use etc.) limited the capacity of a single-focussed substance use intervention to produce similar gains as reported by the above research among people with remitted mental health symptoms.

The presence of comorbid depression did interact with treatment outcomes for some variables in Studies 3 and 4, to both positive and negative ends. For example, depression scores generally decreased for Study 3 and 4 participants over the follow-up period, however in Study 3, those with comorbid depression who received treatment reported an accelerated reduction in depressive symptoms (evident at six-months rather than at 12-months). In the same way, Study 4 participants reported a general reduction in an aggregate of hazardous use of substances over time. However, follow-up tests
revealed that those with depression who received the ten-session treatment reported reductions in this aggregate score, whereas their depressed counterparts who did not receive treatment did not make similar gains. These results indicate that providing some form of treatment for this comorbid group is preferable to no treatment at all.

In contrast, the Study 4 sample reduced their rates of hazardous alcohol use over time, but within the treatment groups, a non-significant trend suggested that this reduction was mainly explained by the rates at which people without depression who received treatment made changes on this variable. People in the treatment group with comorbid depression did not make similar changes in their hazardous use of alcohol. In Study 3, a non-significant trend also emerged for alcohol use over time, indicating that those participants with depression who received the four-session intervention actually reported increased use of alcohol over time, compared with their four-session colleagues without depression. It may be that the combination of depression and alcohol use problems presents a unique set of difficulties that single-focussed treatments do not adequately address. This suggestion is supported by the one study of dual-focussed therapy completed by Brown, Evans, Miller, Burgess and Mueller (1997), who added depression-focussed CBT to an ongoing program of alcohol treatment in the United States. Results of this study indicated that participants who received the additional CBT reported superior abstinence rates, improved alcohol use outcomes and significant reductions in depressive symptoms relative to their comorbid counterparts who did not receive the additional therapy.
Closer examination of the Study 3 and 4 results indicate that, although people with comorbid depression generally experienced a similar pattern of response to substance use treatment relative to those without depression, they continued to report poorer outcomes than their non-depressed counterparts across the assessment occasions for a range of key variables. In Study 3, this included rates of six-month amphetamine dependence, poly-drug use, depression scores, general psychiatric distress, HIV risk taking, criminality and quality of life. In Study 4, people with coexisting psychosis, depression and AOD use problems consistently reported higher levels of depression, hazardous use of substances, lower self-concept and quality of life scores and lower levels of functioning across the follow-up assessments, compared with their non-depressed counterparts. Although these differences were not statistically significant, questions remain about how these residual symptoms might impact on relapse, morbidity and recovery further down the track. For example, a five-year survey of 102 women following treatment for AOD dependence, was conducted by Weaver et al. (2000) in the United States. Results of this survey indicated that at the five-year follow-up, one-third of the sample were experiencing current moderate symptoms of depression and thus required continuing psychological counselling for these issues after treatment for substance use had been completed. Considering that the depressed participants in Studies 3 and 4 continued to report current depressive symptoms in the moderate range, the need to expand treatment to address these residual symptoms seems indicated and worthy of investigation.
Some authors have suggested that untreated, residual symptoms of depression following treatment for alcohol use is closely associated with increased risk of relapse to pre-treatment levels of alcohol consumption (Curran, Flynn, Kirchner, & Booth, 2000). However, given very few studies have examined depression longitudinally among a sample of substance users, little is known about how current and post-treatment depression relates to relapse and other substance use outcomes. In one study that did attempt to address this issue, Curran and colleagues (2000) assessed 298 male war veterans with alcohol use disorder, following discharge from an inpatient detoxification program. Results indicated that levels of depression at the post-treatment assessment, as measured by the BDI-II were the strongest predictor of relapse over a 12-month period. This was the case for mild-severe post-treatment levels of depression (i.e. 14 and over on the BDI-II), with those scoring between 14-19 on the BDI-II at 2.5 times the risk of relapse to alcohol use at the nine-month follow-up, and those scoring 20 or over 4.5 times more likely to relapse at nine-month follow-up. Comorbidly depressed participants in Study 3 reported average BDI-II scores of 19.15 following completion of the treatment programs, while those in the treatment group in Study 4 reported average BDI-II levels of 22.61 at the post-treatment assessment. This highlights the potential importance of considering depression, where present, within the treatment program for substance use.

Further, experts have recently suggested that neither addiction nor psychiatric interventions on their own are sufficient to meet the needs of people with these co-occurring conditions (Brown et al., 2001), but the lack of data to support this notion
makes it difficult to decide on a preferred treatment approach with such clients. Herman and colleagues (2004) explain that despite the apparent need there is little precedence in either clinical or research settings for offering psychological treatment for depression to AOD users. Scott, Gilvarry and Farrell (1998) further suggest that substance use treatment services need to address depression among their clientele in an evidence-based way, and staff within mental health should extend their use of evidence-based treatments to deliver to patients with comorbid substance use problems. However, little research exists to suggest what these strategies should be with depression and substance use comorbidity. Clearly, more research is required.

The results of Studies 3 and 4 suggest that it may be important to target depression in the context of comorbid substance use problems, given the higher levels of disability and morbidity reported by participants with comorbid depression, and the potential for the participants to experience ongoing difficulties that could impact on relapse and recovery from both conditions. The next chapter examines these ideas in more detail, and reports on a randomised controlled trial of an integrated treatment for depression and AOD use comorbidity. In addition, a computerised version of integrated treatment, developed to address the important issue of accessibility of treatment for comorbid conditions, will also be evaluated.
Chapter 5

Treating Comorbid Depression and Alcohol/Other Drug Use Problems

Testing Comorbidity-Specific Treatments

Study 5

5.0 Abstract
The results of Studies 3 and 4 confirm previous research suggesting that the failure to treat both conditions among people with comorbid depression and alcohol/other drug (AOD) misuse may impact on outcomes for both problems. As described in previous chapters, people with depression and AOD use comorbidity encounter problems in accessing existing treatments and services, highlighting the need to develop and test treatment alternatives that can overcome these barriers. This chapter reports on the results of a pilot study of integrated psychological treatment for depression and AOD use comorbidity, targeting both conditions simultaneously. Participants received integrated treatment delivered by a therapist, computer-delivered integrated treatment or a brief intervention (control) treatment delivered by a therapist. Depression scores, daily use of alcohol and cannabis, hazardous use of a range of substance and poly-drug use fell significantly over a 12-month follow-up period across the integrated treatment and control conditions. One significant treatment effect was found for depression scores, with those receiving integrated clinician-delivered therapy reporting a steeper improvement in depression scores at three- and six-month follow-ups, relative to the other treatment conditions. A number of potentially important non-significant trends
were observed, indicating a possible benefit of integrated psychological treatment relative to the control condition over the longer term (i.e. six- to 12-months). The results of this study suggest that a brief intervention targeting both depression and AOD drug use problems is associated with improvements in key outcomes in the short-term, with integrated, lengthier psychological treatment potentially associated with sustained changes on the same outcomes. The implications of these results are discussed.
The results of Studies 3 and 4 (Chapter 4) suggest that while people with comorbid depression and alcohol/other drug (AOD) use problems report similar improvements following substance use treatment as do people without comorbid depression, they report consistently higher levels of depression and other psychiatric symptomatology, reduced social, personal and general functioning, lower rates of satisfaction with their quality of life and higher levels of AOD use. Research suggests that these residual symptoms following treatment for AOD use problems could place people with comorbid depression at a heightened risk of relapse of both conditions and continued morbidity regardless of any initial treatment gains that might be made (Curran, Flynn, Kirchner, & Booth, 2000; Weaver, Haston-Turner, Kristi, & O'Dell, 2000).

In the case of Studies 3 and 4, the AOD use condition was the primary focus of the treatment under evaluation. The single-focussed treatment was not sufficient to resolve the depressive symptoms, which may well have benefited from an adjunctive, specific intervention. It would appear that an important approach to managing comorbid depression and AOD use problems involves further development of a specific treatment model particular to this population. As McNamara, Schumacher, Milby, Wallance and Usdan (2001) report, although epidemiological surveys and results from treatment studies may indicate that people with comorbidity perform poorly in treatment compared with their non-comorbid counterparts, it is likely that if they were offered treatment targeting both components of their presentation (i.e. depression and AOD use) outcomes would be significantly improved.
Limited evidence currently exists that evaluates the efficacy of integrated treatments among people with depression and AOD use comorbidity that address both mental health and AOD use problems simultaneously. Several pilot studies testing the efficacy of integrated approaches to comorbidity treatment have shown promising results, although these have been conducted almost exclusively among people with psychosis and AOD use comorbidity (Myrick & Brady, 2003). For example, Barrowclough and colleagues (2001) compared routine care with a 9-month program of routine care, supplemented with motivational interviewing (five weekly sessions), CBT (24 sessions) and family or carer intervention (10-16 sessions) among 36 patients with schizophrenia and AOD use disorders and their carers. The 9-month treatment program integrated strategies for both AOD use problems (via motivational interviewing) and symptoms of psychosis (via CBT). At 3-month follow-up, the integrated treatment resulted in significantly greater improvement in participants' general functioning and lower scores on positive symptoms compared to the control group. The percent of “days abstinent from all substances” over the study period was greater for the integrated group. These differences remained for positive symptoms at the nine-month follow-up assessment, however differences in general functioning between the integrated intervention and control groups was no longer statistically significant (Haddock et al., 2003). Further, the integrated treatment group did not consistently report superior outcomes relative to the control group. For example, there were no differences in social functioning, nor did the treatment group report consistently better symptom scores at three-month follow-up.
This study, while promising, also suffers from several methodological problems. Firstly, it is not clear whether the content of the integrated treatment program brought about these changes, or whether the additional attention and contact with therapists and assessors received by the treatment group led to the superior outcomes (Barrowclough et al., 2001). In addition, the study sample size was small, perhaps contributing to the mix of results reported by the authors, and also to the absence of results reported according to drug type or diagnosis. Finally, the study population was limited to those participants with carers. Evidence from the studies reported in this thesis (Studies 1-4) suggest that presenting characteristics and response to treatment varies according to drug type. Thirdly, even if the intervention had led to significantly improved outcomes across a range of variables, it is questionable whether such an intensive program of treatment would be feasible outside of this study.

Bachmann, Moggi, Hirsbrunner, Donati and Brodbeck (1997) recruited 57 psychiatric inpatients who also had AOD dependence issues to an integrated treatment program for comorbidity. All participants received a four-stage integrated intervention that included both individual and group-based treatments. Each stage was completed over a four-week period (16 weeks of treatment in total) and included illness self-management, skills training, optimising pharmacological therapy, CBT, financial planning and relapse prevention strategies focussed on AOD use. Participants reported a moderate decrease in positive symptoms of psychosis over the 12-month follow-up period, but no change in their negative symptoms or levels of drug use. This study was
conducted within a locked psychiatric ward, where all participants received the same treatment program.

In a replication of the above study, the authors recruited 52 consecutive participants who presented to a locked ward for treatment over a three-year period (Moggi, Hirsbrunner, Brodbeck, & Bachmann, 1999a). Twelve-months following intake to the study, the sample reported significantly improved positive symptoms of psychosis and increased engagement with mental health services. However, AOD use outcomes did not change. In interpreting these results, the authors discussed the problems with focussing their treatment on encouraging abstinence from AOD use, rather than taking a harm minimisation approach. Abstinence as a goal may have been unrealistic for this comorbid group (Moggi et al., 1999a). In response to this, the authors recruited an additional 32 consecutive participants, admitted to the inpatient program over a two-year period (Moggi, Brodbeck, Koltzsch, & Hirsbrunner, 2002). On this occasion, the AOD use goals were relaxed and targeted stabilisation of use, but the other treatment components were retained as per the previous studies. Twelve-months following admission to the unit, participants reported significant reductions in AOD use generally, and specifically in terms of alcohol, heroin, cocaine and cannabis use. Total scores on the Brief Psychiatric Rating Scale (BPRS, Ventura, Green, Shaner, & Liberman, 1993) were significantly lower at follow-up, indicating reduced psychiatric symptomatology, and hospitalisation rates were significantly improved.
As a whole, this body of research is promising, however several methodological shortcomings are worthy of mention. None of these studies included a control group for comparison, sample sizes were small and in each study, one-third of the original participants were lost to attrition. Further, inpatient-based treatment programs are expensive to initiate and maintain (Carr, Neil, Halpin, & Holmes, 2002), and so the likely transfer of this program to other treatment centres outside this inpatient unit remains questionable. This final point is important, given only around 25% of those admitted to the inpatient unit completed the inpatient program (Moggi et al., 2002).

In separate research conducted by the same group, Moggi, Ouimette, Finney and Moos (1999b) recruited 981 males with AOD use disorder and comorbid psychosis (15%) or non-psychotic disorders such as depression, anxiety etc. (85%) from an inpatient AOD use program for male war veterans. Following inpatient detoxification for AOD use problems, participants were provided with access to CBT and 12-step treatment combinations and followed up over a 12-month period. Results indicated that all participants made significant improvements on levels of AOD use and psychiatric symptomatology following treatment for AOD use. However, these improvements in psychiatric symptoms were more marked for those participants who accessed treatment that focussed on both the AOD use and mental disorders than participants in programs with a AOD-use focus only. While these results are also encouraging, this study was not a randomised controlled trial and participants were recruited from a defined and limited source. The program of treatment was not manualised or controlled in any way and involvement in type, quantity and frequency of treatment was left to the study.
participants. The generalisability of these findings is uncertain and future research is still required.

Twenty-four weeks of pharmacological and psychosocial treatments for comorbid mental health and AOD use disorders were offered to 44 outpatients of a AOD abuse program in America (Granholm, Anthenelli, Monteiro, Sevcik, & Stoler, 2003). The sample included people with major depression (n=16), schizophrenia (n=18) and bipolar disorder (n=10). Treatment was integrated in that symptom management and abstinence was promoted simultaneously. However, treatment was provided by several practitioners within the same multidisciplinary team rather than by the one provider. At the 12-month follow-up, participants reported a reduction in the rate of re-hospitalisation relative to the previous year. Levels of symptoms and AOD use severity were not measured and participants were not compared with an alternative control condition. The sample size was small and drawn exclusively from a pool of male war veterans. As such, further conclusions and generalisations cannot be made with any confidence.

Brady, Dansky, Back, Foa and Carroll (2001) recruited 39 outpatients with comorbid post-traumatic stress disorder and cocaine dependence to a study of integrated treatment. Following an assessment, all participants were invited to attend up to sixteen 90-minute psychotherapy sessions, using exposure therapy to treat the PTSD and cognitive behavioural relapse prevention techniques to target cocaine use. Sessions could occur either once or twice weekly. Participants reported significant
reductions in PTSD symptoms and levels of cocaine use, along with reductions in depression scores between baseline and 6-month follow-up assessments. However, this study suffered from small participant numbers, and the lack of an alternative treatment group, making generalisations outside this study difficult.

In an Australian study among people with comorbid severe mental illness and AOD misuse problems, Teesson, Gallagher and Ozols (1998) evaluated an integrated treatment program that provided motivational interviewing treatment strategies and support for mental health and AOD misuse over a 12-month period. Treatment encouraged harm reduction approaches with respect to changing AOD use. Results for 37 participants indicated that the integrated treatment produced reductions in AOD use and improvements in social functioning and symptomatology, albeit that these reductions were not statistically significant. This included reductions in the average current use of alcohol, cannabis and tobacco and in the number of substances used in the month prior to survey. Attrition rates were around 50% over the life of the study, and involved people with serious mental illness (schizophrenia and other psychotic disorders) as opposed to those with depressive conditions. Given this was a naturalistic study, no comparison group was available, however these results are encouraging.

In one of the few studies conducted among people with depression and comorbid AOD use problems, Daley and colleagues piloted an integrated motivational interview among 23 people with major depression and cocaine dependence (Daley, Salloum,
Zuckoff, Kirisci, & Thase, 1998). Upon discharge from an inpatient psychiatric facility, participants were consecutively assigned to receive motivational therapy or treatment as usual (psychoeducation, supportive counselling and pharmacotherapy) during the first month of outpatient care, and could access up to five individual and four group-based sessions. All participants were stabilised on antidepressants for the duration of the study, and motivational interviewing focussed on assisting people to better cope with various psychiatric and AOD-related issues that influence treatment adherence. Results indicated that attendance at the motivational treatment program was significantly greater than that for treatment as usual over the first month post-discharge. At the 90-day follow-up assessment, participants in the motivational group reported improved abstinence rates from cocaine and a significant decrease in severity of depressive symptoms than their treatment as usual counterparts. At the 12-month follow-up, differences between the treatment groups were found, and included significantly lower rates of rehospitalisation among the motivational interviewing group. Despite the small numbers of participants involved in this study, the lack of randomisation to treatment groups and the lack of an active CBT treatment component, the results are promising.

In general, preliminary results from these studies suggested that treatment programs integrating both mental health and AOD use-focussed approaches may be effective in reducing levels of drug use and psychiatric symptoms for people presenting with comorbid problems. With the exception of Daley et al. (1998) these studies of integrated treatment have not targeted people with depression and AOD use comorbidity and at no stage has a randomised controlled trial of integrated treatment
been conducted among this population. Each of the available studies suffers from methodological problems, making generalisations about appropriate treatment difficult, especially to the increasing group of people with comorbid depression and substance use problems.

In a review of treatments for people with severe mental illness (psychotic spectrum disorders) and comorbid AOD use disorders, Drake et al. (2004) concluded that there is widespread anecdotal recognition within the field of comorbidity treatment that integrated approaches with this population leads to superior treatment responses. Furthermore, there is a real and pressing need to develop and rigorously evaluate integrated treatments for people with AOD use and depression comorbidity, given the absence of randomised controlled trials with this population (Degenhardt, 2002).

Drake et al. (2004) have suggested that integrated treatment for severe mental illness and AOD use comorbidity should include a stage-based approach to the introduction of treatment techniques (commensurate with the client’s stage of change for particular conditions), engagement/motivational-based interventions, and active treatment phases that introduce clients to a range of interventions to effect and maintain change (e.g. CBT and relapse prevention). It is likely that the same integrated treatment strategy would be beneficial to depression and AOD use comorbidity, even though research is yet to address this specific group.
5.2 STUDY 5
THE EFFICACY OF AN INTEGRATED PSYCHOLOGICAL TREATMENT FOR DEPRESSION AND SUBSTANCE USE PROBLEMS

5.2.1 Introduction
In the absence of research investigating integrated treatments for people with co-occurring depression and AOD use problems, and the need to develop and appropriate treatment program for this increasing group of the community, the SHADE study (Self-Help for Alcohol/other drugs and DEpression) was developed. The study was funded in part by the Australian Brewer’s Foundation, Alcohol-related Medical Research Scheme and a bequest from Ms Jennie Thomas on behalf of her late husband Philip Emelyn Thomas via the University of Newcastle. In addition, a National Health and Medical Research Council (NHMRC) public health postgraduate scholarship supported the primary research clinician on this project.

5.2.2 Aims and Hypotheses
The SHADE study commenced in 2002, and aimed to recruit participants with comorbid depression and substance use problems to a study of integrated psychological treatment. Specifically the project aimed to:

- Develop a ten-week program of psychological treatment that simultaneously integrates strategies for depression and substance misuse among people experiencing co-occurring depression and AOD use problems (SHADE therapy), and can be delivered via multiple platforms (e.g. clinician- and computer-based delivery);
• Trial the ten-week SHADE program using both clinician- and computer-delivered modes;

• Assess the effectiveness of the SHADE interventions relative to a brief (one-session) motivational treatment; and

• Compare groups on measures of AOD use, service utilisation, symptomatology and functioning.

It was hypothesised that:

• Participants will attend a ten-week program of psychological treatment (SHADE therapy) delivered via a computer program or using a “live” therapist and that targets depression and AOD use in an integrated way; and

• People who receive SHADE therapy delivered via computer or by a therapist will report superior reductions in alcohol, cannabis and other AOD use outcomes, level of depression, service utilisation and disability relative to the brief intervention group.

5.2.3 Methods

5.2.3.1 Setting

The study was conducted in the Hunter Region of New South Wales, which covers approximately 24,800 square kilometres of industrial, urban and rural areas of the state (HAHS, 2004). Referrals to the project were sought from a range of sources, including Drug and Alcohol Clinical Service (DACS), Hunter Mental Health Services, and primary health care settings. Please refer to Studies 1 and 2 for a detailed description.
of these sources. Participants were also drawn from the general community, in response to advertising through the local television and print media.

5.2.3.2 Participants

Participants in the study were 97 people with comorbid depression and current problematic use of alcohol, cannabis or amphetamines. To be eligible for the study, people were required to satisfy the following criteria:

a. Current depressive symptomatology, as indicated by a score of 17 or greater on the Beck Depression Inventory II (BDI-II, Beck, Steer, & Brown, 1996);

b. Lifetime diagnosis of major depressive disorder, as confirmed by the Structured Clinical Interview for DSM-IV, Research Version (SCID-RV, First, 2001);

c. Current problematic use of at least one of the following: alcohol (i.e. consumption above recommended drinking levels as suggested by the NHMRC; equates to 4 standard drinks per day for men or 2 standard drinks per day for women with fewer than 2 alcohol free days per week); cannabis (at least weekly use); or amphetamines (at least weekly use);

d. Absence of a brain injury, organic brain disease and/or significant cognitive impairment; and

e. Ability to understand English.

In total, the project received 169 referrals over an 18-month period. Thirty three people (20%) did not meet thresholds for current AOD use, and four (2%) did not meet criteria for current depressive symptomatology. Seven people (4%) were excluded on the basis of a psychotic disorder and nine (5%) could not be contacted to determine

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eligibility status. The remainder refused participation either actively (i.e. by declining to participate following referral by a health professional, n=12) or were referred via a relative/family member who could not convince the person to make direct contact with the SHADE project (n=7). Ninety-seven people (57%) met study criteria and commenced the project. Please see Table 5.1 for a summary of the recruitment sources from which the eligible participants for the SHADE project were drawn.

Table 5.1 – Participants referred to a study of comorbid depression and alcohol/other drug use problems (N=97)

<table>
<thead>
<tr>
<th>Referral Source</th>
<th>n</th>
<th>%</th>
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<tbody>
<tr>
<td>Local Television</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>Local Newspaper</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>Mental Health Service</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Alcohol/other Drug Clinical Service</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

All participants were volunteers, and received up to $20 AUD reimbursement of travel expenses at each of the assessment occasions. Treatment in the study was provided free of charge and no reimbursement was offered to participants during treatment.

5.2.3.3 Assessment Instruments

The assessment battery comprised a number of instruments commonly used within AOD and mental health settings, and covered the domains of self-reported AOD use, AOD abuse/dependence, readiness to change AOD use, reasons for AOD use, general functioning, quality of life, levels of depression, and personality sub-type. Basic demographic information was collected from participants, along with service utilisation data. The following instruments have been described in Chapters 3 and 4, and were also used in Study 5:
Demographic Information: using the relevant subscales of the Diagnostic Interview for Psychosis (DIP, Jablensky et al., 2000), as described in Studies 2 and 4.

Beck Depression Inventory II (BDI-II, Beck et al., 1996): see Study 1.

Structured Clinical Interview for DSM-IV, Research Version (SCID-IV-RV, First, 2001): AOD abuse and dependence subscale was used (see Study 1), and the subscale relating to major depressive disorder was used in this study to provide a diagnostic rating of the presence/absence of major depressive disorder over the previous six-, 12- and lifetime periods.

Patterns of AOD Use: see Study 1.


Lancashire Quality of Life Profile (LQoLP, Oliver, 1991-1992): see Study 2.

International Personality Disorder Questionnaire (IPDEQ, Loranger, Janca, & Sartorius, 1997): see Study 1.

Readiness to change AOD use (Rollnick, Heather, Gold, & Hall, 1992): as in Study 2.

Drug Use Motives (Cooper, Russell, Skinner, & Windle, 1992): see Study 2.

Global Assessment of Functioning (GAF, APA, 1994), as in Study 2.

In addition to the above, the following instruments were also part of the assessment battery for Study 5.
5.2.3.3.1 Alcohol Use Disorders Identification Test (AUDIT, Saunders, Aasland, Babor, de le Fuente, & Grant, 1993)

The AUDIT is a 10-item screening questionnaire that focuses solely on patterns of drinking for the previous 12-month period. In contrast to measures of quantity and frequency, the AUDIT targets the presence of behaviours and thoughts about drinking that lead to a diagnosis of alcohol abuse and dependence. Studies using the AUDIT suggest that it is the best instrument to use as a screener for current alcohol use disorders, and is particularly useful to detect low levels of risky drinking (Dawe, Loxton, Hides, Kavanagh, & Mattick, 2002). The AUDIT has been used among people with serious mental disorders, and is valid for use to screen for alcohol use disorders among these groups of clients. AUDIT scores of 10 or greater indicated hazardous drinking behaviours, with scores of 19 or greater indicating likely alcohol abuse/dependence among the respondent, with sensitivity and specificity upwards of 93% in each case (Dawe et al., 2002). In addition, the AUDIT has good internal reliability among a range of populations of between 0.80 and 0.94.

5.2.3.3.2 Dysfunctional Attitude Scale (DAS, Weissman & Beck, 1978)

The 40–item DAS is a self-report scale that measures the extent to which respondents hold a set of dysfunctional beliefs about self, the world and the future (Weissman & Beck, 1978). High scores on these domains represent a cognitive vulnerability to depression, and the DAS is the most commonly used measure of this vulnerability (Brown, Hammen, Craske, & Wickens, 1995).
5.2.3.3 Beck Hopelessness Scale (BHS, Beck, Weissman, Lester, & Trexler, 1974)

The BHS is a 20-item self-report instrument that measures optimism about the future and indirectly estimates suicide risk. Participants complete the scale by providing true/false responses to 20 statements related to their thoughts about the future over the previous two-week period. A score above nine on the BHS is associated with high levels of suicide ideation. Internal consistency of the scale is acceptable (Cronbach’s $\alpha = 0.9$), and test-retest reliability is reasonably good at 0.68 (Beck et al., 1974). Scores on the BHS correlate highly with clinicians' ratings of hopelessness ($r = .74$).

5.2.3.4 State-Trait Anxiety Inventory (STAI, Spielberger, 1983)

The STAI is a self-report scale assessing state and trait anxiety. There are two forms of the STAI; Form Y-1 measuring state anxiety (i.e. how the person feels ‘right now’) and Form Y-2 which measures trait anxiety (i.e. more enduring characteristics of anxiety, such as how the person ‘generally’ feels (Spielberger, 1983). Form Y-2 was used in the SHADE study, and the STAI itself has been used extensively as a research tool measuring change and in clinical practice (Spielberger, 1983). The scale takes around ten minutes to complete (five minutes per form).

The reliability and validity properties of the scale, as assessed using University students, are acceptable. The test-retest correlation for Form Y-2 is 0.73 for males and 0.77 for females covering an interval of 104 days. Test-retest for Form Y-1 is lower (range 0.31-0.33, 104 day interval), but this is not surprising given the responses are based on current feelings. Internal consistency for both forms is good ($\alpha$ range: 0.86-
0.95). Both forms also correlate well with other measures of state and trait anxiety and personality tests (Spielberger, 1983). Norms have also been devised for psychiatric populations.

All of the above assessments were used at the initial, three-, six- and 12-month follow-up assessments.

5.2.3.4 Procedure

Referrals to the project were sourced through mental health or AOD treatment services, however people could self-refer in response to project advertising (see Appendix E). Once participants were deemed eligible to participate in the study, they were provided with an information sheet and consent form, summarising their involvement throughout the study period. Parental/guardian consent was additionally sought for participants under the age of 18 years. See Appendix E for a copy of this documentation.

Following the provision of formal consent to participate in the study, an appointment was arranged at a time convenient to the research participant for commencement of the initial assessment protocol. Where possible, the assessment was conducted at the research rooms particular to the study site or, if preferred by participants, within the service from which they were referred. The research clinicians completing initial assessments and treatment sessions were registered psychologists with several years counselling experience. The primary clinician (Frances Kay-Lambkin) developed the therapy manual for each treatment arm, had extensive experience administering the
assessment instruments described above and delivered the majority of assessment and treatment sessions. Additional clinicians completed a one-week intensive training course in the administration of the assessment instruments and delivery of the treatment prior to commencing work on the study. To maximise treatment fidelity, clinicians received weekly group clinical supervision throughout the treatment period, which included replaying audiotaped treatment sessions and discussing the progress of clients through therapy.

Participants completed the assessment battery over two one-hour sessions, one week apart. In cases where participants were unable to read or write sufficiently to complete the self-report measures, the research clinicians facilitated completion of the instruments by reading the questions and response options aloud. Reimbursement of expenses of up to $20 AUD was provided at the conclusion of the second assessment session.

Following completion of the initial assessment, each participant commenced the treatment phase of the study, which started with a brief (one-session) intervention. The content of this session is described in detail below and was consistent across the three different treatment arms (brief intervention – control, clinician-delivered SHADE therapy and computer-delivered SHADE therapy). Participants were randomly assigned to receive one of three treatment allocations at the conclusion of the brief intervention: no further treatment (treatment as usual/control condition), nine further sessions of SHADE therapy delivered by a psychologist, or nine further sessions of SHADE therapy delivered by a computer (with brief 10-15 minute weekly input from
a psychologist). Specific clinician- versus computer-delivered SHADE treatment is discussed in Study 5. The research clinicians were blind to treatment allocation until the conclusion of the initial brief intervention session.

A randomisation list was generated by the Research Manager of the Centre at which the study was conducted and was linked to a unique participant identification code (i.e. 1-120). Treatment allocations were transferred from this list by the Administrative Assistant at the Centre and concealed in individual envelopes labelled with the relevant participant code. Neither the Research Manager nor the Administrative Assistant were involved with the assessment or treatment phases of the study. Prior to the brief intervention session for each participant, the research clinicians were issued with a new randomisation envelope by the Administrative Assistant, which displayed the participant number on the outside of the envelope, with the treatment allocation sealed inside. The envelope was opened by the participant at the conclusion of the brief intervention session. Randomisation was blocked into groups of 20 so that the distribution of participants across treatment conditions could be maintained regardless of the final sample size.

Following randomisation, participants either had no further involvement in the treatment phase of the study (brief intervention/treatment as usual) or were invited to attend nine further sessions of therapy (as described below). At the conclusion of the ten-week treatment period, all participants, regardless of treatment allocation entered the follow-up phase of the study. This involved meeting with a different research clinician at two points over the ensuing six months to complete a follow-up assessment.
battery comprising the instruments described above. Follow-up assessments occurred at three-months (post-treatment), six-months (three-months post-treatment) and 12-months (nine-months post-treatment) after the initial assessment was completed. Follow-up assessors were intern psychologists, blind to treatment allocation, who completed a two-day training seminar in the administration of each of the assessment instruments. All participants were reimbursed up to $20 AUD for travel expenses associated with attending each assessment session.

At no stage were participants discouraged from accessing additional treatments outside this study, including antidepressant medication and pharmacotherapy for AOD use. People taking medication at entry to the study were screened to determine whether they were stabilised on their current dosage. If a person was taking a therapeutic dose for a period of 2 months or more, with no plans to change their dose, and still met the inclusion criteria for the project, they were deemed eligible for participation. If this was not the case, recruitment to the project was suspended until these additional criteria were met.

In addition, participants requiring medical detoxification for their AOD use were initially be referred to the appropriate service in the community, and recruited to the study upon discharge, provided they still met inclusion criteria. The study did not exclude people on the basis of suicidal ideation. Any person at initial assessment who scored highly on the BDI-II question relating to suicide was more closely assessed using a suicide checklist created from the Hunter Mental Health Service policy for dealing with suicidal behaviour (see SHADE treatment manual, Appendix E). Only
those persons judged as serious risk for suicide had their participation suspended and
were referred on to the relevant professional. Those people unable to return to the
study after a maximum of one month from suspension were classified as a “treatment
dropout”.

5.2.3.4.1 Content of the interventions

A copy of the treatment manual for the following interventions is contained in
Appendix E.

In general, a harm minimisation approach to reducing depression and AOD use was
emphasised during the treatment phase of the SHADE study. This is in line with
recommendations from state health departments in Australia (e.g. NSWHealth, 2000)
and evidence from the literature (e.g. Drake, Mercer-McFadden, Mueser, McHugo, &
Bond, 1998; Moggi et al., 2002).

An integrated approach to treatment occurred, with the one clinician responsible for
delivering treatment and co-ordinating care. Integration of strategies for depression
and AOD use ensued, which allowed for recognition and exploration of the
relationship between the depressive symptoms and substance use problem, including
how each condition is exacerbated (Carroll, 2004). Motivational interviewing was
used throughout the treatment program, as this set of techniques is considered central
to integrated treatments (Mueser, Noordsy, Drake, & Fox, 2003). Despite being
developed for use in AOD use treatments, motivational interviewing is not limited to
the AOD arena and can be used to help modify virtually any health-related behaviour,
including mental health (Baker & Hambridge, 2002). Further, guidelines have also been provided for using motivational interviewing with people experiencing low mood (Rollnick, Mason, & Butler, 1999) as poor motivation and indecisiveness are commonly reported among people with depression. Thus, motivational interviewing is appropriate for depressed individuals experiencing ambivalence about the effort required to change, and the technique is suited to problem drinkers and drug users who are not contemplating change.

5.2.3.4.1.1 BRIEF INTERVENTION - CONTROL

This one-session intervention was delivered to all participants, prior to allocation to the treatment conditions in the study. Specifically, the session comprised case formulation, feedback from assessment and rapport building. A brief motivational interview was commenced, where the issues of AOD use were raised and expectancies for use discussed, and self-help material provided for both depression and AOD use problems. Case formulation strategies included the following components: developing a problem list, preliminary schema analysis, discussion of the origins of current problems (AOD use and depression), activating and precipitating situations, development of a treatment plan and setting goals for treatment. Session content was manualised and incorporated the approaches of Persons, Davidson and Tompkins (2001), Miller and Rollnick (1991), Rollnick, Mason and Butler (1999) and Beck, Rush, Shaw and Emery (1979). When describing the above skills and concepts, examples relating to both depressive and AOD use triggers were used. This session lasted around 60 minutes.
At the conclusion of this session, the participant was provided with the randomisation envelope, which was opened and the resultant treatment allocation discussed. For people allocated to treatment as usual (brief intervention only), no further treatment was provided by the SHADE study. In these cases, the research clinicians reviewed depression and AOD use status of the participant to determine the need for further intervention from another source. Referral to available treatment sources in the community was arranged where appropriate.

People allocated to receive further clinician- or computer-delivered SHADE therapy (described below), were introduced to the concept of mood and AOD monitoring (as per Beck et al., 1979; Beck, Wright, Newman, & Liese, 1993) and asked to complete a daily mood/AOD monitoring task over the coming week.

5.2.3.4.1.2 SHADE THERAPY - THERAPIST

SHADE therapy consisted of ten individual sessions of therapy, one week apart, including the brief intervention described above as session one. Using the brief intervention above as a starting point, SHADE therapy offered nine additional treatment sessions to participants designed to encourage a reduction in depression and AOD use. SHADE therapy incorporated motivational, behavioural and cognitive components, based on the work of Segal et al. (2002), Persons et al. (2001), Graham (2004), Beck et al. (1979; 1993) and Tarrier and Wells (1998). Participants took responsibility for any change that occurred throughout treatment, including deciding on their goals for therapy, such as a choice between complete abstinence from
substances or a level of reduced, controlled usage (a harm reduction goal). Each of the SHADE therapy session was structured and manualised as per the following:

Session 1: as per the brief intervention described above;

Session 2: Mood/AOD monitoring continues in the context of a rationale for CBT. Mindfulness training is commenced and activity scheduling introduced. Motivation enhancement continues in this session;

Session 3: Links between thoughts and behaviours are discussed and thought monitoring commenced specifically around triggers for depression and AOD use. Mindfulness training continues, along with activity scheduling and motivation enhancement;

Session 4: Phase II motivational interviewing is commenced and change plans for both AOD and depression are negotiated. Coping with cravings for AOD use is discussed and continues as required through until Session 10. Activity scheduling and mindfulness practice also continues until Session 10;

Session 5: Cognitive restructuring is introduced via the concept of identifying and managing unhelpful automatic thought patterns. Restructuring continues through until Session 10. Mindful breathing is introduced and motivation enhancement continues on a needs basis through until Session 10;
Session 6: Problem-solving techniques are introduced and applied to both AOD use and depression-relevant situations. Mindfulness training focuses on breathing with regular practice encouraged;

Session 7: Schema change methods are introduced and continue until Session 10;

Session 8: Refusal skills are practiced and an emergency plan developed for both cravings for AOD and depressive symptoms. Mindfulness training continues using the theme of allowing and letting things be;

Session 9: The concepts of “seemingly irrelevant decisions” and the abstinence/rule violation effect are introduced in the context of both AOD use and depression. Preventing relapse is discussed, and a plan developed for investing time in enjoyable and achievement activities and avoiding activities that tax resources;

Session 10: A relapse management plan is developed that involves both AOD and depression, and treatment is terminated. The research clinician reviewed depression and AOD use status of the participant during this session to determine the need for further intervention from another source. Referral to available treatment sources in the community was arranged where appropriate.
After session one, all participants and the research clinicians completed a therapist- and client-rated measure of therapeutic alliance (Agnew Relationship Measure, Agnew-Davies, Stiles, Hardy, Barkham, & Shapiro, 1998). For people allocated to SHADE therapy, the Agnew Relationship Measure was also completed after sessions five and ten.

5.3.2.4.1.3 COMPUTER-DELIVERED SHADE THERAPY

The content of computer-delivered SHADE therapy was identical to that described for clinician-delivered SHADE therapy above. The computer-delivered SHADE CD-ROM contained interactive components, including video demonstrations, voiceovers and in-session exercises. The video components modelled CBT/mindfulness and other skills relevant to the therapy (activity scheduling, self-monitoring thoughts, challenging faulty cognitions, identifying cognitive schema, drink/drug refusal and problem solving). The CD-ROM was menu-driven, and participants were instructed to complete the nine sessions in sequence, one week apart, as per the clinician-delivered intervention. Participants were able to preview future sessions and review previous sessions throughout the treatment program.

Text presented in the SHADE CD-ROM was pitched at a reading level consistent with that of a person who has completed up to Year eight at high school in Australia (approximate age: 12-13 years). A similar computer-based intervention among problem drinkers, written at the eighth grade reading level was acceptable and comprehensible by all participants (Hester & Delaney, 1997).
Session one was completed face-to-face with a ‘live’ clinician, as per the description provided in the brief intervention – control condition. After completion of session one, participants randomly allocated to computer-delivered SHADE therapy proceeded as follows.

Computer-delivered SHADE therapy sessions were delivered according to the following format:

a. Greet the person: the SHADE participant was greeted briefly upon arrival by the research clinician, and taken to the SHADE computer for their session. Interaction with the person was limited to non-specific topics, unrelated to SHADE therapy or participation in the research project (e.g. the weather).

b. Introduce the module: for the first computer module (i.e. session two, following completion of session one face-to-face), the research clinician and the participant completed the introductory SHADE module together. This brief (approximately 5 minute) tutorial module oriented the person to the computer program, showed them how to use the mouse and keyboard, and taught them how to navigate their way through the program. Once complete, and for subsequent computer-delivered SHADE modules, the research clinician briefly prepared the participant for computer therapy in the following way:
“Today I have set up Module XX on the computer for you to complete. You can go backwards and forwards through the computer program by clicking the mouse, and I’ve put a pen and some paper here for you to make notes if you would like to. You can also see that there is a printer connected to the computer, so you can print out any worksheets or other information whenever you wish. It’s OK to get up and walk around a little bit during the session, just to make sure you keep comfortable. Allow yourself about one hour to complete this module. I’ll come back into the room after about one hour to see how you are going.”

c. Commence the module: the research clinician left the participant to work through the computer-based SHADE module/session.

d. Brief check-in: following completion of the SHADE computerised module, the research clinician met briefly with the participant for a “check-in” session of 10-15 minutes’ duration. The content of this “check-in” was manualised, and is described in detail in the treatment manual in Appendix E. In summary, the ‘check-in’ session comprised the following elements:

- Review Homework Activities: To check the participant’s understanding of the assigned homework tasks, they were asked to describe the homework tasks in their own words. Research clinicians reinforced the importance of homework and its relevance to future modules.
Develop a Plan for Completing Homework: Research clinicians and participants briefly explored any anticipate obstacles to completing homework activities, and developed and verbalised a plan for doing homework tasks through the week.

Suicide and Mood Assessment: the research clinician used the brief ‘check-in’ to provide a general idea of their current mood. Where indicated, the research clinician conducted a suicide risk assessment with the person, as articulated in the treatment manual in Appendix E.

Confirm Next Appointment: the person’s next appointment was confirmed prior to completing the session.

A copy of the manual for computer-delivered SHADE therapy appears in Appendix E. The Agnew Relationship measure of therapeutic alliance was also administered to computer-delivered SHADE therapy participants following completion of sessions one, five and ten.

5.3.2.4.1.4 SELF-HELP MATERIAL

Each participant, regardless of treatment allocation, received psychoeducation about depression, alcohol, cannabis and amphetamine use as relevant. These psychoeducation materials are contained in the SHADE treatment manual under session one (see Appendix E). Each participant also received a copy of the book ‘Taming the Black Dog’ (Aisbett, 2000) (available on-line at http://www.harpercollins.com.au/title.cfm?ISBN=0732267579&Author=0000715). This book makes use of cartoons and comic strips to explain the symptoms of
depression and ways to assist people manage this condition, including CBT-related strategies.

5.3.2.4.1.4 TREATMENT DROPOUT

Assertive follow-up of participants was required to encourage continued participation in the treatment programs. This was in consideration of the research team’s prior experience with comorbid populations and the increasing emergence of literature indicating that a high level of commitment is necessary in order to engage and retain comorbid populations in treatment (Desmond, Maddux, Johnson, & Confer, 1995; Stein et al., 2004). In line with the recommendations of Stein et al. (2004) and Desmond et al. (1995) the following procedures were put in place to maximise the retention of participants in the SHADE study:

a. Collecting next of kin information at the commencement of the study and gaining consent to contact this person in the event that the participant could not be located using their last known contact information;

b. Informing participants about follow-up assessments and appointments at every opportunity, including the use of written confirmation of appointment time/day and confirming attendance the day of the scheduled appointment with a phone call;

c. Being flexible and supportive around appointment scheduling;

d. Providing resources for travel to attend initial assessment and follow-up sessions;

and

e. Hiring experienced staff sensitive to the importance of assertive outreach with comorbid clients.
In addition, the following protocol was used when a person missed a treatment session:

(1) The research clinician contacted the participant, arranged an alternative appointment time and sent a handwritten confirmation of the new appointment time/day to the participant’s home address;

(2) On the day of the rescheduled appointment the research clinician telephoned the participant to remind them of the appointment;

(3) If the rescheduled session was also missed, the research clinician telephoned the participant and rescheduled for a second time;

(4) The research clinician contacted the participant on the day of the appointment to remind him/her to attend;

(5) If the appointment was missed again, the research clinician followed steps 1 and 2 and arranged a final appointment time/day convenient to the participant;

(6) If a participant missed three consecutive appointments, they were not assertively followed for further treatment and classified as a treatment dropout.

All participants, regardless of missed appointments, continued to receive follow-up on each of the assessment occasions.

5.3.2.4.1.5 TREATMENT FIDELITY

Treatment fidelity was encouraged throughout the study by delivering the therapy in a consistent fashion, closely adhering to the treatment manual. Session checklists were taken into each therapy session to ensure essential therapy items were covered. The research clinicians also completed a session checklist for each session, with any
deviations from the therapy manual recorded in the clinical notes kept for each session. Weekly clinical supervision was held where session checklists were monitored.

All treatment sessions and brief check-in sessions were tape recorded. Tapes were marked with the participant’s study number and session number, and stored in a secure location. A representative 20% sample of treatment and check-in sessions was randomly selected from each condition and rated by an independent person for treatment fidelity. The fidelity assessor was independent of the assessment and therapy stages of the study (including the follow-up phase) and was an intern psychologist with several years counselling experience and training in the SHADE therapy manual. A second fidelity assessor rated a 20% sub-sample of tapes to confirm inter-rater reliability. This person was a clinical psychologist with several years counselling experience and no involvement in the SHADE study apart from participating in training in SHADE therapy. Please see Appendix E for a copy of the treatment fidelity rating manual.

5.2.3.4.2 Exacerbation in symptoms

Participants judged as being at high risk for suicide at any stage during the project had their participation suspended and were referred to crisis care. Participants were also instructed to contact their local Community Mental Health Team in between sessions should they require crisis intervention. Subject to participant approval, case managers, treating psychiatrists and general practitioners were informed of the person’s involvement in the study and results of the initial assessment. All participants were
advised to maintain close contact with their general practitioner to ensure any physical symptoms of AOD withdrawal were managed appropriately.

The above procedures were carried out in accordance with the National Health and Medical Research Council of Australia’s Statement of Ethical Conduct of Research among Human Participants. Ethics approval was gained from the relevant Human Research Ethics Committees (HAREC Approval No: 02/03/13/3.16, HREC Approval No: H 307 0502).

5.2.3.5 Statistical analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) for Windows, Version 12.0. As a partial correction for the number of statistical tests performed on the dataset, the level of significance was set at 0.01. Significance values between p=0.01 and p=0.05 were regarded as non-significant trends.

5.2.3.5.1 Characteristics of the sample at baseline

Exploratory data analysis was conducted on the full sample of participants (N=97) across basic demographic variables such as age, gender, marital status, education levels and employment rates, along with levels of depression and AOD use. Rates of treatment attendance and follow-up completion were also calculated, with the demographics of completers and non-completers compared. One-way analysis of variance (ANOVA) was used to examine differences on continuous variables, and chi-squared analysis compared participants on categorical data.
5.2.3.5.2 Comparison of “completers” and “non-completers” samples
Participants completing each of the assessment points (n=67, 69%) were selected for further analysis of change in various key outcomes over the period of the study. Baseline characteristics of these “completers” were compared with their counterparts (“non-completers”) who did not participate in all four assessment occasions (initial, three-, six- and 12-month assessments) on the following variables: gender, age, AOD abuse and dependence, major depressive disorder, depressive symptoms, alcohol use, cannabis use and treatment attendance. Chi-squared analysis compared completers and non-completers on the categorical outcome variables, and one-way ANOVA examined differences in the continuous variables for these participants.

5.2.3.5.3 Alcohol/other drug use outcomes
Analyses in this sub-section were conducted on the sample of 67 completers who participated in all phases of assessment for the study. AOD use outcomes were compared over time for participants as a function of their treatment allocation (i.e. brief intervention, clinician- or computer-delivered SHADE therapy) rather than the number of sessions people attended.

5.2.3.5.3.1 Alcohol use outcomes
A sub-selection of follow-up completers (n=41) met criteria for harmful use of alcohol at entry to the study. Repeated measures ANOVA examined changes in levels of alcohol use, scores on the AUDIT questionnaire and stage of change for these participants over the four assessment occasions according to treatment allocation.
Scheffë follow-up tests were used to more closely examine any changes in these key outcomes that were significant. Chi-squared analyses compared six- and 12-month rates of abstinence and alcohol abuse/dependence among this sub-sample as a function of treatment allocation.

5.2.3.5.3.2 CANNABIS USE OUTCOMES

Similarly, a sub-sample of the follow-up completers (n=43) met criteria for harmful use of cannabis at entry to the study. Repeated measures ANOVA compared levels of cannabis use and stage of change outcomes for this group over the assessment occasions, as a function of treatment allocation. Scheffë post-hoc tests examined any significant changes in these variables. Chi-squared analysis compared rates of cannabis abuse/dependence and abstinence for these participants at the six- and 12-month follow-up assessments, according to treatment allocation.

5.2.3.5.3.3 OTHER ALCOHOL/OTHER DRUG USE OUTCOMES

Although the eligibility criteria for the study also included people using amphetamines at harmful levels, only seven completers were using at this threshold at entry to the study. As a result, separate analyses were not conducted on this small sample of amphetamine users.

Repeated measures ANOVA compared poly-drug use over the four assessments as a function of treatment allocation. An aggregate global AOD use score was calculated for all participants, which estimated the number of days in the previous month at which participants consumed AOD at hazardous levels (see Baker et al., in press, January
Repeated measures ANOVA examined changes in this hazardous use index over time according to treatment allocation. One between subjects factor (intervention status) and one within subjects factor (time – initial, three-months, six-months and 12-months) was entered into these analyses. Scheffé follow-up tests were conducted on any changes in outcome variables that reached significance.

5.2.3.5.4 Depression outcomes
Analyses in this section were conducted on the full sample of follow-up completers (n=67). Repeated measures ANOVA compared changes in key depression outcomes over time for these participants, according to their treatment allocation. Key outcomes included: BDI-II scores, BDI-Fast Screen scores, BHS total scores, DAS total scores and DAS subscale scores. Scheffé follow-up tests more closely examined any significant changes in these key variables. Further, chi-squared analysis compared rates of major depressive disorder at six- and 12-month follow-up assessments according to treatment allocation.

5.2.3.5.5 Other outcomes
Other outcomes of interest included Lancashire quality of life scores (general well being, self-concept scores and the well being ‘ladder’), scores on the STAI, GAF scores and treatment utilisation. Treatment utilisation data consisted of medication rates, and involvement in any AOD treatment (yes/no), and difference in these variables was examined according to treatment allocation via chi-squared analyses. A count of the number of specialists (general practitioners, community mental health
workers, psychiatrists, psychologists and other private specialists) was also generated, and differences examined at each follow-up occasion according to treatment allocation using oneway ANOVAs, with post-hoc adjustments made on significant results. Repeated measures ANOVAs examined changes in each of the other variables listed above over time according to treatment allocation. Scheffè follow-up tests were conducted on all significant changes detected among these variables.

5.2.3.5.6 Intention to Treat Analysis

In addition to the principal analysis strategy described above, a sub-analysis was conducted on the dataset that was consistent with the principles of an intention-to-treat analysis. That is, for the primary outcomes of depression (BDI-II scores), alcohol use (OTI q-scores) and cannabis scores (OTI q-scores), missing data at each follow-up occasion was substituted with the last available observation obtained from the participant. Repeated measures ANOVAs examined changes in these outcome variables over time and according to treatment allocation for the full sample (N=97). Scheffè post-hoc tests examined any significant changes in these variables.

5.2.3.5.7 Treatment Fidelity Analysis

To determine the extent to which the treatment described above was delivered to project participants, a sub-set of treatment audiotapes was examined by an independent rater. Three-hundred and ninety three treatment sessions were attended by participants, and 73 of these (19%) were randomly selected for treatment fidelity analysis, including a mixture of treatment and brief check-in sessions. Frequency counts were calculated on the number of treatment sessions in which the session
agenda was adhered to, including reasons for non-adherent ratings. Chi-squared analysis compared types of treatment session (computer- or clinician-delivered SHADE therapy versus brief check-in session) with adherence ratings, and one-way ANOVA compared the mean number of time spent in sessions according to session type. A second independent rater randomly selected a further 16 tapes (22%) for confirmatory treatment fidelity analyses. Kappa was used as the measure of agreement in adherence ratings between the two independent raters.

5.2.4 Results

5.2.4.1 Characteristics of the sample at baseline

Ninety-seven people were recruited to the current study. Table 5.2 displays demographic characteristics of the sample. Of the 97 participants, 54% (n=52) were female, and the majority (n=90, 93%) were born in Australia. The majority of the sample was single, never having been married (n=43, 44%), and at entry to the study were living either alone (n=22, 23%), with parents or relatives (n=28, 29%) or with a partner (n=40, 41%). Five people (5%) identified themselves as being of Aboriginal or Torres Strait Islander descent. Over half the sample (n=50) reported having children, with family size ranging from one child (n=13, 13%), through to three (n=13, 13%) or four children (n=6, 6%).
Table 5.2  Presenting characteristics of participants in a study of treatment for comorbid depression and problematic alcohol/other drug use (N=97).

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>45</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>52</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>43</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Married/Defacto</td>
<td>39</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Separated/Divorced/Widowed</td>
<td>15</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Living Situation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>22</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Parents/Relatives/Children</td>
<td>28</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>40</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Current Accommodation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own home</td>
<td>25</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Family Home</td>
<td>23</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Rental</td>
<td>42</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Crisis/Temporary</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

At the time of the initial assessment, 35 participants (36%) reported currently caring for these children at home. The mean age of the sample was 35 years (M=35.37, range 18-61 years), and, on average, participants had left school at around 16 years of age (M=15.62, range 12-19 years), as indicated in Table 5.3.

After schooling, participants reported a range of additional educational experiences, gaining tertiary qualifications (n=8, 8%), and trade and technical qualifications (n=53, 55%). At entry to the study, 68% of the sample (n=66) were unemployed and receiving either a disability pension (n=27, 28%) or unemployment benefit (n=19, 20%). Of those unemployed participants, around 17% (n=11/66) reported they were actively looking for work for at least the month prior to assessment.
Table 5.3  Demographic characteristics of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (N=97).

<table>
<thead>
<tr>
<th>Participants</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Completed Secondary School</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Secondary</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Tertiary</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Trade/Technical</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td><strong>Qualifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td>Part-time</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Full-time</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td><strong>Current Source of Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Benefit</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td><strong>Type of Benefit Received</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Disability/sickness</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>Unemployment</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Other (e.g. Carer, child support etc.)</td>
<td>20</td>
<td>21</td>
</tr>
</tbody>
</table>

As indicated in Table 5.4 below, many participants reported deterioration across a range of domains in the 12-months prior to assessment. Specifically, this included obvious dysfunction in completing household activities such as cooking, cleaning, paying bills etc. due to a lack of interest or perceived incompetence in participating in these tasks. The majority of the sample reported obvious dysfunction in their social interactions over the year prior to the assessment, including reduced overall socialising, maintaining a restricted range of social contacts or friends, and only sporadic participation in any organised activities (according to the DIP, Jablensky et al., 2000). Social withdrawal was also high among the sample, with the majority of people reported obvious dysfunction in terms of generally avoidant behaviour, only mixing with people if encouraged or pressured (as per the DIP, Jablensky et al., 2000).
Furthermore, intimate relationships were also dysfunctional among the sample, with the majority reporting that, although they had close friends or intimate relationships in the past, they had not enjoyed such intimacy in the 12-months prior to assessment (as per the DIP, Jablensky et al., 2000).

Table 5.4  Disability indices of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (N=97).

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Participation in Household Activities in Past 12-months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Dysfunction</td>
<td>21</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Obvious Dysfunction</td>
<td>67</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Severe Dysfunction</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Overall Socialising in Past 12-months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Dysfunction</td>
<td>14</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Obvious Dysfunction</td>
<td>76</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Severe Dysfunction</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Social Withdrawal in Past 12-months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Dysfunction</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Obvious Dysfunction</td>
<td>81</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Severe Dysfunction</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Interpersonal Relationships in Past 12-months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Deterioration</td>
<td>25</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Subjective Deterioration</td>
<td>69</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Objective Deterioration</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Intimate Relationships in Past 12-months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Dysfunction</td>
<td>66</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Obvious Dysfunction</td>
<td>29</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Severe Dysfunction</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Mean S.D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Disability – Personal</td>
<td>1.75</td>
<td>1.137</td>
<td></td>
</tr>
<tr>
<td>Overall Disability - Social</td>
<td>2.64</td>
<td>0.970</td>
<td></td>
</tr>
</tbody>
</table>

Disability scores were calculated using responses to these and other DIP items, and levels of social and personal disability reported for the sample as a whole. Personal disability scores could range from zero to a maximum of 10. Among this sample,
personal disability was relatively low (M = 1.75, range 0-5), see Table 5.4. This index included such items as interests, self-care, occupational performance and overall socialising. Social disability scores were higher than personal disability scores for the study sample, (M = 2.64, range 0-5), and were about mid-range of the possible scores on this scale (minimum possible = 0, maximum = 6).

5.2.4.1.1 Treatment History

Table 5.5 displays the treatment participation rates of the sample.

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td><strong>Current medication</strong></td>
<td></td>
</tr>
<tr>
<td>Antidepressant</td>
<td>42</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>8</td>
</tr>
<tr>
<td><strong>Participation in Rehabilitation Program in Past 12-months</strong></td>
<td></td>
</tr>
<tr>
<td>Participation in Rehabilitation Program in Past 12-months</td>
<td>18</td>
</tr>
<tr>
<td><strong>Current Alcohol/other Drug Treatment</strong></td>
<td></td>
</tr>
<tr>
<td>Current Alcohol/other Drug Treatment</td>
<td>23</td>
</tr>
<tr>
<td><strong>Number of Appointments with Health Professionals in Past 12-months</strong></td>
<td></td>
</tr>
<tr>
<td>Community Mental Health Team</td>
<td>1.35</td>
</tr>
<tr>
<td>General Practitioner</td>
<td>6.45</td>
</tr>
<tr>
<td>Specialist Medical Practitioner</td>
<td>0.63</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>1.47</td>
</tr>
<tr>
<td>Psychologist</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Participants reported participation in a range of treatments for AOD use and depression. For example, around half the sample (n = 48) were currently taking medication for a psychiatric condition, most often an antidepressant (n = 42, 43%). Of these, 12 people (25%) reported at least mild impairment due to the side effects of this medication, and 79% (n = 38/48) reported taking their medication as it was prescribed.
In the 12-months prior to assessment, 18 participants reported an average of seven weeks of participation in a rehabilitation program (range 0-52 weeks).

As indicated in Table 5.5, treatment utilisation among the sample was generally low, with the most common form of treatment being medication. This is despite the eligibility criteria of the current study limiting participation to people with moderate current levels of depressive symptomatology. Although on a few occasions, antipsychotic medication was prescribed, it was not being used to treat psychotic symptoms. Rather, participants reported using the antipsychotic medication for its sedative properties.

The sample on average had visited a general practitioner (GP) six times in the previous 12-month period. However, around 16% of the sample (n=15) had not visited a GP at all in the previous 12-months, and around one-third of the sample had made two or less visits. Specialists were accessed less frequently, with around 85% (n=82) of the sample reporting no visits to a psychiatrist in the previous 12-months, and approximately 93% (n=90) reporting no visits to a psychologist. Community mental health teams had been visited an average of once in the previous 12-month period, with 78 participants (80%) reported no visits at all during this time.

One-quarter of the sample reported current participation in treatment for AOD use, despite each participant meeting criteria for harmful use of alcohol, cannabis or amphetamines at entry to the study. Of these participants, 43% (n=10/23) were currently enrolled in a methadone maintenance program, a further six (26%) reported
receiving drug free counselling, and one person (4%) was a current Alcoholics Anonymous attendee. Six further people reported involvement in “other” forms of AOD treatment, such as detoxification (n=2/23, 9%) at entry to the study. Apart from methadone, pharmacotherapy for AOD use (e.g. naltrexone, acamprosate etc.) was not reported by any study participant.

5.2.4.1.2 Mental health history

For the 12-months prior to assessment, 91 participants (94%) met criteria for a major depressive episode according to DSM-IV criteria, and 100% of participants met criteria for lifetime major depressive disorder.

Participants reported relatively long histories of depressive conditions, with the average age at onset of the first depressive episode being approximately 17 years (M=17.22, range 4-47), and the duration of illness, on average, being 98 weeks (range 52-99; note maximum possible code for this variable was 99 weeks). Since the first onset of depression, participants reported a number of recurrent episodes, with 70 participants (72%) indicating an experience of multiple episodes of depression with partial-good recovery in between episodes. A further 26 participants (27%) reported continuous, chronic depression since onset, 15 of whom (16%) had experienced clear deterioration in functioning over this course. Only one participant reported a single episode of depression, that being the current episode.

In reflecting on their first episode of depression, 88 participants (91%) reported that a definite psychosocial stressor preceded this experience. Figure 5.1 displays the types
of psychosocial stressors reported by participants associated with the first emergence of depression.

As indicated in Figure 5.1, the majority of participants (n=70), reported disruption to their family immediately prior to the onset of their first depressive episode. Educational and social difficulties preceded the onset of depression in around 40% of cases, with a range of occupational, housing, economic and legal stressors also occurring for some participants prior to their first experience of depression. Fifteen participants reported “other” psychosocial stressors, such as abuse or trauma, immediately prior to their first ever depressive episode.

Figure 5.1 Types of psychosocial stressors preceding the first episode of depression for participants in a study of treatment for comorbid depression and alcohol/other drug use.
At its worst, over one-quarter of the sample (n=26) had been hospitalised for their depression, while a further 60 (62%) reported objective impairment as evidenced by impairment in major life roles (social, occupational, functional) with definite reduction in productivity and/or receiving criticism about these issues (as per the DIP, Jablensky et al., 2000). Current levels of depression were high among the study sample, with mean BDI-II scores in the severe range of symptomatology ($M=31.93$, $S.D.=9.55$, range 17-53).

In addition to depression, participants were also screened for the presence of personality disorder. Rates of likely individual personality disorders among the study sample are displayed in Figure 5.2.

![Bar chart showing the proportion of positive screens for different personality disorders](image)

**Figure 5.2** Presence of likely personality disorder among participants in a study of treatment for comorbid depression and alcohol/other drug use (n=97).
As indicated in Figure 5.2, the likelihood of having a personality disorder was extremely high, with 99% of the sample (n=96) screening positive for at least one personality disorder category. The most commonly reported likely personality disorder was anxious-type (n=80, 83%). Close to 80% of participants also screened positive for a likely paranoid personality disorder, with 76% of respondents reporting a likely schizoid personality. Over two-thirds of the sample met criteria for a likely borderline personality disorder (67%), while around 61% of respondents (n=59) had a likely impulsive personality.

5.2.4.1.3 Alcohol/other drug use history

Figure 5.3 displays the lifetime rates of AOD use reported by study participants.

![Drug Use Graph](image)

**Figure 5.3** Lifetime use of a range of substances among participants in a study of treatment for comorbid depression and alcohol/other drug use (n=97).
All participants had used alcohol at some stage in the past, and most had smoked cigarettes (n=85, 88%) and cannabis (n=86, 89%). Lifetime use of amphetamines was also high among the sample, with around two-thirds of participants (n=62) admitting to previous use of this drug. Around half of the sample (n=51) reported previous use of hallucinogens such as ecstasy, while lifetime cocaine use and use of non-prescribed tranquillisers was around 40% (n=41, 42% and n=36, 37% respectively).

Figure 5.4 displays the rates at which participants in the study met criteria for abuse or dependence, according to DSM-IV for alcohol, cannabis and amphetamines for the 12-months prior to the initial assessment.

![Figure 5.4](image)

**Figure 5.4** Rates of abuse and dependence on alcohol, cannabis and amphetamines among participants in a study of treatment for comorbid depression and alcohol/other drug use problems (n=97).

As indicated in Figure 5.4, participants frequently met dependence criteria across the substances in the 12-months prior to assessment. Previous 12-month rates of alcohol...
dependence were: 51% (n=49) for alcohol and 65% for cannabis dependence (n=63). Amphetamine dependence was also relatively common, with approximately one-quarter of participants (n=23, 24%) meeting DSM-IV dependence criteria for the 12-months prior to assessment. Rates of abuse of alcohol, cannabis and amphetamines were less common among the study participants, occurring among 16%, 2%, and 4% of users of alcohol, cannabis and amphetamines respectively in the 12-months prior. Use below a harmful threshold was more common, reported by approximately 30% of users of alcohol, 11% of cannabis users, and 21% of amphetamine users.

Current level of use of alcohol, cannabis, amphetamines and tobacco was also assessed for the month prior to assessment. These results are displayed in Table 5.6.

Table 5.6 Levels of use of alcohol, cannabis, amphetamines and tobacco among participants with comorbid depression and alcohol/other drug use problems (N=97).

<table>
<thead>
<tr>
<th>Participating</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTI q-score†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>5.05</td>
<td>5.67</td>
</tr>
<tr>
<td>Cannabis</td>
<td>1.08</td>
<td>0.40</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>0.15</td>
<td>0.51</td>
</tr>
<tr>
<td>Tobacco</td>
<td>13.48</td>
<td>13.95</td>
</tr>
<tr>
<td>Poly-drug use Score~</td>
<td>2.84</td>
<td>1.27</td>
</tr>
</tbody>
</table>

†Opiate Treatment Index (Darke et al., 1991) quotient score, indicating average daily use over the month prior to assessment.

~Poly-drug use calculated by summing the number of drug classes (including alcohol and tobacco) the participant used in the month prior to assessment.

As indicated in Table 5.6, the sample was drinking an average of five standard drinks per day for the month prior to assessment. Cannabis use occurred at a mean rate of
once daily for the previous month, while amphetamine usage was approximately once weekly among the study sample. Participants reported smoking an average of 13 cigarettes per day, while poly-drug use for the month prior to assessment was almost three, indicating people used an average of three substances over the previous month.

A hazardous use index score was also calculated, which estimated the number of days in the previous 28-day period participants used a range of ten drug types at harmful levels (range 0-280). Among this study sample, participants reported an average hazardous use index of 40.34 (S.D. = 18.21, range 4-124) for the previous 28-day period to assessment.

5.2.4.1.3.1 Alcohol Use

Fifty-two participants (54%) met criteria for harmful use of alcohol at entry to the study. Among these respondents, scores on the AUDIT questionnaire were, on average, 21.90 (S.D. =8.24, range=7-37), corresponding to a threshold score of alcohol dependence. This sub-sample were consuming an average of nine standard drinks per day for the month prior to assessment (M(OTI score)=8.78, S.D.=5.36), with levels of alcohol use ranging from two to 26 standard drinks per day for the prior month.

Among these participants, readiness to change alcohol use was varied, as can been seen in Figure 5.5.
The majority of participants with hazardous alcohol use (n=29, 56%) indicated they were in the contemplation stage of change for their current use of alcohol. Twelve participants in this sub-group (23%) identified they were in the action stage of change for alcohol at entry to the study.

Reasons for using alcohol were also explored among the sub-group of participants meeting criteria for hazardous use. These results are displayed in Table 5.7. The most commonly cited reason for using alcohol was as a coping mechanism, followed closely by enjoyment and social motives.
Table 5.7  Drug use motives for participants in a study of treatment for comorbid depression and alcohol/other drug use problems.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alcohol use motives (n=52)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>3.66</td>
<td>0.83</td>
</tr>
<tr>
<td>Coping</td>
<td>3.91</td>
<td>0.67</td>
</tr>
<tr>
<td>Pleasure Enhancement</td>
<td>3.34</td>
<td>0.80</td>
</tr>
<tr>
<td>Illness</td>
<td>2.73</td>
<td>1.02</td>
</tr>
<tr>
<td><strong>Cannabis use motives (n=69)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>2.81</td>
<td>0.87</td>
</tr>
<tr>
<td>Coping</td>
<td>3.77</td>
<td>0.67</td>
</tr>
<tr>
<td>Pleasure Enhancement</td>
<td>3.46</td>
<td>0.65</td>
</tr>
<tr>
<td>Illness</td>
<td>3.12</td>
<td>1.14</td>
</tr>
<tr>
<td><strong>Amphetamine use motives (n=13)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>3.11</td>
<td>0.71</td>
</tr>
<tr>
<td>Coping</td>
<td>3.63</td>
<td>0.75</td>
</tr>
<tr>
<td>Pleasure Enhancement</td>
<td>3.72</td>
<td>0.75</td>
</tr>
<tr>
<td>Illness</td>
<td>2.88</td>
<td>0.80</td>
</tr>
</tbody>
</table>

* A score of 1=almost never, 2=never, 3=sometimes, 4=often, 5=always

5.2.4.1.3.2 Cannabis Use

Sixty-nine participants in the study (n=71%) met criteria for harmful use of cannabis at assessment. This sub-group were consuming cannabis at high levels for the month prior to assessment, reporting an average of 14.06 use occasions per day (S.D.=16.19).

The range of cannabis use in the preceding month was quite varied for these 69 participants, whose self-reported use ranged from weekly (OTI score of 0.14) through to 100 use occasions per day.

As Figure 5.6 indicates, these participants were mostly in the contemplation stage of change for their current cannabis use (n=37, 54%) or the action stage (n=21, 30%).
Figure 5.6  Readiness to change current cannabis use among participants in a study of treatment for comorbid depression and alcohol/other drug use problems meeting criteria for hazardous use of cannabis at assessment (n=69).

Table 5.7 displays the motives people within this sub-group gave for using cannabis. Cannabis was most often used as a coping strategy, followed closely for reasons such as enjoyment (or to enhance mood) or to cope with symptoms of depression.

5.2.4.1.3.3 AMPHETAMINE USE

Thirteen people (13%) met criteria for harmful use of amphetamines upon initial assessment in the current study. On average, this group reported using amphetamines approximately once per day for the month prior to assessment (M(OTI score)=1.06, S.D.=1.00). Use of amphetamines ranged from once weekly (OTI score=0.14) through to four use occasions per day as reported by participants for the previous month.

Figure 5.7 displays the stage of change which these participants most readily explained their current thoughts about their use of amphetamines.
Readiness to change current amphetamine use among participants in a study of treatment for comorbid depression and alcohol/other drug use problems meeting criteria for hazardous use of amphetamines at assessment (n=13).

Participants were either in the action or contemplation stages of change for amphetamine use, with around 62% (n=8) identified they were currently contemplating their use of amphetamines.

Table 5.7 lists the reasons this sub-group of people gave to explain their use of amphetamines. Enhancing mood was the most commonly cited reason for using amphetamines, followed closely by use as a coping strategy. Social motives for amphetamine use were also commonly reported.

5.2.4.2 Comparison of “completers” and “non-completers” sample

Of the 97 participants recruited to the current study, 67 (69%) completed all three follow-up assessments in addition to the initial assessment. Table 5.8 displays the initial characteristics of participants according to completion of all assessment phases.
Table 5.8  Presenting characteristics of completers* and non-completers+ in a treatment trial for people with comorbid depression and current problematic alcohol/other drug use (N=97).

<table>
<thead>
<tr>
<th>Participants</th>
<th>Completers*</th>
<th>Non-completers+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean S.D.</td>
<td>Mean S.D.</td>
</tr>
<tr>
<td>Age (years)*</td>
<td>37.12 10.33</td>
<td>31.65 9.02</td>
</tr>
<tr>
<td>Current levels of depression</td>
<td>32.03 10.02</td>
<td>31.71 8.60</td>
</tr>
<tr>
<td>Current levels of alcohol use</td>
<td>5.47 5.51</td>
<td>4.16 6.00</td>
</tr>
<tr>
<td>Current levels of cannabis use</td>
<td>7.68 10.15</td>
<td>19.94 21.57</td>
</tr>
<tr>
<td>Current levels of amphetamine use</td>
<td>0.98 0.31</td>
<td>0.25 0.77</td>
</tr>
<tr>
<td>Males</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>Allocated to treatment</td>
<td>30 46</td>
<td>15 48</td>
</tr>
<tr>
<td>Brief intervention - control</td>
<td>21 32</td>
<td>9 29</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>22 33</td>
<td>13 42</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>23 35</td>
<td>9 29</td>
</tr>
<tr>
<td>Major Depressive Disorder in Previous 12-months</td>
<td>63 96</td>
<td>28 90</td>
</tr>
<tr>
<td>Alcohol use disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>9 14</td>
<td>6 19</td>
</tr>
<tr>
<td>Alcohol dependence</td>
<td>35 53</td>
<td>14 45</td>
</tr>
<tr>
<td>Cannabis use disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannabis abuse</td>
<td>0 0</td>
<td>2 7</td>
</tr>
<tr>
<td>Cannabis dependence</td>
<td>40 61</td>
<td>23 74</td>
</tr>
<tr>
<td>Amphetamine use disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amphetamine abuse</td>
<td>1 2</td>
<td>3 10</td>
</tr>
<tr>
<td>Amphetamine dependence</td>
<td>12 18</td>
<td>11 36</td>
</tr>
</tbody>
</table>

* “Completers” are those participants who completed each of the follow-up assessments.
+ “Non-completers” did not complete all follow-up assessments.
~ p=0.013

Follow-up “completers” had a mean age of 37 years, and 46% were male.

Approximately 53% of the sample met criteria for alcohol dependence, 61% were cannabis dependent and 18% met DSM-IV criteria for amphetamine dependence. Chi-squared analysis indicated no significant differences existed between completers and non-completers in terms of the gender distribution (continuity-corrected $\chi^2_1=0.003$, $p=0.959$), rates of major depressive disorder (Pearson $\chi^2_2=2.337$, $p=0.311$), rates of
cannabis abuse/dependence ($\chi^2=7.985$, $p=0.046$) and rates of alcohol abuse/dependence ($\chi^2=1.315$, $p=0.726$) and amphetamine abuse/dependence ($\chi^2=9.076$, $p=0.028$). However, oneway ANOVA revealed that the completers were significantly older than their non-completing counterparts ($F(1,96)=6.405$, $p=0.013$).

There was a statistically non-significant trend for completers to have used cannabis less often in the month prior to initial assessment ($F(1,96)=5.113$, $p=0.026$). Follow-up completers and non-completers did not significantly differ from each other on any of the remaining key variables at the initial assessment, including: levels of depression ($F(1,96)=0.024$, $p=0.878$), levels of alcohol use ($F(1,96)=1.137$, $p=0.289$), levels of amphetamine use ($F(1,96)=1.799$, $p=0.183$), and rates of major depressive disorder according to DSM-IV for the 12-months prior to assessment ($\chi^2=2.337$, $p=0.311$).

Among the follow-up completers, 21 (32%) were allocated to the control (brief intervention) condition, 23 (34%) to receive SHADE therapy face-to-face with a therapist, and a further 23 (34%) to receive SHADE therapy via a computer program. Pearson chi-squared analysis indicated that no significant differences in treatment allocation were evident when comparing the completers with their counterparts who did not complete all assessment phases ($\chi^2=0.702$, $p=0.704$).

Treatment attendance was additionally examined for people who completed all assessments versus those who did not. Seventy-one percent of assessment completers
(n=47) attended their full complement of treatment sessions according to the condition to which they were allocated (i.e. one session for brief intervention, 10 sessions for SHADE therapy). In contrast, 12 assessment non-completers (39%) attended all their allocated treatment sessions, a difference that was statistically significant (continuity-corrected $\chi^2 = 8.037$, $p=0.005$).

Analyses from this point forward include only those participants who completed all phases of assessment in this study. Given there were no baseline differences between assessment completers and non-completers across any of the demographic and other variables, no covariates were entered into the following analyses.

5.2.4.3 Treatment Outcomes - Depression

5.2.4.3.1 Major depressive disorder

Figure 5.8 displays the proportion of people at the six-month and 12-month assessments who met criteria for major depressive disorder according to the SCID. Six-month diagnosis refers to the six-month period between the initial and six-month assessments, and 12-month rates, refer to the proportion of people meeting SCID criteria for major depressive disorder during the six-months between the six-month and 12-month assessment occasions.
Forty-eight percent of the brief intervention – control condition met criteria for major depressive disorder at the six-month follow-up assessment. This rate was similar to that reported in the two SHADE therapy conditions at this follow-up timepoint. At the 12-month assessment, rates for the clinician- and computer-delivered SHADE therapy groups had approximately halved, with 22% of SHADE therapy – therapist participants and 13% of SHADE therapy – computer participants meeting criteria for major depressive disorder. In contrast, the brief intervention – control group maintained their rates of major depressive disorder at the 12-month follow-up assessment. Despite these differences, Pearson chi-squared analysis revealed no significant differences existed in rates of major depression between the treatment groups at either the six-month ($\chi^2_4=0.678, p=0.954$) or 12-month ($\chi^2_1=6.677, p=0.154$) follow-up assessments. Table 5.9 displays these data in more detail.
Table 5.9 Rates of major depressive disorder at the six- and 12-month follow-up assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>10</td>
<td>48</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>9</td>
<td>39</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>10</td>
<td>44</td>
</tr>
</tbody>
</table>

*Refers to the period of time between the initial and six-month assessments
†Refers to the period of time between the six- and 12-month assessments

5.2.4.3.2 Current depression

Current levels of depression were measured using the BDI-II at each assessment timepoint. Changes in BDI-II scores are displayed in Figure 5.9 and Table 5.10.

Table 5.10 Mean BDI-II scores for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>34.91</td>
<td>9.70</td>
<td>13.04</td>
<td>10.51</td>
</tr>
</tbody>
</table>

BDI-II scores were in the severe range for the group at the initial assessment (threshold score for severe=28). In general, scores decreased for the group as a whole over the follow-up period, relative to this baseline score. Repeated measures ANOVA indicated that there was a significant main effect for time on BDI-II data ($F(3,64)=38.163$, $p=0.000$). Scheffé follow-up tests confirmed that BDI-II scores were significantly lower at the three-month ($F(3,64)=84.683$, $p<0.01$), six-month
Repeated measures ANOVA indicated that the change in BDI-II scores over time was moderated by treatment allocation ($F(6,64)=4.231$, $p=0.001$). Scheffé follow-up tests indicated that the reduction in BDI-II scores was greatest for people in the clinician-delivered SHADE group at the three-month ($F(6,64)=5.794$, $p<0.01$) and six-month follow-up assessments ($F(6,64)=7.584$, $p<0.01$) relative to the initial assessment. That is, SHADE therapy – therapist participants reported a 22-point reduction at three-months and a 19-point reduction at the six-month assessment on the BDI-II. Although not statistically significant, participants in the SHADE therapy – computer condition recorded an 11-point reduction in BDI-II scores over the same assessment time.
periods, compared with a 10-point reduction at three-months for the brief intervention – control group and a five-point reduction at six-months. At the 12-month assessment, the overall reduction in BDI-II scores relative to baseline was not statistically significant, despite the brief intervention – control group reporting an eight-point reduction, and the two SHADE therapy conditions recording a 15-point improvement on this variable. The SHADE therapy – computer participants reported an average depression score in the minimal range (i.e. 13 or less) at the 12-month follow-up assessment, and participants in the SHADE therapy – therapist and brief intervention – control conditions scored in the moderate symptom range at this same timepoint (i.e. 20-27).

In addition to the BDI-II total score comparison, BDI-II Fast Screen items, covering the psychological aspects of depression, were calculated for participants at each assessment occasion. Table 5.11 displays the mean BDI Fast Screen scores (and standard deviations) for the sample.

Table 5.11  Mean BDI-II Fast Screen scores for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Treatment Allocation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>11.10</td>
<td>4.07</td>
<td>8.05</td>
<td>4.53</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>11.87</td>
<td>3.22</td>
<td>4.55</td>
<td>4.00</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>9.43</td>
<td>3.67</td>
<td>6.00</td>
<td>4.77</td>
</tr>
</tbody>
</table>

BDI-II Fast Screen scores decreased for the sample as a whole over time. Repeated measures ANOVA revealed that this decrease was statistically significant.
(F(3,64)=28.993, p=0.000). Scheffé follow-up tests indicated that BDI-II Fast Screen scores were significant lower at the three-month (F(3,64)=60.688, p<0.01), six-month (F(3,64)=45.594, p<0.01), and 12-month follow-up assessments (F(3,64)=40.629, p<0.01) relative to the initial assessment. The interaction between changes in BDI-II Fast Screen scores over time and treatment allocation was also statistically significant (F(6,64)=3.324, p=0.004). Scheffé follow-up tests indicated that people in the clinician-delivered SHADE therapy condition reported significant reductions in the BDI-II Fast Screen scores at the three- (F(6,64)=5.369, p<0.01) and six-month follow-up occasions (F(6,64)=4.603, p<0.01) compared with scores at the initial assessment, and with the other treatment conditions. These results were consistent with those for the full BDI-II scale.

5.2.4.3.3 Cognitive vulnerability to depression

Scores on the Dysfunction Attitude Scale (DAS) were added together to form a total score. The mean and standard deviation of the DAS total scores are displayed in Table 5.12 according to treatment allocation at each follow-up assessment.

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Treatment Allocation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>154.52</td>
<td>33.00</td>
<td>139.94</td>
<td>30.84</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>161.65</td>
<td>35.43</td>
<td>129.22</td>
<td>36.96</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>152.22</td>
<td>30.81</td>
<td>144.91</td>
<td>29.80</td>
</tr>
</tbody>
</table>

Table 5.12 Mean Dysfunction Attitude Scale total scores in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).
DAS decreased gradually for the sample as a whole over time. Figure 5.10 displays these data.

![Graph showing mean DAS scores over time and according to treatment allocation.](image-url)

**Figure 5.10** Mean Dysfunctional Attitude Scale (DAS) total scores over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (n=67). Note that the range of potential scores on the DAS is 0 to 280.

Repeated measures ANOVA indicated a significant decrease in DAS total scores occurred for the sample over time ($F(3,64)=10.598$, $p=0.000$). Scheffé follow-up tests indicated that the three-month ($F(3,64)=20.143$, $p<0.01$), six-month ($F(3,64)=12.537$, $p<0.01$) and 12-month follow-up assessments ($F(3,64)=19.205$, $p<0.01$) DAS total scores were significantly less than the initial assessment. Although not statistically significant, there was a trend towards reduced DAS total scores over time as a function of treatment allocation ($F(6,64)=2.125$, $p=0.050$). That is, DAS total scores were lower at the 12-month follow-up for participants in the brief intervention – control group, relative to the other treatment conditions. Participants in the brief intervention –
control group recorded an 11-point reduction in DAS scores, relative to the SHADE therapy – computer group who reported a 17-point reduction and the SHADE therapy – therapist group who reported a 29-point reduction in DAS scores at 12-months relative to baseline.

5.2.4.3.4 Suicidality

Beck Hopeless Scale total scores were calculated for the entire sample at each assessment occasion. As indicated in Figure 5.11, BHS total scores appeared to increase slightly over the course of the study, from an average of 9.76 at baseline, through to an average of 13.51 for the whole sample at the 12-month follow-up assessment.

![Mean BHS Scores Over Time](image)

**Figure 5.11** Mean hopeless scores (BHS) over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (n=67).
Repeated measures ANOVA indicated that changes in BHS total scores were statistically significant for the group as a whole over time ($F(3,64)=11.257, p=0.000$). Scheffé follow-up tests indicated that 12-month BHS total scores were significantly higher for the sample relative to the baseline BHS scores ($F(3,64)=23.154, p<0.01$). The means and standard deviations associated with BHS total scores are displayed at each assessment timepoint in Table 5.13.

Table 5.13  Mean Beck Hopelessness Scale total scores in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial Mean</th>
<th>S.D.</th>
<th>3-months Mean</th>
<th>S.D.</th>
<th>6-months Mean</th>
<th>S.D.</th>
<th>12-months Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>10.10</td>
<td>4.38</td>
<td>10.57</td>
<td>5.75</td>
<td>11.57</td>
<td>6.24</td>
<td>13.24</td>
<td>5.37</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>8.83</td>
<td>5.69</td>
<td>13.91</td>
<td>5.34</td>
<td>12.91</td>
<td>5.78</td>
<td>13.04</td>
<td>6.16</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>10.35</td>
<td>5.37</td>
<td>12.87</td>
<td>5.75</td>
<td>12.70</td>
<td>5.97</td>
<td>14.26</td>
<td>4.95</td>
</tr>
</tbody>
</table>

Despite the apparent increase in BHS total scores for the two SHADE treatment groups relative to the brief intervention – control group, evident at the three-month follow-up assessment, repeated measures ANOVA indicated no significant treatment effects were associated with changes in BHS scores over time ($F(6,64)=1.148, p=0.181$).

5.2.4.4 Treatment Outcomes - Alcohol/other drug use

Given the small number of participants (“completers”) who met criteria for harmful use of amphetamines at entry to the study, (n=7) separate analyses were not conducted on this sub-group.
5.2.4.3.1 Alcohol use outcomes

Of those people completing each phase of assessment, 41 (62%) met criteria for problematic use of alcohol at the initial assessment. This section describes the alcohol use outcomes for this subset of people over the study period. Table 5.14 displays the mean alcohol use levels of this sub-group according to treatment allocation.

Table 5.14 Mean daily alcohol use* in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation. Note that this only includes those people meeting criteria for problematic alcohol use at entry to the study (n=41).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>8.18</td>
<td>5.17</td>
<td>4.79</td>
<td>4.95</td>
<td>6.41</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>9.60</td>
<td>5.45</td>
<td>3.58</td>
<td>4.60</td>
<td>3.62</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>7.34</td>
<td>4.48</td>
<td>3.81</td>
<td>4.92</td>
<td>6.39</td>
</tr>
</tbody>
</table>

A score of 1 equates to once daily use over the month prior to survey. A score of 2 equates to two standard drinks per day, 3 to three standard drinks per day, etc.

At baseline, the sub-group of participants meeting criteria for harmful alcohol use reported drinking between seven and ten standard drinks per day for the month prior to assessment. By the 12-month follow-up, the sample as a whole reduced their level of alcohol consumption and reported drinking between two and four standard drinks per day on average. Repeated measures ANOVA revealed that this reduction over the course of the assessment was statistically significant ($F(3,38)=9.045$, $p=0.000$). Scheffé follow-up tests indicated specifically that levels of alcohol use were significantly lower at the three-month ($F(3,38)=20.255$, $p<0.01$) and 12-month
(F(3,38)=24.796, \(p<0.01\)) follow-up assessments relative to the initial assessment.

Figure 5.12 displays these data below.

Figure 5.12  Mean daily alcohol use over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems. Note that these date include only those people meeting criteria for harmful alcohol use at entry to the study (n=41).

Participants in the clinician-delivered SHADE therapy group reported greater reductions in alcohol use over time, relative to the other two treatment conditions.

However, repeated measures ANOVA revealed that this pattern of change was not statistically significant (F(6,38)=0.950 \(p=0.463\)).
Total scores on the AUDIT were calculated at each assessment timepoint for people meeting criteria for harmful use of alcohol at entry to the study. Figure 5.13 displays this information, according to treatment allocation.

**Figure 5.13** Mean AUDIT scores over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems. Note that these data only include those participants meeting criteria for harmful use of alcohol at the initial assessment (n=41).

AUDIT scores at baseline for this sub-group were high, indicating likely alcohol abuse/dependence for the 12-months prior to assessment (i.e. scores of 19 or greater indicate likely abuse/dependence). In general, AUDIT scores decreased over the three- and six-month assessment periods for each of the treatment groups. At the 12-month assessment, only those in the computer-delivered SHADE therapy group continued to report reductions. Repeated measures ANOVA revealed that the reductions in AUDIT scores for the sample as a whole over time was statistically significant
(F(3,34)=14.981, p=0.000), but the interaction between changes in AUDIT scores over time and treatment allocation was not significant (F(6,34)=1.123, p=0.354). Scheffè follow-up tests indicated that AUDIT scores at the three-month (F(3,34)=29.378, p<0.01), six-month (F(3,34)=22.502, p<0.01) and 12-month (F(3,34)=20.028, p<0.01) follow-up assessment were each significantly lower than the initial assessment occasion. Table 5.15 displays the mean and standard deviations associated with these AUDIT scores over time.

**Table 5.15** Mean AUDIT scores in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation. Note that these data only include those participants meeting criteria for harmful use of alcohol at the initial assessment (n=41).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial Mean</th>
<th>Initial S.D.</th>
<th>3-months Mean</th>
<th>3-months S.D.</th>
<th>6-months Mean</th>
<th>6-months S.D.</th>
<th>12-months Mean</th>
<th>12-months S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>22.64</td>
<td>8.14</td>
<td>17.00</td>
<td>7.87</td>
<td>16.73</td>
<td>9.73</td>
<td>18.18</td>
<td>8.62</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>21.38</td>
<td>6.32</td>
<td>12.92</td>
<td>7.09</td>
<td>13.46</td>
<td>8.23</td>
<td>16.85</td>
<td>8.26</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>20.23</td>
<td>10.85</td>
<td>14.00</td>
<td>10.84</td>
<td>13.54</td>
<td>11.75</td>
<td>11.46</td>
<td>9.97</td>
</tr>
</tbody>
</table>

At the 12-month assessment, those in the SHADE therapy – computer condition had reduced their AUDIT scores by approximately nine points, compared with those in the other groups who recorded a four-point reduction over the same time period. At 12-months, participants across the treatment groups were, on average, below the threshold for likely alcohol abuse/dependence (score of 19), with average scores for the SHADE therapy – computer group closest to the hazardous drinking threshold of ten.

Alcohol-use status was calculated at the 12-month follow-up mark for those people meeting hazardous alcohol use criteria at entry to the study, as a function of treatment...
allocation. Pearson chi-squared analysis indicated that no differences existed between
treatment groups on this outcome variable ($\chi^2_4=2.453, p=0.653$, see Appendix E).

Readiness to change alcohol use was analysed for participants at each follow-up
assessment. No significant differences were found on this outcome measure according
to treatment allocation. See Appendix E for the details of this analysis.

5.2.4.3.2 Cannabis use outcomes

Of those people completing each assessment, 43 (64%) met criteria for harmful use of
cannabis at entry to the study. The analyses in this section include only this sub-group
of participants. Table 5.16 displays the mean levels of cannabis use for those
participants meeting criteria for hazardous use of cannabis at entry to the study over
the follow-up assessment period.

Levels of cannabis use at baseline were high, with participants across the treatment
conditions reporting an average of between nine and 15 use occasions per day in the
month prior to assessment. Despite the apparent differences between the study groups
in cannabis use at the initial assessment, oneway ANOVA revealed no significant
differences existed ($F(2,42)=1.058, p=0.357$).
Table 5.16  Mean daily cannabis use* in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation, meeting criteria for hazardous cannabis use at entry to the study (n=43).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial Mean</th>
<th>Initial S.D.</th>
<th>3-months Mean</th>
<th>3-months S.D.</th>
<th>6-months Mean</th>
<th>6-months S.D.</th>
<th>12-months Mean</th>
<th>12-months S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>9.22</td>
<td>8.57</td>
<td>7.24</td>
<td>7.77</td>
<td>8.00</td>
<td>9.70</td>
<td>8.61</td>
<td>10.16</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>15.03</td>
<td>13.87</td>
<td>8.90</td>
<td>11.25</td>
<td>7.10</td>
<td>9.51</td>
<td>5.72</td>
<td>6.22</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>11.94</td>
<td>9.14</td>
<td>5.77</td>
<td>6.56</td>
<td>4.97</td>
<td>6.93</td>
<td>3.34</td>
<td>5.52</td>
</tr>
</tbody>
</table>

A score of 1 equates to once daily use on average over the month prior to survey. A score of 2 equates to two use occasions per day, 3 to three use occasions per day, etc.

Cannabis use decreased for the whole sample over the study period. Repeated measures ANOVA indicated that this decrease was statistically significant ($F(3,40)=8.198$, $p=0.000$). Specifically, Scheffè follow-up tests indicated that, relative to the initial assessment, cannabis use levels were significantly reduced at the three-month ($F(3,40)=9.257$, $p<0.01$), six-month ($F(3,40)=10.241$, $p<0.01$), and 12-month follow-up assessments ($F(3,40)=15.927$, $p<0.01$).

Participants in each of the SHADE therapy conditions continued to report reductions in cannabis levels at each follow-up assessment timepoint, relative to the pattern of use reported by the control group participants. Figure 5.14 displays these data.
Figure 5.14  Mean daily cannabis use over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems. Note that these data only include those participants who met threshold criteria for harmful use of cannabis at entry to the study (n=43).

Those in the brief intervention – control condition reported an average of one-point reduction in daily cannabis use between initial and 12-month assessments. In contrast, SHADE therapy – therapist and – computer participants reduced the number of times they used cannabis daily by approximately nine use occasions at the 12-month assessment relative to baseline. Repeated measures ANOVA revealed no significant interaction existed between changes in cannabis use levels over time and treatment allocation ($F(6,40)=1.600, p=0.153$). It is important to note that despite these reductions, cannabis use for this sub-group of participants remained at a level indicating daily use of between three and nine times in the month prior to the 12-month assessment.
Cannabis use status (abstinent, use above/below harmful level) was calculated for this sub-group of participants at the 12-month follow-up occasion, according to their treatment allocation. At the 12-month follow-up assessment, two people in the clinician-delivered SHADE therapy condition (17%) and six people in the computer-delivered SHADE therapy condition (40%) were abstinent from cannabis. This is in contrast to the control group, where no person reported abstinence at 12-month follow-up. Fifteen people in the control group (94%) reported using cannabis above a hazardous threshold at the 12-month follow-up assessment, compared with ten people in the clinician-delivered SHADE therapy (83%) and eight people in the computer-delivered SHADE therapy conditions (53%). One person in the computer-delivered SHADE therapy (7%) was using cannabis below a hazardous threshold at 12-months, compared with one person in the control condition (6%) and zero people in the clinician-delivered SHADE condition. Pearson chi-squared analysis indicated that this trend did not reach statistical significance \( \chi^2 = 9.211, p = 0.056 \).

Readiness to change cannabis use was measured at each follow-up assessment. NO significant differences were found between participants on this variable according to treatment allocation (see Appendix E for the full analysis).

5.2.4.3.3 Poly-drug use outcomes

The number of drug classes in the month prior to assessment (poly-drug use) was calculated at each assessment occasion. The mean poly-drug use scores for the sample are displayed in Table 5.17.
Table 5.17  Mean poly-drug use in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>2.71</td>
<td>1.31</td>
<td>2.43</td>
<td>1.25</td>
<td>3.14</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>2.65</td>
<td>1.67</td>
<td>2.13</td>
<td>1.14</td>
<td>2.04</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>2.61</td>
<td>0.90</td>
<td>2.43</td>
<td>0.84</td>
<td>2.39</td>
</tr>
</tbody>
</table>

Poly-drug use remained relatively constant over the course of the study, with participants in this sub-group reporting using between two and three substances in the month prior to each assessment. Those in the brief intervention - control group at 6-month follow-up, reported an elevated poly-drug use score of 3.14 for the month prior to survey. A non-significant trend emerged to support this observation ($F(6,64)=2.141$, $p=0.050$), however, Scheffé follow-up tests failed to find a significant difference in poly-drug use according to treatment allocation. A non-significant trend emerged to suggest that poly-drug use scores did vary over the follow-up time period ($F(3,64)=2.764$, $p=0.043$), namely that poly-drug use at the three- and 12-month follow-up occasions was lower than at the initial assessment. Scheffé follow-up tests failed to confirm a significant difference existed in these sets of scores.

5.2.4.3.4 Hazardous alcohol/other drug use index outcomes

An aggregate score was calculated for the number of days in the previous month participants used a range of ten substances at hazardous levels. Figure 5.15 displays the mean hazardous use aggregate scores over time, according to treatment allocation.
Figure 5.15  Mean hazardous use aggregate scores use over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (n=67).

Participants reported an average of 41.62 days of hazardous use of substances at the initial assessment. In general, participants in the two SHADE therapy groups reported reduced hazardous use days over the follow-up assessment period, using substances at approximately half the level at the 12-month assessment that they reported at baseline. This is despite the clinician-delivered SHADE therapy group at the three-month assessment, reporting elevated hazardous use days relative to the other treatment groups.

Participants in the brief intervention – control group reported reasonably consistent levels of hazardous use of substances throughout the study period, reported between 34.11 and 39.67 hazardous use days at each assessment timepoint. Despite this
apparent difference between treatment groups, the interaction between treatment allocation and changes in hazardous use aggregate scores over time was not statistically significant ($F(6,55)=2.004, p=0.068$). The means and standard deviations corresponding to these data are displayed in Table 5.18.

Table 5.18  Mean hazardous use aggregate scores* for the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Treatment Allocation</td>
<td>Brief Intervention – control</td>
<td>39.67</td>
<td>15.40</td>
<td>31.11</td>
</tr>
<tr>
<td></td>
<td>Clinician-delivered SHADE therapy</td>
<td>43.11</td>
<td>17.04</td>
<td>39.84</td>
</tr>
<tr>
<td></td>
<td>Computer-delivered SHADE therapy</td>
<td>42.10</td>
<td>20.17</td>
<td>34.11</td>
</tr>
</tbody>
</table>

*Range 0-280 days.

Repeated measures ANOVA revealed a significant decrease in hazardous use aggregate scores occurred for the sample as a whole over time ($F(3,55)=7.329, p=0.000$). Scheffé follow-up tests indicated that hazardous use aggregates were significantly lower at the six-month ($F(3,55)=14.525, p<0.01$) and 12-month ($F(3,55)=28.946, p<0.01$) follow-up assessments compared to the level at the initial assessment.

5.2.4.3.5 Abstinence rates

Although the treatment in this study took a harm reduction approach to AOD use, abstinence rates were calculated for alcohol and cannabis. No significant differences existed in rates of abstinence from alcohol according to treatment allocation at any follow-up assessment. The same was true for cannabis abstinence. A statistically non-
significant trend emerged in the 12-month abstinence rates to suggest that rates of abstinence were higher among clinician- and computer-delivered SHADE therapy participants relative to the control group. Despite reporting almost half the rate of abstinence as the two SHADE therapy groups, Pearson chi-squared analysis revealed that those in the control groups were not significantly different ($\chi^2=6.206$, $p=0.045$). Appendix E contains the detail analyses of these outcome variables.

5.2.4.5 Treatment Outcomes - Change scores

Change scores were calculated for alcohol use, cannabis use, depression and hazardous use of AOD for the six- and 12-month follow-up assessments compared to the initial assessment. Pearson correlational analysis indicated no significant relationships existed between any of these change variables at these timepoints.

5.2.4.6 Treatment Outcomes - Other

5.2.4.6.1 General functioning outcomes

General functioning was assessed at each follow-up occasion via the Global Assessment of Functioning (GAF). Changes in GAF scores over time are displayed in Figure 5.16.
GAF scores in both of the SHADE therapy conditions increased fairly uniformly across the assessments, increasing by about seven points on the rating scale between the initial and follow-up assessments. In contrast, GAF scores for the brief intervention – control group remained relatively stable at each assessment timepoint. Repeated measures ANOVA indicated that the sample as a whole reported significantly improved GAF scores over time ($F(3,64)=13.019$, $p=0.000$), particularly when comparing the initial and three-month (Scheffé critical $F(3,64)=33.242$, $p<0.01$), initial and six-month (Scheffé critical $F(3,64)=21.604$, $p<0.01$) and initial and 12-month assessment pairs (Scheffé critical $F(3,64)=9.391$, $p<0.01$). The interaction between changes in GAF scores, time and treatment allocation was not statistically significant ($F(6,64)=0.652$, $p=0.688$). These data are also displayed in Table 5.19.
Table 5.19  Mean Global Assessment of Functioning * the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Treatment Allocation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>58.29</td>
<td>7.78</td>
<td>66.95</td>
<td>11.90</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>62.43</td>
<td>6.19</td>
<td>71.70</td>
<td>10.36</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>59.91</td>
<td>10.35</td>
<td>70.17</td>
<td>14.21</td>
</tr>
</tbody>
</table>

Higher scores indicate better functioning

5.2.4.6.2 State anxiety outcomes

Current levels of anxiety were measured among study respondents at each assessment timepoint. Table 5.20 displays the mean and standard deviation of STAI scores (state anxiety) at each assessment according to treatment allocation.

Table 5.20  Mean State Trait Anxiety Inventory total scores (State Anxiety) in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Assessment Occasion</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Treatment Allocation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>59.57</td>
<td>8.26</td>
<td>49.29</td>
<td>2.76</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>61.52</td>
<td>10.71</td>
<td>49.13</td>
<td>2.47</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>55.70</td>
<td>9.73</td>
<td>50.30</td>
<td>2.65</td>
</tr>
</tbody>
</table>

Norms for the STAI – state anxiety scale are reported in Spielberger (1983), and for a sample of 28 neuropsychiatric patients with depression equate to a mean of 54.43 (S.D. =13.02). As indicated in Table 5.20 and Figure 5.17 below, state anxiety scores for this sub-sample were above the “norm” reported by Spielberger (1983) at the baseline assessment. All three treatment groups reported reductions in state anxiety.

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over the follow-up time period, and equally, the total scores across each treatment condition were consistently lower than the “norm” at each follow-up assessment timepoint.

![Mean State Trait Anxiety (State Anxiety) total scores over time and according to treatment allocation](image)

**Figure 5.17** Mean State Trait Anxiety (State Anxiety) total scores over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (n=67). Note that scores on this scale range from 20-80.

Repeated measures ANOVA revealed that these changes in STAI – state anxiety scores over time were statistically significant for the group as a whole ($F(3,64)=52.612, p=0.000$). Scheffé follow-up tests indicated that state anxiety scores at the three-month ($F(3,64)=61.188, p<0.01$), six-month ($F(3,64)=60.558, p<0.01$) and 12-month assessments ($F(3,64)=54.412, p<0.01$) were significantly lower than those reported by the sample at the initial assessment. The interaction between time, treatment allocation and changes in state anxiety total scores was not statistically
significant ($F(6,64)=2.659$, $p=0.017$). A statistically non-significant trend emerged suggesting that the reductions in state anxiety scores at the three- and six-month assessments (relative to baseline) were less for participants allocated to the SHADE therapy – computer condition, who reported approximately half the reduction in scores compared to the other treatment conditions. This trend had disappeared by the 12-month assessment.

5.2.4.6.3 Quality of life outcomes

Figure 5.18 displays the mean scores on the Lancashire Quality of Life (LQoL) scale for participant’s “life as a whole” over time for people according to treatment allocation, with increasing scores indicating increasing satisfaction with quality of life.

Figure 5.18  Mean Lancashire Quality of Life (“life as a whole”) scores over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems ($n=67$).
Repeated measures ANOVA revealed significant increases in participant’s satisfaction with their “life as a whole” occurred over the follow-up time period ($F_{(3,64)}=6.187$, $p=0.000$). Satisfaction increased by approximately one point on the response scale, from mostly dissatisfied to mixed (equally satisfied and dissatisfied). Scheffé follow-up tests indicated that quality of life ratings on this dimension were significant higher at the three-month ($F_{(3,64)}=4.846$, $p<0.01$) and 12-month follow-up assessments ($F_{(3,64)}=15.367$, $p<0.01$) relative to the initial assessment. The interaction between changes in quality of life, time and treatment allocation was not statistically significant ($F_{(6,64)}=1.103$, $p=0.418$). These data are detailed in Table 5.21.

Table 5.21  Mean Lancashire Quality of Life scores (“life as a whole”)* for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial Mean</th>
<th>S.D.</th>
<th>3-months Mean</th>
<th>S.D.</th>
<th>6-months Mean</th>
<th>S.D.</th>
<th>12-months Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>3.14</td>
<td>1.06</td>
<td>3.48</td>
<td>1.21</td>
<td>3.48</td>
<td>1.33</td>
<td>3.71</td>
<td>1.10</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>3.30</td>
<td>0.97</td>
<td>4.17</td>
<td>1.30</td>
<td>4.22</td>
<td>1.83</td>
<td>4.17</td>
<td>1.77</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>3.57</td>
<td>0.95</td>
<td>3.96</td>
<td>1.40</td>
<td>3.61</td>
<td>1.75</td>
<td>4.36</td>
<td>1.53</td>
</tr>
</tbody>
</table>

Range 1-7

Participants were also asked to indicate on a ten-rung ladder their current perceptions of their life at the time of assessment in between the worst possible outcome (score of 1) and the best possible outcome (score of 10) imaginable. The means and standard deviations associated with these ratings at each timepoint are displayed in Table 5.22 and Figure 5.19 below. Scores on the life “ladder” increased over the three-month and six-month assessments for the sample as a whole, but only continued to increase at 12-months for those in the computer-delivered SHADE therapy condition and the brief intervention –control group.
Table 5.22  Mean quality of life ratings (current life rating)* for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial Mean ± SD</th>
<th>3-months Mean ± SD</th>
<th>6-months Mean ± SD</th>
<th>12-months Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>3.81 ± 1.36</td>
<td>4.33 ± 1.77</td>
<td>4.29 ± 1.98</td>
<td>4.81 ± 1.36</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>3.60 ± 1.59</td>
<td>5.17 ± 1.47</td>
<td>5.30 ± 1.99</td>
<td>4.73 ± 2.18</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>3.91 ± 1.27</td>
<td>5.18 ± 1.59</td>
<td>5.18 ± 1.92</td>
<td>5.68 ± 1.62</td>
</tr>
</tbody>
</table>

*1=worst possible outcome imaginable, 10=best possible outcome imaginable

Figure 5.19  Mean quality of life (current life - ladder) ratings over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (n=67).

Repeated measures ANOVA indicated that these increases over time were statistically significant (F(3,63)=13.214, p=0.000). Scheffè follow-up tests indicated that scores were significant higher at the three-month (F(3,63)=26.168, p<0.01), six-month (F(3,63)=20.390, p<0.01) and 12-month (F(3,63)=22.786, p<0.01) follow-up
assessments compared to the ratings provided at the initial assessment. Despite an increase in ratings for participants in the computer-delivered SHADE therapy condition of close to two full points over time, repeated measures ANOVA revealed no significant differences existed in quality of life ratings over time according to treatment allocation ($F(6,63)=1.559, \ p=0.161$).

Self-concept scores were calculated for participants across the assessment occasions, and are displayed in Figure 5.20.

![Mean self-concept scores over time and according to treatment allocation](image)

**Figure 5.20** Mean self-concept scores over time and according to treatment allocation, among a sample of participants in a study of treatment for comorbid depression and alcohol/other drug use problems (n=67).

Self-concept scores uniformly increased over the course of the study, with a slight decrease in total scores evident for the clinician-delivered SHADE therapy group at the 12-month follow-up assessment. Repeated measures ANOVA revealed that these increases over time in self-concept scores was statistically significant ($F(3,64)=8.541$, $p<0.001$).
p=0.000), particularly when comparing initial and three-month scores (Scheffè critical $F(3,64)= 17.483, p<0.01$), initial and six-month (Scheffè critical $F(3,64)= 9.286, p<0.01$) and initial and 12-month self-concept scores (Scheffè critical $F(3,64)=13.33, p<0.01$). The interaction between time, treatment allocation and improvement in self-concept was not statistically significant ($F(6,64)=1.369, p=0.229$). Mean self-concept scores (and standard deviations) are displayed for each assessment timepoint in Table 5.23.

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>14.57</td>
<td>2.66</td>
<td>15.24</td>
<td>2.86</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>13.65</td>
<td>2.76</td>
<td>15.78</td>
<td>2.83</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>15.30</td>
<td>3.36</td>
<td>16.96</td>
<td>2.40</td>
</tr>
</tbody>
</table>

### Table 5.23 Mean self-concept scores for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

5.2.4.6.4 Treatment utilisation outcomes

Treatment utilisation was assessed across several domains. Table 5.24 displays the rates of medication reported by participants at each assessment timepoint. Rate of medication at the three-month assessment were similar for those people in the clinician-delivered SHADE therapy and control conditions, with approximately two-thirds of participants in each group reporting taking psychiatric medication at this assessment.
Table 5.24  Rates of medication reported by participants in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial n</th>
<th>%</th>
<th>3-months n</th>
<th>%</th>
<th>6-months n</th>
<th>%</th>
<th>12-months n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>11</td>
<td>52</td>
<td>14</td>
<td>67</td>
<td>14</td>
<td>67</td>
<td>15</td>
<td>71</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>14</td>
<td>61</td>
<td>15</td>
<td>65</td>
<td>15</td>
<td>65</td>
<td>15</td>
<td>65</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>10</td>
<td>44</td>
<td>9</td>
<td>39</td>
<td>9</td>
<td>39</td>
<td>12</td>
<td>52</td>
</tr>
</tbody>
</table>

Thirty-nine percent of the computer-delivered SHADE therapy group were taking medication at the three-month follow-up. Despite these differences in medication rates, Pearson chi-squared analysis indicated no significant differences in medication rates existed between the treatment groups at the three-month assessment ($\chi^2=4.422$, $p=0.110$). Rate of medication at the six-month assessment were identical to those reported at the three-month assessment and did not significantly differ according to treatment allocation (Pearson $\chi^2=4.422$, $p=0.110$).

At the 12-month assessment approximately half of the participants in the computer-delivered SHADE therapy condition reported taking psychiatric medication. Medication was prescribed for 65% of those in the clinician-delivered SHADE therapy condition, while 71% of control group participants reported taking medication for a psychiatric condition. Pearson chi-squared analysis indicated no significant differences in medication rates existed between treatment groups at the 12-month follow-up assessment ($\chi^2=3.730$, $p=0.444$).

Participation in treatment for AOD use was recorded at each assessment occasion, as displayed in Table 5.25.
Table 5.25 Rates of participation in treatment for alcohol/other drug use reported by participants in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

As indicated in Table 5.25, participation in treatment for AOD use was low across the treatment conditions. At the three-month assessment, close to 20% of control group and computer-delivered SHADE clients indicated current involvement in AOD use treatment, compared with 9% of those in the clinician-delivered SHADE therapy group. Pearson chi-squared analysis indicated that these differences were not statistically significant ($\chi^2=1.094, p=0.579$).

At the six-month follow-up, one-third of control group participants reported engagement with some form of AOD use treatment, over two-times the rate of the SHADE therapy groups. Pearson chi-squared analysis indicated these differences were not statistically significant ($\chi^2=7.405, p=0.025$).

At 12-months, approximately one-third of both the control participants and those allocated to computer-delivered SHADE therapy reported involvement with an AOD treatment service. In contrast, only 9% of the clinician-delivered SHADE participants reported engagement with an AOD treatment agency. This difference was not statistically significant (Pearson $\chi^2=3.801, p=0.150$).
Involvement with other health professionals was assessed at the six- and 12-month follow-up timepoints. Table 5.26 displays the number of visits to health professionals according to treatment allocation. Note that rates of health professional involvement refer to the six-month period between the initial and six-month follow-up assessment, and to the subsequent six-month period between the six- and 12-month follow-up timepoints.

<table>
<thead>
<tr>
<th></th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment Occasion</strong></td>
<td><strong>Mean</strong></td>
<td><strong>S.D.</strong></td>
</tr>
<tr>
<td><strong>GENERAL PRACTITIONER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>3.24</td>
<td>3.27</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>2.17</td>
<td>2.66</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>2.39</td>
<td>3.31</td>
</tr>
<tr>
<td><strong>PSYCHIATRIST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>0.33</td>
<td>0.91</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>0.74</td>
<td>2.60</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>0.26</td>
<td>1.25</td>
</tr>
<tr>
<td><strong>PSYCHOLOGIST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>0.48</td>
<td>1.44</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>0.04</td>
<td>0.21</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>0.22</td>
<td>0.67</td>
</tr>
<tr>
<td><strong>MENTAL HEALTH TEAM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>1.19</td>
<td>2.89</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>0.17</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Participants had most contact with a general practitioner (GP) over the course of the study, and no significant differences existed at any of the timepoints in the number of visits each treatment group made to GPs, psychiatrists, psychologists of mental health teams. Rates of access of health professionals were low for the sample, with 27% of the sample at six-months and 28% at 12-months having no contact with a GP, and between 50-60% of the sample having two or fewer visits over the same time period.
Ninety percent of the sample at six-months reported no contact with a psychiatrist of psychologist, and around 88% had not contact with a mental health team. At the 12-month assessment, 90% still had no contact with a mental health team, a psychiatrist or a psychologist at any stage in the previous six-month period. No significant differences were reported in rates of access of health professionals according to treatment allocation.

5.2.4.4 Intention-to-treat analysis

Of the 97 people recruited to Study 5, 82 (85%) completed the three-month (post-treatment assessment). Seventy-nine people (81%) completed a six-month follow-up assessment, and 74 (76%) completed their 12-month follow-up assessment. Between 24%-15% of data was carried forward from previous assessment phases, to form a pool of 97 participants for the intention-to-treat analysis.

5.2.4.4.1 Depression outcomes

Changes in BDI-II scores were examined over time and according to treatment allocation using repeated measures ANOVA. The mean BDI-II scores at each assessment timepoint for the full sample (N=97) are displayed in Table 5.27. Depression scores for the full sample significantly decreased over time ($F(3,94)=33.821, p=0.000$). Scheffè follow-up tests indicated that the group as a whole reported significantly lower BDI-II scores at the three-month ($F(3,94)=66.07, p<0.01$), six-month ($F(3,94)=46.10, p<0.01$) and 12-month ($F(3,94)=50.53, p<0.01$) follow-up assessments, relative to the initial (baseline) assessment. These results are consistent
with the principal analysis described above, for the 67 participants who completed each of the three follow-up assessments.

### Table 5.27 Mean depression scores (BDI-II) over time reported by participants in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=97*).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>32.27</td>
<td>9.63</td>
<td>23.70</td>
<td>11.08</td>
</tr>
<tr>
<td>Clinician-delivered SHADE therapy</td>
<td>34.26</td>
<td>9.45</td>
<td>19.37</td>
<td>13.74</td>
</tr>
<tr>
<td>Computer-delivered SHADE therapy</td>
<td>29.06</td>
<td>9.09</td>
<td>20.38</td>
<td>12.80</td>
</tr>
</tbody>
</table>

*To form a dataset of 97 observations, the last available observation was carried forward for missing data at each follow-up occasion.

A greater reduction in BDI-II scores was found for the two active SHADE treatment conditions relative to the brief intervention – control condition at the three- and six-month follow-up assessments. Repeated measures ANOVA revealed that the interaction between changes in BDI-II scores over time and treatment allocation was of borderline significance, when the sample of 97 participants was considered \( F(6,94)=2.779, p=0.012 \). Scheffé follow-up tests did not detect a significant difference between individual treatment groups and changes in the BDI-II scores over time, however, a non-significant trend suggested that those in the brief intervention – control condition did not make as large a reduction in BDI-II scores at the six-month follow-up assessment as did their counterparts who received SHADE treatment. This result is inconsistent with the analysis of changes in BDI-II scores carried out with the follow-up completers, where significant treatment effects were detected at the three- and six-month follow-up assessment timepoints.
5.2.4.4.2 Alcohol use outcomes

Of the full sample of 97 participants, 52 (54%) met criteria for harmful use of alcohol at the initial assessment. Of these, 16 (31%) were allocated to the brief intervention – control and SHADE therapy – computer conditions, with the remainder receiving SHADE therapy – therapist (n=20, 38%). Table 5.28 displays the alcohol use scores over time for these participants, according to their treatment allocation. The level of alcohol use for those participants meeting criteria for harmful use of alcohol at the initial assessment decreased over the course of the study. For example, at the 12-month follow-up assessment, the group were consuming around four standard drinks per day (M=3.97), compared with approximately nine standard drinks at baseline (M=8.69).

Table 5.28  Mean daily alcohol use* in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=52; intention-to-treat analysis).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial Mean</th>
<th>S.D.</th>
<th>3-months Mean</th>
<th>S.D.</th>
<th>6-months Mean</th>
<th>S.D.</th>
<th>12-months Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – control</td>
<td>8.10</td>
<td>4.49</td>
<td>5.25</td>
<td>4.65</td>
<td>6.48</td>
<td>5.34</td>
<td>4.10</td>
<td>3.29</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>9.85</td>
<td>6.28</td>
<td>5.16</td>
<td>6.52</td>
<td>4.98</td>
<td>6.95</td>
<td>4.12</td>
<td>6.26</td>
</tr>
<tr>
<td>SHADE therapy – computer</td>
<td>8.13</td>
<td>5.01</td>
<td>4.07</td>
<td>4.88</td>
<td>6.05</td>
<td>8.85</td>
<td>3.67</td>
<td>5.29</td>
</tr>
</tbody>
</table>

*A score of 1 equates to one standard drink per day over the month prior to survey. A score of 2 equates to two standard drinks per day, 3 to three standard drinks per day, etc.

Repeated measures ANOVA revealed that this decrease was statistically significant (F(3,49)=11.363, p=0.000). Scheffè post-hoc tests revealed that the group as a whole reported significantly lower levels of alcohol use at the three-month (F(3,49)=20.76,
p<0.01) and 12-month (F(3,49)=30.06, p<0.01) assessment timepoints relative to the levels consumed at the baseline assessment. No other significant interactions were detected. This result is consistent with the analysis of the 67 participants completing all follow-up assessments reported above.

5.2.4.4.3 Cannabis use outcomes

Sixty-nine participants in the full sample (N=97) met criteria for hazardous use of cannabis at the initial assessment. Of these, 22 were allocated to the SHADE therapy – therapist condition (32%), 23 received the brief intervention – control condition (33%) and 24 were allocated to the SHADE therapy – computer condition (35%).

Mean levels of cannabis use at each assessment timepoint were compared across the treatment groups for this sub-sample of participants. Initial levels of cannabis use were high among the study participants, ranging from 10.81 use occasions through to 16.90 use occasions per day in the month prior to assessment. Despite the apparent differences in the level of cannabis use at the initial assessment, oneway ANOVA revealed that no significant differences existed between the treatment groups on this variable at the initial assessment (F(2,68)=0.831, p=0.440). At the 12-month follow-up timepoint, levels of daily use for the two SHADE therapy conditions had reduced, with those in SHADE therapy – computer reporting the lowest levels of daily cannabis use of the treatment groups (i.e. 4.74 use occasions per day). Table 5.29 displays the mean and standard deviation data for levels of cannabis use for this sample over the phases of assessment.
Table 5.29  Mean daily cannabis use* in the month prior to assessment for people participating in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=69; intention-to-treat analysis).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Initial</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Brief Intervention – control</td>
<td>10.81</td>
<td>13.09</td>
<td>6.84</td>
<td>6.65</td>
</tr>
</tbody>
</table>

*A score of 1 equates to once daily use over the month prior to survey. A score of 2 equates to two use occasions per day, 3 to three use occasions per day, etc.

Repeated measures ANOVA revealed that cannabis use decreased significantly over time ($F(3,66)=6.110, p=0.001$). Scheffè follow-up tests indicated that levels of cannabis use were significantly less for the group as a whole at the 12-month follow-up assessment, relative to baseline levels ($F(3,66)=12.937, p<0.01$). This is consistent with the results for the sample of 67 participants who completed each follow-up assessment, which indicated a significant time effect for cannabis use, evident at the three-, six- and 12-month follow-up occasions.

Closer inspection of the data suggests that participants in the SHADE treatment conditions (computer and therapist) reported reduced levels of cannabis use at each follow-up occasion relative to their baseline assessment. Those in the brief intervention – control condition similarly reduced their cannabis use over the three-month follow-up period, and returned to baseline cannabis use levels from six-months. Despite this trend, repeated measures ANOVA revealed no significant differential effect of treatment existed for cannabis use in the study sample over time.
(F(6,66)=2.294, p=0.037). This result is consistent with the sample of 67 discussed above.

5.2.4.5 Treatment fidelity

A 19% sample of therapy tapes was rated for adherence to the session manual by an independent rater. In total, therapy sessions lasted an average of 62 minutes (M=62.43, S.D.=16.041, range=31-95mins), and check-in sessions lasted an average of 12 minutes (M=12.31, S.D.=8.168, range=3-37mins). Of the 73 tapes rated for treatment fidelity, 47 (64%) were assessed as being fully adherent to the agenda for that particular session. Therapy sessions were less likely than brief check-in sessions to be rated as fully adherent to the session agenda. Twenty-three therapy sessions (52%) and 24 check-in sessions (83%) were rated as adherent, and continuity-corrected chi-squared analysis indicated this difference was not statistically significant (χ²₁=5.817, p=0.016).

Of those that were not classified as fully adherent (36%), seven (27%) could not be rated in full as the audiotape ran out prior to the session end, and in a further three cases (12%) the session was abandoned due to the client being in suicidal crisis. Other reasons for a non-adherent rating included exceeding the 60-minute session time (n=3, 12%), no review of the previous week was conducted (n=4, 15%), no explicit rationale for CBT was provided in four cases (5%), or motivational interviewing was not covered (n=3, 12%). In one case, schema therapy was conducted earlier than programmed in the manual (4%), and in one further instance, an explicit introduction to the session was not conducted.
A second independent rater assessed a sub-section of these audiotapes for treatment fidelity (n=16, 22%). The percentage of agreement in ratings of adherence between the two raters was high (79%), but after correcting for chance the overall measure of agreement between the two raters was around 50% (Cohen’s $\kappa=0.478$, $p=0.025$).

5.2.5 Discussion

The results of Study 5 indicate that participants with comorbid depression and AOD use problems will attend a program of psychological treatment targeted at both conditions, and report some benefits on depression and AOD outcomes as a result of this participation. Regardless of treatment allocation, participants reported significant reductions in depression over the 12-month study period, significant reductions in alcohol consumption and significant reductions in cannabis use over the course of the study. These results were confirmed by the intention-to-treat analysis. A statistically non-significant trend emerged to suggest that the reduction in cannabis use was greater for people in the SHADE therapist- and computer-delivered conditions, with rates of cannabis abstinence in the brief intervention group half that of the active treatment groups. Significant reductions were also reported by the whole sample in their hazardous use of a range of substances and the number of drug classes used at each assessment timepoint. General functioning significantly improved overall at each follow-up assessment, as did self-reported quality of life scores and self-concept. Cognitive vulnerability to depression (DAS scores) significantly improved for all participants over the study, with a non-significant trend suggesting that this improvement was greatest among people in the SHADE therapy – therapist treatment
at 12-months. Depression scores were the only ones to significantly change according to treatment allocation. That is, participants who received SHADE therapy delivered by a therapist reported significantly greater reductions in BDI-II scores at the three- and six-month follow-up assessments relative to baseline and the other treatment groups. This was confirmed by an intention-to-treat analysis. These results and their implications are discussed in detail below.

5.2.5.1 Depression Outcomes

Reductions in depressive symptoms were a key goal of treatment for Study 5, with participants reporting significant reductions in BDI-II scores over the follow-up period. As indicated above, treatment moderated this reduction, with significantly better improvements in BDI-II scores between initial and three-months and initial and six-months found for the clinician-delivered SHADE group. At the 12-month assessment, clinician- and computer-delivered SHADE participants reported a 15-point reduction in depression between initial and 12-month assessment, compared to an eight-point reduction among the control participants, although these differences were not statistically significant. This pattern of change in depression scores suggests a significantly more immediate response to treatment among those participants in the SHADE therapy – therapist condition, with SHADE therapy – computer clients taking a longer period of time to match these reductions in depression. At the 12-month follow-up, computer- participants reported lower levels of depression relative to the other two conditions (approximately seven points lower than clinician-delivered and 11 points for controls), and scored in the minimal-range for depressive symptoms, but these differences were not statistically significant. It is
unclear why the SHADE therapy – therapist group did not maintain the significant changes at 12-month assessment relative to the other follow-up occasions, and equally why the SHADE therapy – computer participants reported lower BDI-II scores at 12-months than did their counterparts. In the short-term, the direction of a “live” therapist may have resulted in participants more quickly grasping the concepts of SHADE therapy, and closer monitoring may have encouraged them to practice these strategies sooner than did participants in the computer condition. However, the self-help nature of the computer-delivered treatment may have benefited these participants over the longer term. With the onus on them to understand, implement and evaluate the various treatment strategies in SHADE therapy – computer, these participants may have internalised these approaches to a greater extent than did their counterparts, and thus have been better able to remember and implement these strategies over the longer term.

Post-treatment BDI-II scores have previously been linked with increased risk of relapse to AOD use (Curran et al., 2000), with scores of 14-19 on the BDI-II associated with 2.5 times the risk of relapse to AOD use compared with scores of less than 14. BDI-II scores of 20 or greater are associated with 4.5 times the risk of relapse to AOD use over the longer term (Curran et al., 2000). In evaluating the post-treatment (three-month) BDI-II scores for participants in Study 5, control group participants reported depression scores in the moderate range (i.e. above 20 on the BDI-II), while those in the clinician- and computer-delivered groups reported levels of 13 and 17 respectively. These differences were not statistically significant, but those who received SHADE therapy – therapist at post-treatment were likely to be at
reduced risk of relapse and continued morbidity for AOD use over the longer term according to these criteria. SHADE therapy – computer participants were also at reduced risk of relapse to AOD use relative to the brief intervention – control condition, although this was not statistically significant.

Rates of major depressive disorder did not significantly vary at the 12-month assessment according to treatment allocation. However, major depression was diagnosed at twice the rate for control group participants at this follow-up assessment than it was for those in the clinician- and computer-delivered conditions, a clinically significant finding.

Cognitive vulnerability to depression, as measured by the DAS, significantly decreased for the sample as a whole across the follow-up assessments. Closer examination of these rates of reduction revealed that those in the clinician-delivered SHADE treatment group reported improvement more quickly on this domain, making reductions at post-treatment that were maintained through to 12-month follow-up assessment (29-point reduction over 12-months). Computer- participants reported similar levels of cognitive vulnerability to the clinician-delivered group by the 12-month assessment, and needed the full 12-month study period to achieve this reduction (17-point reduction in total). Again, the control group reported less improvement in cognitive vulnerability to depression compared to the SHADE treatment conditions. These differences were not statistically significant, but the results were similar to those for reductions in BDI-II scores, indicating a steeper gradient of improvement among the SHADE therapy – therapist participants relative
to the other treatment groups, with outcomes appearing equivalent for SHADE therapy – therapist and computer participants by the 12-month follow-up period. Of additional note is that the brief intervention – control participants also reported improvements across these domains relative to the initial assessment that over the shorter-term.

In contrast, BHS scores, an index of suicidality, increased significantly over the course of the study. It is unclear why this occurred, when levels of depression and associated vulnerabilities decreased significantly over the same time period. One additional study among females engaged in treatment for illicit drugs found a similar pattern to Study 5, in that scores on the BHS were negatively associated with scores on the BDI-II (Neely, 2005). Importantly, participants in Study 5 were not hospitalised for suicidal ideation/behaviour over the course of the study, nor was anybody suspended from treatment due to acute suicidality. Recently, a critical review of the BHS highlights that many of its items are phrased in general terms, as opposed to specific goals or aspirations about the future. This may make it difficult for the respondent judge their overall hope about the future, when a number of factors (income, family, etc.) may influence this rating in different directions at the same point in time (Fernandez, 2005). Many items are also suggested to relate to mild pessimism or uncertainty that may be more characteristic of a general disposition towards negativity rather than acute suicidal ideation or behaviour (Fernandez, 2005). Thus, increases in BHS items may not necessarily reflect increased suicidality of a life threatening nature.
5.2.5.2 Alcohol/other Drug Use Outcomes

Among people meeting criteria for hazardous use of alcohol at the initial assessment, reductions in the average daily use of alcohol were reported for the sub-sample as a whole over the course of the study. Treatment did not moderate this reduction at a statistically significant level, indicating that the brief intervention – control condition reported similar benefits for this severely depressed and hazardous alcohol-using group of study participants.

Significant reductions in AUDIT total scores were found across the follow-up occasions, with all three groups reporting a similar pattern of reduction in scores between the initial, three- and six-month assessments. This again, potentially demonstrates the benefits of a brief intervention for people with comorbid depression and hazardous alcohol use. At 12-month assessment, computer-delivered SHADE participants continued to report a reduction in AUDIT scores, but the clinician-delivered SHADE treatment and control groups reported increased AUDIT scores. These differences were not statistically significant.

The alcohol outcomes observed in Study 5 closely approximate those reported in the Project MATCH study, comparing alcohol use outcomes for people engaged in a brief motivational intervention versus cognitive behaviour therapy and a 12-step facilitation program (PMRG, 1997). That is, at the 12-month follow-up assessment, Project MATCH participants assigned to receive the brief motivational intervention reported equivalent alcohol use outcomes relative to their counterparts who received more intensive treatment. Consistent with the results of Study 5, Project MATCH
participants with higher levels of psychiatric severity did not respond better to the
more intensive CBT or 12-step treatment relative to the brief motivational
intervention. Taken together, these findings suggest a potential benefit of brief
interventions, in addition to assessment, even for people at the severe end of the
depression and alcohol-using spectrum.

Stage of change for alcohol use was not significantly different across the treatment
groups, but at 12-months, the majority of participants in the clinician- and computer-
delivered SHADE treatment groups reported being in the action stage of change for
alcohol. In contrast, control participants were mostly in the contemplation stage of
change for alcohol, continuing to ruminate about their use.

Participants meeting criteria for problematic use of cannabis were also selected for
closer analysis. Cannabis users in the clinician- and computer-delivered conditions
reported a consistent, similar pattern of reduction in cannabis use over the follow-up
assessment period. Control group participants kept pace with these reductions at the
post-treatment assessment, but did not reduce at the same rate over the longer term.
These reductions in cannabis use were statistically significant for the main effect of
time, but the differences noted across the treatment groups did not meet the
significance threshold. Despite important reductions in daily levels of cannabis use,
12-month levels remained high across the treatment conditions, with participants
continuing to use between 3 and 9 times daily. This is in contrast to levels of alcohol
use, which dropped to within recommended safe drinking guidelines by the 12-
month follow-up assessment across treatment groups. It is unclear why this
occurred. A similar result was reported by Baker et al. (in press, January 2005), where at 12-month follow-up, cannabis use remained above the hazardous threshold of once weekly use (range 4.12-8.53 use occasions per day) and alcohol use dropped to within recommended safe drinking levels. The difficulty in shifting cannabis use to low levels and the unique combination of cannabis use and depression (other mental health) comorbidity warrants further attention.

Stage of change for cannabis use at the 12-month follow-up assessment was also not significantly different across the treatment conditions. While the majority of control and clinician-delivered SHADE participants reported being in the contemplation stage of change for cannabis use, the sample of computer-delivered SHADE participants were equally divided between contemplation and action stages of change (46% in each stage).

The finding that stage of change for alcohol and cannabis use did not significantly change over time, despite reductions in alcohol- and cannabis-use for the group as a whole, is an interesting one, given the basic tenet of this model that a person’s readiness to change predicts actual behaviour change (Prochaska & DiClemente, 1983, 1986; Prochaska, DiClemente, & Norcross, 1993; Reed et al., 2005). Recent evidence is emerging in support of the findings of Study 5, suggesting that movement toward the action stage of change is not necessarily associated with actual behaviour change (West, 2005). The study 5 sample as whole reported reductions in alcohol- and cannabis-use irrespective of an intervention tailored to their particular stage of change, and these changes were maintained over time. In practice, although
it is common for people to be offered treatment commensurate with their current stage of change, as Hodgins (2005) suggests, little empirical evidence exists to support this approach over others. The concern here is the potential for people in the pre-contemplation stage of change, for example, to be excluded from treatments deemed more appropriate for people at the action stage of change, in the absence of any data to support this exclusion and that (in light of Study 5 results) could have potentially produced some benefits. More work in this area is clearly required.

A major treatment goal in SHADE therapy was the reduction of hazardous AOD use. To explore this, an aggregate score of hazardous use days in the month prior to survey was calculated for each follow-up assessment. A significant reduction in this aggregate score was found for the whole sample over the follow-up period, indicating overall reduced levels of hazardous use of substances occurred.

A range of additional AOD use outcomes was assessed over the course of Study 5, including poly-drug use, hazardous use indices and abstinence rates at 12-month follow-up. A significant main effect of time was found for poly-drug use, with results indicating the sample as a whole reported decreased poly-drug use over the initial and follow-up assessments. Closer inspection of the data indicates that, although not statistically significant, poly-drug use fell uniformly for all three treatment groups up until the six-month follow-up assessment. Only the clinician- and computer-delivered SHADE treatment participants continued to report reductions on this outcome variable through to the 12-month assessment. It would appear that the extended integrated
SHADE treatments produced superior gains (although non-significant) in poly-drug use over the longer term.

Despite an emphasis in treatment on harm reduction, abstinence rates were recorded at the conclusion of the study. No significant differences existed in the rates of abstinence at the 12-month follow-up assessment, however those in the clinician-delivered SHADE treatment reported much lower rates of abstinence from alcohol at 12-months relative to the other two conditions (9% versus 22-25% abstinence). This is an interesting result, given the non-significant observation that SHADE therapy – therapist participants reported a more consistent reduction in daily alcohol use over the course of the study.

Although abstinence rates for cannabis were identical at the 12-month follow-up for computer- and clinician-delivered SHADE treatments, clinician-delivered SHADE participants achieved and maintained the 57% abstinence rate from the post-treatment assessment, whereas computer- participants worked towards this rate over the follow-up period. For each of these substances, rates of abstinence among the control group participants were lower than the two SHADE treatment conditions (e.g. 24% abstinence from cannabis at 12-months). This trend was non-significant, but is suggestive of an associated between extended, integrated treatment and increased rates of abstinence.
5.2.5.3 Other outcomes

On several of the remaining outcome variables in Study 5, clinician- and computer-delivered SHADE treatments reported a similar pattern of improvement across the follow-up occasions, which was different from that observed in the control group, although these differences were not statistically significant. For example, general functioning (as measured by the GAF) improved for both SHADE treatment conditions across the follow-up occasions, while over the same time period, control group functioning reduced. This effect was significant for the main effect of time, but there was no significant impact of treatment on this observation.

Similarly, self-concept scores and perceptions of current life status (using the well-being ladder) significantly improved across the treatment groups over time, but there was not significant treatment effect. In general, scores on these variables improved at similar rates for both clinician- and computer-delivered SHADE participants from initial assessment through to post-treatment and six-month follow-up. Over the same time period, those in the brief intervention – control group did not report the same rate of improvement, and in the case of self-concept, reduced over the same time period. These apparent differences between treatment groups were not statistically significant. The computer-delivered group continued to report improvements in these measures at 12-month follow-up, in contrast to the clinician-delivered group, which reported similarly reduced self-concept and general well-being scores as that reported by the control group participants. Again, these observations were not statistically significant.
In a similar pattern to BDI-II and DAS scores, total scores on state anxiety decreased across the follow-up period for the whole sample. A statistically non-significant trend did suggest that this decrease occurred more quickly for people in the SHADE therapy – therapist condition and the brief intervention – control group relative to the SHADE therapy – computer participants. Again, these non-significant differences had disappeared by the 12-month follow-up assessment, with all three groups reporting similar changes in state anxiety scores at this occasion. Taken together, these results suggest that, although computer-delivered therapy participants eventually make equivalent changes on several dimensions of symptomatology, face-to-face therapy, and in some cases a brief intervention can produce these gains over a shorter period of time.

5.2.5.4 Limitations

Several limitations exist with Study 5 that are worthy of mention. The observations reported above, relating to the patterns of change observed across several key outcomes as a function of treatment allocation, did not reach statistical significance and should be considered with caution. The small sample size of the current study did mean that power to detect differences between treatment groups was small (power calculations were as low as 0.01 for some time X treatment interactions), and replication of Study 5 is required with a larger sample size of participants to further explore these observations.

It is also possible that the patterns of change associated with the study are due to a high level of motivation for change among the self-referred study participants, and therefore
may not accurately represent the treatment attendance and outcomes among a less-motivated sample. At entry to the study, between 67%-75% of people identified themselves as being in the pre-contemplation or contemplation stages of change for their alcohol- or cannabis use (approximately 50% in contemplation), and is similar to the stages of change reported among people with depression across the different research samples recruited for Studies 1-4. Given that people with comorbid depression and AOD use problems are not ordinarily located within treatment services (Kavanagh et al., 2000), it may be that these Study 5 participants do at least partly represent the group of people with this comorbidity within the community.

Finally, primacy of depression or AOD use was not established for this study, although all participants met criteria for major depressive disorders at some point in their lives, indicating that depression had been primary at some stage. However, this was not clear for their current depressive episode. Although age at onset of first depressive symptoms was measured for the study respondents, the age at which initiation to regular AOD use was not. Not establishing between primary/secondary diagnoses of depression may cause problems for proponents of these models of comorbidity, which suggest treatment of the primary condition will result in resolution of the second condition. Considering the evidence from Studies 3 and 4 that significant residual depression continues to exist following substance use treatment, the extreme difficulties in determining the primacy of conditions that may have been present for a long period of time, and the finding in Study 5 that changes in depression were not associated with changes in AOD use at any follow-up occasion, it is unlikely that the
reduction in outcomes for depression and AOD use reported above are solely related to successful treatment of a primary condition.

Future replications of this study would need to consider a control group that matches for therapist contact, rather than offering a single 60-minute intervention. This may help to determine the extent to which the patterns reported above were attributable to the treatment strategies and orientation, as opposed to increased therapist contact.

Notwithstanding these limitations, the results of Study 5 show promise for the benefits of integrated psychological treatment for depression and AOD use comorbidity, and is worthy of further exploration.

5.2.5.5 Discussion of existing research

Very little previous research has been conducted on the benefits of integrated psychological treatment, targeting both mental health and substance use problems, among people with comorbidity, especially depression and comorbid substance use problems. Daley et al. (1998) recruited 23 people with comorbid depression and cocaine dependence, and randomised participants to receive motivational interviewing or treatment as usual in conjunction with antidepressant medication across the treatment conditions. In line with the results of Study 5, Daley et al. (1998) reported that participants who received the motivational intervention reported greater abstinence rates at 90-day follow-up than did the control group, and a
decrease in the severity of depressive symptoms over the same time period. These
differences were not maintained at the 12-month follow-up.

Table 5.30 compares the Study 5 results with those obtained in the only other study
to examine integrated treatment for depression and substance use comorbidity (i.e.
Brown, Evans, Miller, Burgess, & Mueller, 1997).

Table 5.30  Comparison of changes in key outcome measures between the Study 5
participants, those in the Brown et al. (1997) study of simultaneous
treatment for depression and alcohol use problems and Study 4
participants who received a single-focussed AOD treatment.

<table>
<thead>
<tr>
<th>Changes Relative to Initial Assessment</th>
<th>Post-treatment (19 days post-initial)</th>
<th>Three-months post-initial</th>
<th>Six-months post-initial</th>
<th>12-months post-initial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BDI-II scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown et al. CBT-D</td>
<td>12.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Brown et al. Control</td>
<td>9.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Study 4 – Treatment</td>
<td>-</td>
<td>10.28</td>
<td>14.00</td>
<td>7.45</td>
</tr>
<tr>
<td>Study 4 – Control</td>
<td>-</td>
<td>12.77</td>
<td>13.24</td>
<td>11.39</td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>-</td>
<td>21.87</td>
<td>19.45</td>
<td>14.56</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>-</td>
<td>11.48</td>
<td>11.92</td>
<td>14.92</td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>-</td>
<td>8.91</td>
<td>4.57</td>
<td>8.1</td>
</tr>
<tr>
<td><strong>Daily drinking levels</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Brown et al. CBT-D</td>
<td>-</td>
<td>7.98</td>
<td>7.84</td>
<td>-</td>
</tr>
<tr>
<td>Brown et al. Control</td>
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<td>7.27</td>
<td>3.24</td>
<td>-</td>
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<tr>
<td>Study 4 – Treatment</td>
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<tr>
<td>Study 4 – Control</td>
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<td>4.94</td>
<td>6.26</td>
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<td>5.98</td>
<td>7.11</td>
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<tr>
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<td>0.95</td>
<td>3.21</td>
</tr>
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<td>Brief Intervention – Control</td>
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<td>3.39</td>
<td>1.77</td>
<td>4.15</td>
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<tr>
<td><strong>Abstinence rates</strong></td>
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<tr>
<td>Brown et al. CBT-D</td>
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<td>-</td>
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<tr>
<td>Brown et al. Control</td>
<td>-</td>
<td>33</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>Study 4 – Treatment</td>
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<td>12</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Study 4 – Control</td>
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<td>18</td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
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<tr>
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<td>-</td>
<td>17</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>-</td>
<td>29</td>
<td>19</td>
<td>24</td>
</tr>
</tbody>
</table>

* Reports actual abstinence rates at each assessment, not changes in abstinence rates from initial assessment
In addition, Table 5.30 summarises the results of Study 4 for those participants meeting criteria for comorbid depression and hazardous alcohol consumption, following a single-focussed treatment for AOD use.

Brown et al. (1997) offered simultaneous CBT treatment for depression to a random sample of people with alcohol use problems who were undergoing inpatient treatment for their problematic alcohol use (n=35). Participants who received the additional CBT for depression (CBT-D) reported a 12-point reduction in BDI-II scores between initial and post-treatment assessments (19 days later), while control group participants (who received a group relaxation treatment with equivalent clinician contact) reported a BDI-II reduction of 9.6 over the same time period. In a similar result to Study 5, this reduction in depressive symptoms was significant over time, but not according to treatment allocation.

Participants in Study 5, who were allocated to the clinician-delivered treatment, reported a 22-point decrease in BDI-II scores between initial and three-month/post-treatment assessments, with computer-delivered SHADE participants and those in the control group reporting reductions over the same time period of 11.48 and 8.91 respectively. Reductions in depression reported by Study 4 participants (AOD treatment only) were comparable to those reported by the computer-delivered participants at three- and six-month follow-up, however both the treatment and control groups in Study 4 reported higher reductions in BDI-II scores at these timepoints than did the control group in Study 5.
At the end of the 12-month follow-up period in Study 5, clinician- and computer-delivered participants reported a 15-point reduction in BDI-II scores, elevated in comparison to the Brown et al. (1997) treatment group and the Study 4 AOD treatment and control group participants. Study 5 control group participants were slightly less improved on depression at 12-months than were those in the Brown et al. (1997) control group at post-treatment assessment (8.1 versus 9.6 reduction) and Study 4 controls at 12-month follow-up. However, Study 5 controls had much less therapist contact than did the Brown et al. (1997) controls who had simultaneous group treatment for alcohol use and a group relaxation treatment matched for clinician time with the active CBT-D treatment condition.

In consideration of the results of these three studies, clinician- and computer-delivered SHADE may offer a promising alternative to the more resource intensive Brown et al. (1997) treatment, and may produce superior results for depression over the longer term. This is also true in comparison to the Study 4 AOD treatment group, whose initial improvements in depression were not maintained over the longer term. Further, the brief intervention – control treatment in Study 5 may offer a similar benefit for depression as did the Brown et al. (1997) group alcohol and relaxation treatments, using arguably less clinician and other resources to achieve similar results over a longer follow-up period. This also appears true for those control (no treatment) participants in Study 4, who reported and maintained similar improvements in depression to both studies over a 12-month period.
As indicated in Table 5.30, the reduction in the number of daily drinks in the Brown et al. (1997) study for those engaged in the CBT-D and alcohol treatments was superior at the six-month assessment compared to the relaxation control group counterparts. In comparison, the relaxation control participants in Brown et al. (1997) reported similar reductions to CBT-D participants at three-months, but this was not maintained over the follow-up period. This reduction may be due to the intensive alcohol detoxification and partial inpatient rehabilitation program in which all Brown et al. (1997) clients participated, and perhaps suggests an additional benefit for longer-term drinking outcomes of the CBT-D adjunctive treatment. Those in the clinician-delivered SHADE treatment also reported similar reductions in daily drinking levels as those in the CBT-D condition, which were still evident at the 12-month follow-up assessment. Computer-delivered and control treatment participants reported around half the reduction in daily drinking levels at three-month follow-up, and even less at six- and 12-month assessments. At the six- and 12-month assessments, those in the computer-delivered and control conditions in Study 5 were drinking at a similar rate to those in the Brown et al. (1997) relaxation control group, although that they had not received the same intensity of inpatient alcohol treatment, nor the equivalent in clinician contact.

Of interest is the reduction in alcohol consumption reported by control group participants in Study 4, whose level of reduction in alcohol use at each assessment matched that of the SHADE therapy – therapist condition. In contrast, rates of reduction in the Study 4 treatment group were less than that reported by the Study 5 and Brown et al. (1997) groups at three- and 12-month follow-up. For Study 4
controls, alcohol consumption at the initial assessment was, on average, two standard drinks higher than for those in the Study 4 treatment group, but was comparable to the level reported by Study 5 participants at entry to the study. The Study 4 sample was different from the other study populations in that participants also had a psychotic disorder, and were engaged in mental health treatment at entry to the study (medication, hospitalisation, case management etc.). This additional input may have contributed to these outcomes.

Based on the results of these studies, it is unclear why those in the CBT-D and clinician-delivered SHADE therapy groups reported lower levels of alcohol use, particularly given the computer-delivered SHADE group arguably received a similar input of CBT and motivational interviewing strategies for depression and alcohol use, and Study 4 treatment participants received treatment targeted at alcohol use of a similar nature. It may be that the additional clinician contacts coupled with the additional focus on depression and alcohol use comorbidity were the key components in this seemingly improved result. Why this might be the case is not clear, and certainly more research to test these issues, at least for alcohol and depression comorbidity appears warranted. Alternatively, at least from the perspective of Study 5, the poorer performance of the computer-delivered SHADE treatment group may be due an artefact of the available data. That is, closer inspection of the computer-delivered participants at six-months reveals that two participants reported extremely high levels of alcohol use compared to the rest of the sample (i.e. 25-28 standard drinks per day in the month prior to survey), and only completed five of the possible ten treatment sessions. Given the small sample size for Study 5 participants with
hazardous alcohol use in this treatment condition (n=13) the influence of these two outliers may have affected this result. Adding further weight to this suggestion is the observation that AUDIT total scores, which screen for hazardous patterns of use of alcohol over a longer time period, decreased for computer-delivered group over the follow-up period, more so than did scores in the other two treatment conditions. Perhaps this indicates some benefit of the computer-delivered SHADE treatment for depression and alcohol users for both of these outcomes.

Abstinence rates in the Brown et al. (1997) study were higher at each follow-up occasion for the CBT-D and alcohol treatment group compared to all other treatments across this study, Study 4 and Study 5. Relaxation controls in Brown et al. (1997) and all treatments in Study 5 reported similar rates of abstinence across the follow-up period, and these were higher than the abstinence rates reported by Study 4 treatment and control participants. This could be related to the content of treatment in Studies 4 and 5, which emphasised a harm reduction approach to AOD use, as opposed to advocating for a goal of complete abstinence from alcohol. Study 5 results also indicated that non-abstinence did not necessarily impact on depression scores, given the high levels of reduction in symptoms over time, and the interesting finding that changes in alcohol use were not significantly associated with changes in depression over the course of the study.

It is interesting that reductions in cannabis use in Study 5 did not mirror those for alcohol use across the three treatment conditions. Participants in the computer-delivered treatment reported similar reductions in cannabis use over the entire follow-
up period as those in the clinician-delivered SHADE therapy or the order of six-nine use occasions per day. In contrast, participants in Study 4 (AOD treatment only) did not make similar reductions in cannabis use, and cannabis use returned to pre-treatment levels by the six-month follow-up assessment across treatment and control groups. When abstinence rates were considered, computer-delivered SHADE participants reported over twice the rate of abstinence than their counterparts in clinician-delivered treatment (not statistically significant). Those in the brief intervention – control condition, reported a short-term reduction in cannabis use at post-treatment, but this did not continue over the longer term, and a 0% abstinence rate was found for cannabis among this group at 12-months. It should be noted that these differences were not statistically significant. The reason for this trend is unclear based.

It may be that the computer-delivered treatment, being more self-directed in nature than the clinician-delivered equivalent, encouraged the cannabis users to think more carefully about their own goals for cannabis change that were relevant to and achievable for them. This may have motivated them into implementing these changes, as evidenced by the majority of this group (46%) reporting action stages of change at the 12-month assessment, in contrast to participants in the other conditions mostly reporting contemplation.

The results of Study 5 confirmed the previous research suggestions that people with comorbid depression and AOD problems are not able to access treatment within mental health and substance use treatment services (Arendt & Munk-Jorgenson, 2004; Kavanagh et al., 2000; Westermeyer, Eames, & Nugent, 1998; Williams, 1999).
Referrals to the SHADE study were sought from a range of sources, including treatment services, general practices, and the general community via media advertisements. Advertising through the print and television media was implemented approximately 12-months into the recruitment phase of the SHADE study, following poor referral rates from the available mental health, primary care and substance use treatment services. At the end of the recruitment phase, just 5% of the final sample was sourced from treatment services, while the remainder self-referred from the general community following a media campaign. Treatment participation rates remained low throughout the course of the SHADE study, with no significant changes in treatment utilisation detected over time, nor as a function of treatment allocation. It seems that integrated treatment for depression and substance use problems was useful, potentially filling an important gap in clinical services, at least in the Hunter Region of New South Wales.

5.3 SUMMARY AND CONCLUSIONS
Study 5 is the first study of its kind to develop and evaluate the efficacy of a clinically integrated psychological intervention for comorbid depression and AOD use problems. While the results of this study are encouraging, clearly more work is required in this important area.

In summary, the results of Study 5 suggest that an integrated psychological treatment, which simultaneously targets depression and problematic AOD use, produces potentially important gains across several depressive and substance use domains that seem to be maintained over time. This is regardless of the mode of delivery of
treatment, via a therapist or computer-based program. Due to the small sample size, these patterns of change did not reach statistical significance, when compared to a brief intervention. In comparison to the results of Studies 3 and 4, which provided substance use treatment to people with comorbid depression (and other conditions), clinician- and computer-delivered SHADE therapy produced superior gains on depression (15-point reduction at 12-months compared to 7.45 in Study 4), alcohol use (3-7 point reduction in daily use at 12-months compared to 0.23 in Study 4 treatment group) and cannabis use (8-9 point reduction in daily use at 12-months compared to a return to baseline levels in Study 4) over time, although these changes were not statistically significant.

The results of Study 5 are in general support of the findings of Brown et al. (1997), which indicated the importance and benefit of simultaneously addressing depression when present during treatment for alcohol use disorders. It may be that an integrated therapy such as was offered in SHADE treatment, produces better outcomes for depression, and potentially alcohol use, over a longer period of time than did the simultaneous adjunctive CBT-D run alongside an intensive treatment for alcohol use problems (as per Brown et al., 1997).

It also seems that the brief intervention – control condition in Study 5 produced some improvements in depression and alcohol use that were similar to those reported in the Brown et al. (1997) relaxation control, with less clinician contact time, and no inpatient/intensive treatment phase for alcohol. The efficacy of the brief intervention for alcohol in this comorbid group has important implications for mental health and
primary care services who could offer this minimal intervention as a first-step in
treatment. Additional research with a larger sample size is required to further test these
possible benefits.

Equally, the clinician- and computer-delivered SHADE treatments may also be less
resource intensive than the CBT-D and alcohol treatment combination offered in the
Brown et al. (1997), which included partial inpatient treatment and detoxification for
alcohol. The efficacy of the computer-based SHADE treatment is of particular interest
in light of these particular issues, given this treatment used an average of 12 minutes of
face-to-face clinician time per session compared with around 60 minutes in clinician-
delivered SHADE therapy. Further, the computer-delivered treatment potentially
produced enhanced treatment outcomes for cannabis use and abstinence, making it an
important tool for non-AOD specialists treating people with this comorbidity.

Closer examination of the similarities and differences between the computer- and
clinician-delivered SHADE therapies is required to determine whether they can be
considered equivalent treatment approaches in addressing depression and substance
use comorbidities. These important issues will be tested and discussed in the next
chapter.
Chapter 6

Improving Access to Effective Treatments for Comorbid Depression and Alcohol/Other Drug Use Problems

Further Analysis of Computer- versus Therapist-Delivered Treatments

6.0 Abstract

This chapter explores the similarities between the clinician- and computer-delivered treatments in Study 5 in more detail. The results of this comparison suggest that computer-delivered integrated treatment is associated with similar rates of improvement as an equivalent therapist-delivered treatment on depression scores, risky drinking patterns, hazardous use of substances, poly-drug use, levels of daily cannabis use, suicidality, treatment retention and therapeutic alliance. In addition, a brief (one-session) integrated intervention produced important short-term improvements on the above outcomes that were equivalent to an extended intervention. The implications of these results, in terms of the utility of computer-based therapy and potential for increased access to evidenced-based psychological treatment, are discussed.
The results of Study 5 indicated that an integrated psychological treatment for depression and substance use comorbidity was associated with important improvements in a range of depression, alcohol/other drug (AOD) use, and quality of life outcomes over time. Clinician-delivered treatment was directly compared with computer-based treatment, and results indicated no significant differences existed between the two treatment modalities in improvement in outcomes at the 12-month follow-up assessment.

Very little previous research has examined the use of alternative modes of delivery of psychological treatment. Osgood-Hynes and others developed a computer-aided telephone system for 41 people with mild-moderate depression, which taught them the techniques of cognitive restructuring, assertive communication and increasing pleasant activities (Osgood-Hynes et al., 1998). The system was also supplemented with an introductory videotape that focussed on psychoeducation about depression, and instruction booklets that detailed homework exercises, troubleshooting strategies and how to use the telephone system. Over a 12-week period, results indicated that those participants who completed the program reported upwards of 40% reductions in depressive symptomatology (Osgood-Hynes et al., 1998). This study, although promising, did not test the duration of these treatment effects beyond the 12-week follow-up, and offered no alternative control group for comparison.
In a large scale randomised controlled trial conducted in the UK, Proudfoot and colleagues (2004) compared an eight-session computerised CBT with treatment as usual among 274 people with depression or anxiety-related conditions. Results indicated that the computerised CBT (‘Beating the Blues’) produced significant improvements in depression and anxiety symptoms, significant reductions in negative attributions and significant increases in positive thinking relative to the control condition. These differences were evident at the post-treatment assessment, and were maintained at six-month follow-up. Average satisfaction with treatment was over one and a half times higher in the computer group relative to controls who received treatment as usual (Proudfoot et al., 2004). Attrition rates were comparable to those encountered in face-to-face therapies, with around 35% of computer participants not completing their full complement of sessions. This study provides important evidence about the acceptability and efficacy of computerised treatments for anxiety and depression, although computer treatment was not compared with an equivalent therapist intervention, and people with AOD use problems were excluded, along with those who had been taking antidepressant/anxiolytic medication for six months or more prior to referral to the study.

In Australia, Christensen, Griffiths and Jorm (2004) recruited 525 people with significant levels of distress (as measured by elevated scores on the Kessler psychological distress scale) to a study of Internet-based CBT for depression. Following recruitment, participants were randomised to receive the six-session Internet-based CBT for depression (MoodGYM), access to Internet-based education
about depression (BluePages) or a six-week control condition which comprised weekly phonecalls from the research team to discuss various lifestyle factors. At six-weeks following completion of treatment, participants in the MoodGYM treatment reported significantly reduced levels of dysfunctional attitudes relative to controls (Christensen et al., 2004). BluePages (education) produced equivalent reductions in depressive symptoms to the MoodGYM CBT program. Attrition rates were significantly higher for the MoodGYM condition relative to the other conditions, with around 25% of people not completing their maximum potential number of sessions. Longer-term follow-up is required to test these effects over time. Nevertheless these results are particularly encouraging, in terms of the potential effectiveness of computerised modes of delivery of psychological treatment for depression.

In the AOD field, one small-scale study has been conducted using computer-based therapy among people with problematic alcohol use in the US. An eight-session Windows-based computer intervention was developed and trialed among 40 problem drinkers. Although the study lacked an alternative treatment control condition, the intervention resulted in clinically significant reductions in alcohol consumption that were maintained at 12-month follow-up (Hester & Delaney, 1997). The participants, including one-third who reported little or no prior computing experience, rated the intervention as “acceptable”.

In Australia, Kypri and colleagues developed and tested an Internet-based brief (15 minute) intervention for alcohol misuse among 104 university students who screened
positive for harmful use of alcohol (Kypri et al., 2004). Results at the six-week follow-up indicated that the Internet-intervention group reported significant reductions in alcohol consumption and personal problems relative to a control group who received a self-help education leaflet. At six-months, differences in alcohol consumption between the groups had disappeared. However, the intervention group maintained improvements in personal problems relative to controls.

Similarly, Cunningham and colleagues examined the impact of providing computerised, personalised feedback about risky drinking behaviours to 214 study volunteers (Cunningham, Humphreys, & Koski-Jannes, 2000). Results indicated that the program was acceptable to participants, who accessed the website over 500 times throughout the course of the study. This result awaits further validation.

Linke, Brown and Wallace (2004) developed a six-session Internet-based CBT program which aimed to reduce levels of harmful alcohol use for 1319 participants. Attrition was high with only 815 (62%) completing one treatment session, and 79 (6%) completing all six sessions. Even so, those who completed the program found it met their needs and found the program helpful. Follow-up drinking data were available for 53 people and indicated that drinking was reduced by an average of 10 standard units of alcohol between pre- and post-treatment.(Linke et al., 2004). In addition to high attrition rates in this study, similar methodological issues affect this study as in those described above.
Only one small study has previously compared responses to a computerised treatment with an equivalent therapist-delivered control group. In this study, 36 people with moderate depression (Beck Depression Inventory scores above 16) were randomised to receive six-sessions of CBT delivered via computer, six-sessions of therapist-delivered treatment, or a wait-list control group (Selmi, Klein, Greist, Sorrell, & Erdman, 1990). Results indicated no differences existed between the computer-delivered and therapist-delivered interventions at two-month follow-up, and both treatment groups reported significantly greater reductions in depressive symptoms relative to controls. Participants had little prior experience with computers. Despite the small sample and short follow-up period, these results are encouraging in terms of the potential efficacy of computerised interventions. Study 6 provides a detailed comparison of outcomes for Study 5 participants who received computerised versus clinician-delivered psychological treatment for depression and comorbid AOD use problems.

### 6.1 Study 6

**A COMPARISON OF COMPUTERISED- AND CLINICIAN-DELIVERED TREATMENT FOR COEXISTING DEPRESSION AND ALCOHOL/OFFER DRUG USE PROBLEMS**

#### 6.1.1 Introduction

As described in Study 5 (Chapter 5), the SHADE study commenced in 2002, and recruited participants with comorbid depression and substance use problems to a study of integrated psychological treatment. Study 5 (Chapter 5) revealed that, although the study sample improved as a group across many of the AOD use and depression-based
outcomes over the follow-up period, this reduction was not moderated by a treatment effect. However, given the small sample size of the completers allocated to receive clinician-delivered SHADE therapy (n=23) and computer-delivered SHADE therapy (n=23), a non-significant difference in outcome profiles is not regarded as sufficient to assume that the two treatment modalities are equivalent. Consequently, the following conditions are suggested as alternative criteria on which clinician-delivered and computer-delivered SHADE treatments could be considered equal:

a. Equivalent rates of treatment participation and retention;

b. Equivalent outcome profiles for the primary outcome measures of depression and AOD use, as suggested by effect size differences between treatments less than 0.25 of a standard deviation;

c. Equivalent rates of suicidality; and

d. Equivalent perceptions of clinician- and participant-rated therapeutic alliance.

These outcomes will be analysed according to the above criteria for the SHADE therapy – therapist and - computer conditions, and also for the brief intervention – control condition where available.

6.1.3 Methods

Please refer to Study 5, Chapter 5 for a detailed description of the study methods and procedures.
6.1.3.5  **Statistical analysis**

Data were analysed using the Statistical Package for Social Sciences (SPSS) for Windows, Version 12.0.

The characteristics of the sample at baseline assessment are reported in Study 5 (Chapter 5) and will not be repeated here. The following analyses are conducted on the sample of participants who completed all phases of assessment (initial, three-, six- and 12-month follow-up). Please refer to Study 5 for a comparison of the characteristics of those people completing all assessments (“completers”) with those who did not (“non-completers”).

### 6.1.3.5.1 Rates of participation

Continuity-corrected chi-squared analysis compared the rates of treatment attendance for people in the clinician-delivered and computer-delivered versions of SHADE therapy. That is, participants in these treatments were coded categorically according to whether or not they attended the full complement of 10 sessions to which they were allocated. In addition, oneway analysis of variance (ANOVA) compared the percentage of treatment sessions attended for these two treatment modalities.

### 6.1.3.5.1 Outcome profiles

The units of improvement for each treatment group were calculated at each follow-up assessment relative to baseline for each of the key outcome variables. Differences in
improvement were calculated between treatment conditions, and compared with a reference standard deviation for each outcome variable, which was calculated from the pooled responses provided by all participants in Study 5 across the follow-up occasions. If the difference in improvement between treatment conditions was less than one-quarter of the reference standard deviation for that outcome variable, the treatment conditions were considered equivalent. The three treatment conditions (therapist-delivered SHADE, computer-delivered SHADE and brief intervention – control) were included in this comparison.

6.1.3.5.1.1 Depression

Improvements in the Beck Depression Inventory II (BDI-II) and BDI-II Fast Screen total scores were compared at each follow-up assessment for participants in each treatment condition (brief intervention – control, clinician- and computer-delivered SHADE therapies) relative to baseline. This comparison was also made for total scores on the DAS.

6.1.3.5.1.2 Alcohol/Other Drug Use

Differences at each assessment timepoint were considered for those allocated to the brief intervention – control condition, along with the clinician- and computer-delivered SHADE therapies for the following AOD use variables: poly-drug use and scores on an aggregate index of hazardous use of ten substances (including alcohol and tobacco). For those people using alcohol above a hazardous threshold at the initial assessment
(i.e. consumption above recommended safe drinking levels as suggested by the National Health Medical Research Council; equates to 4 standard drinks per day for men or 2 standard drinks per day for women with fewer than 2 alcohol free days per week), the following variables were compared at each follow-up assessment: levels of alcohol use (OTI q-scores) and AUDIT total scores. For participants using cannabis more than once weekly at entry to the study (hazardous use), differences were additionally compared for the two treatment modalities on levels of cannabis use (OTI q-scores) across the assessment occasions.

6.1.3.5.3 Suicidality

Differences in Beck Hopelessness Scale (BHS) scores were compared across the three treatment modalities and follow-up assessment timepoints relative to baseline. In addition, the three treatment groups were compared on their responses to the BDI-II question related to suicidality across time using repeated measures ANOVA. Scheffé follow-up tests were conducted on any significant interactions in this analysis.

6.1.3.5.4 Therapeutic alliance

After sessions one (all participants), five and ten, participants and therapists each completed a measure of therapeutic alliance (Agnew-Davies, Stiles, Hardy, Barkham, & Shapiro, 1998). Five subscales were calculated from participant and therapist responses (bond, partnership, confidence, openness, and client initiative). One-way ANOVAs compared scores on these subscales at each administration with treatment
allocation. Bonferroni post-hoc analyses more closely examined any significant differences in these scores.

6.1.4 Results

6.1.4.1 Rates of participation

Of the 46 participants in the two SHADE therapy conditions, 65% (n=30) attended the full complement of ten SHADE therapy sessions, whether delivered by computer or a clinician. Within these treatment subgroups, 78% (n=18) clinician-delivered SHADE therapy participants attended all their allocated sessions, compared with 52% (n=12) within the computer-delivered SHADE therapy condition. Continuity-corrected chi-squared analysis indicated that this difference in treatment completion between the two modalities was not statistically significant ($\chi^2_1=2.396$, $p=0.122$).

In addition, the clinician-delivered SHADE therapy group attended 87% of their treatment sessions as part of the study ($\overline{M}=86.96$, $S.D.=27.38$, range 10%-100%). Those allocated to the computer-delivered SHADE treatment attended an average of 76% of their allotted treatment sessions ($\overline{M}=76.09$, $S.D.=27.72$, range=20%-100%). In other words, clinician-delivered SHADE participants attended an average of nine treatment sessions, compared with their counterparts who attended an average of eight sessions. Oneway ANOVA revealed that no significant differences existed in the proportion of treatment sessions attended for these two treatment modalities ($F(1,44)=1.726$, $p=0.196$).
6.1.4.2 Outcome profiles

6.1.4.2.2 Depression

BDI-II scores reduced for the sample as a whole across the assessment time periods (see Study 5, Chapter 5). As indicated in Table 6.1, differences in BDI-II scores existed at each assessment timepoint according to the type of treatment study participants received.

Table 6.1 Differences in BDI-II total scores for participants in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion*</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>9.90</td>
<td>4.57</td>
<td>8.10</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>21.87</td>
<td>19.48</td>
<td>14.57</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>11.48</td>
<td>11.91</td>
<td>14.91</td>
</tr>
</tbody>
</table>

*Differences at each follow-up assessment are relative to baseline assessment scores

In general, participants in the SHADE therapy – therapist and - computer conditions reported superior improvement in the BDI-II scores over time, compared to the brief intervention – control condition. Relative to a reference pooled standard deviation of 12.98 units, differences existed between the SHADE therapy – therapist and brief intervention groups of the order of 0.92 of a standard deviation at three-months, 1.15 units at six-month follow-up and 0.5 units at the 12-month follow-up assessment (differences between treatment groups were: three-months=11.97, six-months=14.91,
12-months=6.47, see Table 6.1). Using the same reference standard deviation, differences between SHADE therapy – computer and the brief intervention were 0.13 standard deviations at three-months, 0.57 units at six-months, and 0.52 units at the 12-month follow-up assessment (raw difference in BDI-II scores: three-months=1.58, six-months=7.34, 12-months=6.81, as per Table 6.1).

SHADE therapy – therapist participants also reported higher levels of improvement in BDI-II scores at three- and six-month follow-up assessments relative to the SHADE therapy – computer group. These differences were 0.8 standard deviations at three-months and 0.58 units six-month follow-up (raw difference in BDI-II: three-months=10.39, six-months=7.57). At the 12-month follow-up assessment, no detectable difference existed in improvement in BDI-II scores between the two SHADE therapy groups (raw difference at 12-months=0.34, 0.03 standard deviation units).

Total scores on the DAS decreased for the sample of participants as a whole over time (see Study 5, Chapter 5). As indicated in Table 6.2, differences between the individual treatment groups existed at each follow-up occasion on the DAS, although these differences were not statistically significant (as per Study 5, Chapter 5). Brief intervention – control participants and those allocated to the SHADE therapy – computer reported similar rates of improvement on DAS total scores across the follow-up period. Using a reference standard deviation of 33.16 (taken from the pooled DAS total scores provided by all study participants across assessment occasions), the
difference between the computer- and brief intervention participants was 0.21 standard
deviation units at three-months, (actual DAS difference), 0.19 units at six-months
(DAS difference=6.26) and 0.17 units at the 12-month assessment (DAS
difference=5.51).

Table 6.2 Differences in DAS total scores for participants in a study of treatment for
coeexisting depression and substance use disorders, according to treatment
allocation (n=67).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion*</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Improvement</td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>14.62</td>
<td>4.48</td>
<td>11.14</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>32.43</td>
<td>31.18</td>
<td>28.78</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>7.61</td>
<td>10.74</td>
<td>16.65</td>
</tr>
</tbody>
</table>

Differences at each follow-up assessment are relative to baseline assessment scores

SHADE therapy – therapist participants reported greater reductions in DAS total
scores relative to both the computer- and brief intervention groups. This was true for
each follow-up occasion. That is, using the same reference standard deviation of
33.16, differences between therapist-delivered and brief intervention participants was
of the order of 0.54 standard deviation units at three-months, 0.81 units at six-months
and 0.53 standard deviation units at 12-month assessment (raw DAS differences: three-
months=17.81, six-months=26.70, 12-months=17.64, see Table 6.2). Similarly,
differences between the therapist- and computer-delivered SHADE participants were
0.75 standard deviation units at three-month follow-up (raw DAS difference=24.82),
0.62 standard deviation units at six-months (raw DAS difference=20.44), but had
reduced to 0.37 standard deviation units by the 12-month follow-up (raw DAS difference=12.13, see Table 6.2).

6.1.4.2.2 Alcohol/other drug use

6.1.4.2.1.1 Alcohol use

Table 6.3 displays the differences daily levels of alcohol use at each follow-up assessment timepoint for people who met criteria for hazardous use of alcohol at the initial assessment, according to SHADE treatment allocation.

Table 6.3 Differences in daily alcohol use (OTI q-scores) in a study of treatment for coexisting depression and substance use disorders. Note that this only includes those people meeting a minimum threshold for hazardous alcohol use at entry to the study (n=41).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Intervention – Control</td>
<td>3.39</td>
<td>1.77</td>
<td>4.15</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>6.02</td>
<td>5.98</td>
<td>7.11</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>3.52</td>
<td>0.95</td>
<td>3.20</td>
</tr>
</tbody>
</table>

*Differences at each follow-up assessment are relative to baseline assessment scores*

Daily alcohol use varied over the follow-up assessment period, relative to levels reported by participants at the initial assessment (as per Study 5, Chapter 5). Using a reference standard deviation of 5.08, differences in improvement in daily drinking levels between the SHADE therapy – therapist and brief intervention groups varied between 0.52 standard deviation units at three-months (actual difference=2.63 standard drinks), through to 0.83 units at six-months (4.21 standard drinks) and 0.58 units at 12-
months follow-up assessment (2.96 standard drinks). This pattern of differences was also observed for the SHADE therapy – computer condition relative to the therapist-delivered SHADE therapy equivalent. That is, differences between these two treatment programs in daily alcohol use levels were 2.5 standard drinks at three-months (0.49 standard deviation units), 5.03 standard drinks at six-months (0.99 standard deviation units) and 3.91 standard drinks at 12-month assessment (0.77 standard deviation units, see Table 6.3). Further, no discernable difference in daily alcohol use scores was detected between the computer- and brief-intervention participants, with differences between these groups of the order of 0.03 standard deviation units at three-month assessment, 0.16 units at six-months, and 0.19 units at the 12-months follow-up assessment.

Table 6.4 displays the differences in AUDIT total scores across the follow-up period for participants allocated to each treatment condition. Scores on the AUDIT indicate the level of hazardous drinking engaged in by respondents over the preceding assessment period.

Table 6.4 Differences in AUDIT total scores in a study of treatment for coexisting depression and substance use disorders. Note that this only includes those people meeting a minimum threshold for hazardous alcohol use at entry to the study (n=41).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>5.64</td>
<td>5.91</td>
<td>5.83</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>8.46</td>
<td>7.60</td>
<td>5.00</td>
</tr>
<tr>
<td>SHADE therapy – computer</td>
<td>6.23</td>
<td>6.69</td>
<td>8.77</td>
</tr>
</tbody>
</table>

Differences at each follow-up assessment are relative to baseline assessment scores.
Using a reference standard deviation of 9.82 (calculated from the pooled AUDIT total scores for all participants across all assessment occasions), SHADE therapy – therapist participants reported equivalent reductions in AUDIT totals relative to the brief intervention group at three-months (0.29 standard deviation difference), six-months (0.17 standard deviation difference) and 12-month follow-up assessments (0.08 standard deviation difference). Similarly, brief intervention and SHADE therapy – computer groups were equivalent on AUDIT total scores at the three-month (0.06 standard deviation difference) and six-month assessments (0.08 standard deviation difference). At 12-month follow-up, computer-delivered SHADE participants reported a superior improvement in AUDIT scores relative to the initial assessment and compared with their brief intervention – control counterparts (0.30 standard deviation units).

SHADE therapy – therapist and SHADE therapy – computer participants also reported equivalent reductions in AUDIT scores over three- and six-month assessments relative to baseline scores (0.23 standard deviation difference, and 0.09 unit difference respectively, see Table 6.4 for actual difference scores). This changed at the 12-month follow-up assessment, with computer-allocated participants reported greater reductions in AUDIT scores relative to baseline totals, with the difference between treatment groups of the order of 0.38 standard deviation units (3.77 points actual difference in AUDIT total score).
6.1.4.2.1.2 Cannabis Use

As can be seen in Table 6.5, levels of daily cannabis use decreased over time across the treatment conditions (also see Study 5, Chapter 5). Using a reference standard deviation of 11.01, the difference in daily cannabis use between the SHADE therapy – therapist and brief intervention – control groups was of the order of 0.38 standard deviation units at three-months (4.15 daily use occasions), 0.61 standard deviation units at six-months (6.7 daily use occasions) and 0.79 units at 12-month follow-up assessment (8.71 daily use occasions). This pattern of differences was also true for SHADE therapy – computer participants compared with the brief intervention – control condition. That is, differences between these treatment conditions was 4.18 daily use occasions at three-months (0.38 standard deviation units), 5.74 daily use occasions at six-months (0.52 standard deviation units) and 7.99 daily use occasions at the 12-month assessment (0.73 standard deviation units), indicating the computer-delivered therapy produced superior improvements in daily cannabis use over time relative to the control condition (see Table 6.5).

Table 6.5  Differences in cannabis use for participants in a study of treatment for coexisting depression and substance use disorders. Note that this only includes those people meeting a minimum threshold for hazardous cannabis use at entry to the study (n=43).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion*</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>1.98</td>
<td>1.22</td>
<td>0.60</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>6.13</td>
<td>7.92</td>
<td>9.31</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>6.16</td>
<td>6.96</td>
<td>8.59</td>
</tr>
</tbody>
</table>

*Differences at each follow-up assessment are relative to baseline assessment scores

385
Further, no detectable differences existed in daily cannabis use levels for the SHADE therapy – therapist and - computer conditions relative to the baseline measurement. This was true at three-month follow-up (difference of 0.03 daily use occasions or 0.003 standard deviation units), as well as the six-month (difference of 0.96 daily use occasions or 0.09 standard deviation units) and 12-month follow-up assessments (difference of 0.72 daily use occasions, or 0.07 standard deviation units).

### 6.1.4.2.1.3 Other Alcohol/Other Drug Use

Table 6.6 displays the difference in poly-drug use reported by participants in each of the treatment conditions at each of the follow-up assessments.

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>0.29</td>
<td>-0.43</td>
<td>0.00</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>0.52</td>
<td>0.61</td>
<td>0.61</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>0.17</td>
<td>0.22</td>
<td>0.35</td>
</tr>
</tbody>
</table>

*Differences at each follow-up assessment are relative to baseline assessment scores*

As can be seen in Table 6.6, poly-drug use did not tend to vary considerably over the study period. Using a reference standard deviation of 5.44, differences between SHADE therapy – therapist, SHADE therapy – computer and brief intervention groups ranged from a minimum of 0.02 standard deviation units through to a maximum of
0.19 standard deviation units across the follow-up assessments. This indicates that the three treatment conditions produced similar outcomes on this variable over the study period.

As indicated in Table 6.7 below, the number of days in the previous month participants reported hazardous use of up to ten substances improved over steadily over time for the clinician- and computer-delivered participants.

Table 6.7 Differences in hazardous use aggregate scores across ten substances for participants in a study of treatment for coexisting depression and substance use disorders (n=67).

<table>
<thead>
<tr>
<th></th>
<th>Follow-up Assessment Occasion*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3-months</td>
</tr>
<tr>
<td></td>
<td>Mean Improvement</td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>8.56</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>3.26</td>
</tr>
<tr>
<td>SHADE therapy – computer</td>
<td>18.67</td>
</tr>
</tbody>
</table>

Differences at each follow-up assessment are relative to baseline assessment scores

Using a reference standard deviation of 20.20, the difference between SHADE therapy – therapist and brief intervention – control participants was determined to be 0.26 standard deviation units at three-month assessment (5.3 hazardous use days), 0.73 units at six-months (14.84 hazardous use days) and 0.51 standard deviation units at the 12-month follow-up assessment (10.34 hazardous use days, see Table 6.7). Similarly, SHADE therapy – computer participants reported higher levels of improvement on hazardous use of substances, relative to the brief intervention – control participants. That is, at three- month assessment, differences of the order of 0.5 standard deviation
units was detected between these treatment groups (10.11 hazardous use days), and this increased to 0.84 units’ difference at six-months (17.06 hazardous use days) and 0.8 units of difference at the 12-month follow-up assessment (16.15 hazardous use days).

In addition, scores on this variable changed considerably more over time for participants in the SHADE therapy – computer group relative to their therapist-delivered SHADE counterparts. Again, using the reference standard deviation of 20.20 units, differences between SHADE therapy – computer and – therapist participants were of the order of 0.76 standard deviation at three-months (15.41 hazardous use days), 0.11 units at six-months (2.22 hazardous use days) and 0.29 standard deviation units at 12-month assessment (5.87 hazardous use days).

6.1.4.3 Suicidality

As indicated in Table 6.8, levels of hopelessness and suicidality, as measured by the BHS increased over the study period (see Study 5, Chapter 5). Using a reference standard deviation of 5.58, this deterioration in BHS scores over time was less for the brief intervention – control group, relative to the SHADE therapy – therapist and – computer participants at the three-month assessment (0.83 standard deviation difference and 0.37 standard deviation difference respectively, see Table 6.8). At six-month assessment, the brief intervention – control participants reported better BHS total scores than their SHADE therapy – therapist counterparts (0.47 standard deviation difference), but were similar to SHADE therapy – computer participants at
this follow-up timepoint (0.16 standard deviation difference). All three treatment
groups reported equivalent changes in BHS scores by the 12-month follow-up
assessment, with no discernable difference evident between the brief intervention –
control participants and the therapist-delivered (0.19 standard deviation difference) and
computer-delivered participants (0.11 standard deviation difference, see Table 6.8).

Table 6.8 Differences in BHS total scores for participants in a study of treatment for
coeexisting depression and substance use disorders (n=67).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>-0.48</td>
<td>-1.48</td>
<td>-3.14</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>-5.09</td>
<td>-4.09</td>
<td>-4.22</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>-2.52</td>
<td>-2.35</td>
<td>-3.78</td>
</tr>
</tbody>
</table>

* Differences at each follow-up assessment are relative to baseline assessment scores

Over the same follow-up period, participants in the SHADE therapy – computer
condition reported better outcomes on the BHS than did their SHADE therapy –
therapist counterparts at the three-month (0.46 standard deviation difference) and six-
month follow-up assessments (0.31 standard deviation difference). However, at the
12-month assessment, both SHADE treatment groups reported similar scores on this
measure (0.08 standard deviation difference, see Table 6.8).

Responses to the suicide question on the BDI-II score were additionally compared for
participants across the assessment occasions and according to treatment allocation.
This question asked participants to rate their current thoughts about suicide according
to the following response options: 0=I don’t have any thoughts of killing myself; 1=I have thoughts of killing myself, but I would not carry them out; 2=I would like to kill myself; and 3=I would kill myself if I had the chance. Table 6.9 displays the means and standard deviations of responses to this BDI-II question according to the treatment modalities, and as an additional index of current suicidal ideation at each assessment timepoint.

Table 6.9  Mean responses to the question relating to suicidal ideation on the BDI-II reported by participants in a study of treatment for coexisting depression and substance use disorders, according to treatment allocation (n=67).

<table>
<thead>
<tr>
<th>Treatment Allocation</th>
<th>Assessment Occasion</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial</td>
<td>3-months</td>
<td>6-months</td>
<td>12-months</td>
<td>3-months</td>
<td>6-months</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Brief Intervention - Control</td>
<td>0.76</td>
<td>0.63</td>
<td>0.71</td>
<td>0.72</td>
<td>0.62</td>
<td>0.87</td>
</tr>
<tr>
<td>SHADE therapy - therapist</td>
<td>0.78</td>
<td>0.52</td>
<td>0.30</td>
<td>0.56</td>
<td>0.30</td>
<td>0.47</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>0.65</td>
<td>0.94</td>
<td>0.52</td>
<td>0.73</td>
<td>0.52</td>
<td>0.79</td>
</tr>
</tbody>
</table>

As indicated in Table 6.9, responses to this item varied between participants reporting no current thoughts of suicide through to the occurrence of suicide ideation, but no intention of acting on these thoughts. Repeated measures ANOVA indicated that ratings on this BDI-II item decreased over time, particularly at six- and 12-month follow-up relative to baseline, although this trend was not statistically significant ($F(3,64)=3.103$, $p=0.028$). No significant differences existed between three treatment groups in terms of their responses to this BDI-II item over time ($F(6,64)=1.524$, $p=0.172$).
Table 6.10 displays the mean improvement on this BDI-II item over time, according to treatment allocation.

Table 6.10  Differences in responses to the question relating to suicidal ideation on the BDI-II for participants in a study of treatment for coexisting depression and substance use disorders (n=67).

<table>
<thead>
<tr>
<th>Follow-up Assessment Occasion</th>
<th>3-months</th>
<th>6-months</th>
<th>12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td>Mean Improvement</td>
<td></td>
</tr>
<tr>
<td>Brief Intervention – Control</td>
<td>0.05</td>
<td>0.14</td>
<td>0.29</td>
</tr>
<tr>
<td>SHADE therapy – therapist</td>
<td>0.48</td>
<td>0.48</td>
<td>0.17</td>
</tr>
<tr>
<td>SHADE therapy - computer</td>
<td>0.13</td>
<td>0.13</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Differences at each follow-up assessment are relative to baseline assessment scores.

Using a reference standard deviation of 0.70, the differences on this item about suicide ideation for the SHADE therapy – therapist and brief intervention – control groups was of the order of 0.61 standard deviation units at three-month follow-up, 0.49 units at six-months and 0.17 standard deviation units at the 12-month assessment (see Table 6.10 for actual differences). SHADE therapy – computer participants reported equivalent changes in suicide ideation BDI-II responses relative to the brief intervention – control group at the three-month (0.11 standard deviation difference), six-month (0.01 standard deviation difference) and 12-month follow-up assessments (0.01 standard deviation difference). Further, SHADE therapy – therapist participants reported greater improvements on this BDI-II item relative to SHADE therapy – computer participants at the three-month (0.50 standard deviation difference) and six-month (0.5 standard deviation units) assessments, and reported equivalent
improvements at the 12-month assessment (0.19 standard deviation difference, see Table 6.10).

6.1.4.4 Therapeutic alliance

Therapeutic alliance was rated by participants and therapists in both SHADE treatment conditions after sessions one, five and ten of SHADE therapy. Responses on the questionnaire were divided into four subscales: Confidence, Client Initiative, Openness and Bond. Table 6.11 displays the mean and standard deviations for each of these subscales, from both participant and clinician perspectives for each of the SHADE treatment conditions.

As indicated in Table 6.11, very few differences were evident in therapeutic alliance at sessions one, five and ten in SHADE therapy as a function of treatment modality. In addition, therapeutic alliance remained relatively constant over the course of the study period. At session five, participants in the computer-delivered SHADE treatment condition rated themselves significantly more highly on questions relating to client initiative than did their counterparts receiving clinician-delivered SHADE treatment ($F(1,28)=9.243, p=0.005$). This difference had disappeared by session 10 ($F(1,16)=2.476, p=0.136$). At these timepoints, a non-significant trend emerged indicating that clinicians additionally rated the client initiative of participants in the computer-delivered SHADE treatment higher than for those in the clinician-delivered treatment ($F(1,29)=6.259, p=0.018$). This trend for clinicians had disappeared by session 10 ($F(1,15)=0.191, p=0.669$).
Table 6.1 Mean subscale scores on the Agnew Relationship Measure (ARM, Agnew-Davies et al., 1998)* for people participating in a study of treatment for coexisting depression and substance use disorders (and their treating clinician), according to treatment allocation+ (n=38).

<table>
<thead>
<tr>
<th>Subscales of the ARM</th>
<th>Confidence</th>
<th>Client Initiative</th>
<th>Openness</th>
<th>Bond</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td><strong>Session 1 - CLIENTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>6.10</td>
<td>0.80</td>
<td>3.13</td>
<td>1.03</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>6.14</td>
<td>0.79</td>
<td>3.52</td>
<td>0.92</td>
</tr>
<tr>
<td><strong>Session 1 - CLINICIANS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>5.37</td>
<td>0.87</td>
<td>4.21</td>
<td>0.54</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>5.48</td>
<td>0.46</td>
<td>4.13</td>
<td>0.63</td>
</tr>
<tr>
<td><strong>Session 5 - CLIENTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>6.26</td>
<td>0.43</td>
<td>3.95*</td>
<td>0.37</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>6.10</td>
<td>0.64</td>
<td>4.60*</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>Session 5 – CLINICIANS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>6.19</td>
<td>0.45</td>
<td>3.70</td>
<td>0.93</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>5.92</td>
<td>0.60</td>
<td>4.39</td>
<td>0.58</td>
</tr>
<tr>
<td><strong>Session 10 - CLIENTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>6.51</td>
<td>0.46</td>
<td>4.05</td>
<td>0.89</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>6.18</td>
<td>0.53</td>
<td>4.69</td>
<td>0.71</td>
</tr>
<tr>
<td><strong>Session 10 - CLINICIANS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>6.07</td>
<td>0.27</td>
<td>4.88</td>
<td>0.43</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>5.95</td>
<td>0.51</td>
<td>5.00</td>
<td>0.51</td>
</tr>
</tbody>
</table>

* Increasing scores indicate increasing levels of therapeutic alliance

+ Brief intervention – control participants did not complete these measures across all assessments given their treatment program comprised of one session only.

\( p=0.005 \)

In addition, there was a non-significant trend towards higher ratings of therapeutic bond at session 10 for participants allocated to the clinician-delivered SHADE treatment group \((F(1,16)=6.911, p=0.019)\). This non-significant trend was not evident at any other timepoint, and the clinician ratings did not reflect this difference \((F(1,15)=0.937, p=0.349)\).
6.1.5 Discussion

The results of Study 6 indicate that the computer-based and therapist-delivered SHADE treatments could be regarded as producing similar benefits for people with comorbid depression and AOD use problems. Rates of participation and treatment retention were equivalent between the treatment modalities, and these treatment groups reported similar outcome profiles on depression (evident at 12-month assessment), alcohol use disorders, cannabis use and poly-drug use. Improvement on these outcome variables was superior to that reported by the brief intervention control group over the 12-month follow-up period. Alcohol consumption was the only exception to this, with therapist-delivered treatment associated with greater reductions over 12-months relative to the computer-delivered and control treatment groups. In addition, no differences existed between the treatment groups on measures of suicidality, and therapeutic alliance ratings provided by participants and treating clinicians for computer- and therapist-delivered treatments were also equivalent. These results are discussed in detail below.

Rates of participation in treatment were not significantly different for people allocated to each SHADE modality. This is despite 78% of the clinician-delivered SHADE treatment group completing all ten treatment sessions, compared with only 52% of the computer-delivered group. Chi-squared analysis did not detect a difference between groups in treatment completion rates, and given the expected values for this analysis were above five for each cell, it is likely that the power to detect differences should they have existed was acceptable. Although dropout from treatment prior to session
ten seemed higher in the computer-delivered group relative to the clinician-administered SHADE treatment, these attrition rates exceed those reported in previous studies of computer-based therapy (e.g. 94% attrition in Linke et al., 2004). Clinician-delivered SHADE participants attended nine of their ten allotted treatment sessions, compared with eight out of ten for the computer condition. Again, this apparent difference was not statistically significant, and exceeded the rates of retention reported in other studies. For example, Proudfoot et al. (2004) reported 60% retention of participants in computer-delivered treatment at three-month follow-up, with 70% of computer participants completing a six-month follow-up assessment. In Studies 5 and 6, although attendance at each follow-up occasion was 72% for computer participants and 67% for clinician-delivered SHADE treatment, rates of attendance at three-month assessment was 84% for computer participants and 77% for the clinician-delivered group. Similarly high rates of follow-up completion were found at six-months, with 88% of computer-participants and 74% of clinician-delivered participants completing this assessment. Therefore, it is reasonable to suggest that people in the computer-delivered SHADE treatment attended an approximately equal number of sessions as did those in the clinician-delivered treatment, and treatment retention rates were also approximately equivalent between the two treatment modalities.

Outcome profiles were varied in support of the equivalence of the treatment conditions. For depression, SHADE therapy – therapist and – computer participants reported equivalent improvements on the BDI-II by the 12-month follow-up
assessment, but the therapist-delivered group made these improvements more quickly than did their counterparts (i.e. change by the three-month follow-up and maintained changes over time). Both the SHADE treatment conditions produced superior improvements in depression than did the brief intervention – control condition. This was true for each follow-up assessment. Improvement in DAS total scores, an index of cognitive vulnerability to depression, was not equivalent across treatment conditions, with the SAHDE therapy – therapist participants reporting superior improvements over each follow-up occasions relative to the SHADE therapy – computer and brief intervention groups, whose improvements were equal with each other. Outcomes for alcohol use were also mixed, with levels of daily alcohol use improving more for the SHADE therapy – therapist group relative to control and computer-delivered conditions over the follow-up period, but improvement in AUDIT scores (an index of risky drinking) was better for those in the computer-delivered treatment program at the 12-month follow-up occasion. Daily cannabis use improved equally for those in the SHADE therapy – therapist and – computer conditions, and this improvement was higher than that reported by those in the brief intervention – control condition at each follow-up assessment. Further, poly-drug use improvements were equal for all three treatment groups across time. Computer-delivered participants reported increased reductions in their hazardous use of substances more generally when compared with those in the SHADE therapy – therapist condition at each follow-up assessment, and both the SHADE treatment groups reported superior improvements on this index relative to the brief intervention – control condition.
There was a trend towards reduced suicidality over the course of the study, as evidenced by reduced ratings of suicidal ideation according to the specific item on the BDI-II related to this issue, but this reduction was not statistically significant. The magnitude of difference in suicidality was equal across the three treatment conditions at the 12-month follow-up assessment. This was despite a steeper gradient of improvement for those in the SHADE therapy – therapist condition relative to the other treatment programs at the three- and six-month assessments. Scores on the BHS increased over time, indicating higher levels of suicidality were evident for the sample as a whole. Those in the SHADE therapy – computer condition reported less deterioration on this measure than did those in the SHADE therapy – therapist condition at the three- and six-month follow-up occasions, and both these conditions reported poorer outcomes on this measure relative to the brief intervention – control condition at these timepoints. These differences had disappeared by the 12-month assessment.

Results relating to the final criterion, therapeutic alliance, suggested equivalence in outcomes between clinician- and computer-delivered SHADE treatments. That is, both participants and clinicians rated the therapeutic bond, confidence in therapy, client initiative and client openness similarly well across the treatment conditions at sessions one, five and ten. It is of note that client initiative was rated significantly higher by participants in the computer condition at session five, and there was a non-significant trend supporting this in ratings provided by clinicians at the same timepoint. Although this difference had disappeared by session ten, it may be suggestive of
increased empowerment and enhanced problem solving skills associated with the “self-help” nature of computer-based SHADE treatment. While there was a trend towards increased perceptions of therapeutic bond reported by participants in the clinician-delivered group at session ten, this difference was not statistically significant, nor supported by ratings made on these items by the treating clinicians.

Several limitations with this study do exist, not the least of which is the small sample size of participants who completed all three follow-up assessments. Previous computer experience was not assessed among the computer-delivered SHADE participants, nor was preference for a particular mode of treatment delivery. It is possible that these variables may have impacted on the results reported above. In addition, the extra benefit of the brief check-in sessions conducted with all computer-delivered SHADE participants cannot be quantified in this study, and may well have influenced the outcomes. Notwithstanding this, the criterion for comparing computerised and clinician-delivered treatment developed in this study suggests that these approaches to treatment produce equivalent outcomes in terms of the key variables of treatment retention and attendance, AOD use, depression, suicidality and therapeutic alliance.

6.2 SUMMARY AND CONCLUSIONS
Study 6 expanded on the results reported in Study 5, by more closely comparing the treatment programs, offering integrated therapy for comorbid depression and AOD use problems. This additional analysis was necessary given the small sample sizes for
treatment groups within Study 5, and to determine whether the non-significant differences in outcomes reported between computer-delivered and clinician-delivered treatments meant that it was safe to assume that the two treatments were equivalent in efficacy.

Study 5 revealed significant decreases in the following outcomes over time across the treatment groups: hazardous use of substances, alcohol use, cannabis use, depression scores, and cognitive vulnerability to depression. Significant improvements in functioning, quality of life and self-concept were also detected. The only significant treatment effect reported in Study 5, was for significantly lower BDI-II scores at three- and six-months for clinician-delivered SHADE treatment participants (no difference at 12-months). As described in Study 5, despite the non-significant findings for treatment, clinician- and computer-delivered SHADE treatments seemed to result in similar patterns of positive change across many of the outcome variables assessed over time, and in contrast to the brief intervention – control participants. Thus, it would appear that the clinician- and computer-delivered treatments performed similarly well in Study 5.

Closer analysis of treatments in Study 6 confirmed this observation, with computer-based therapy producing the same or better improvements in the following key outcomes: poly-drug use, 12-month BDI-II scores (depression), BHS scores (hopelessness), suicidality (BDI-II ideation), hazardous use of substances, 12-month AUDIT scores (hazardous alcohol use) and quantity/frequency of cannabis use.
Therapeutic alliance ratings from both the participant- and clinician-perspectives were also equivalent over the course of treatment. The brief intervention produced equivalent improvements to the computer-delivered treatment on DAS scores (cognitive vulnerability to depression), and daily levels of alcohol use, and equivalent short-term improvements to both SHADE therapy conditions (three-six months) on AUDIT scores, polydrug use and BHS scores.

No previous research has examined the use of computer-based therapy among a group with comorbid depression and AOD use, nor with a sample reporting severe levels of depression at initial assessment and concurrent heavy use of alcohol/cannabis or amphetamines. Alternatively, three studies have trialled computerised CBT among people with single conditions such as hazardous alcohol use (Hester & Delaney, 1997), and depression (Proudfoot et al., 2004; Selmi et al., 1990), although outcomes were not evaluated against a clinician-delivered control condition in all but one case. Thus, a comparison between the outcomes of Studies 5 and 6 and those of the above research groups is possible across some common outcomes, as is displayed in Table 6.12 below.

As indicated in Table 6.12, the level of change in depression scores over time was similar across Studies 5 and 6, and the Proudfoot et al. (2004) and Selmi et al. (1990) studies, ranging between 11 and 15 points on the BDI-II at the post-treatment assessment. These reductions were maintained at the six-month assessment across the three studies.
Table 6.1  Comparison of changes in key outcome measures between the Study 5/6 participants and those in the Hester and Delaney\(^*\) (1997), Proudfoot et al.\(*\) (2004) and Selmi et al.\(+\) (1990) studies of computer-based treatment for either depressive or alcohol-use conditions.

<table>
<thead>
<tr>
<th></th>
<th>Three-months post-initial</th>
<th>Six-months post-initial</th>
<th>12-months post-initial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BDI-II scores</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proudfoot et al. computer treatment</td>
<td>15.30</td>
<td>15.25</td>
<td>-</td>
</tr>
<tr>
<td>Proudfoot et al. control (GP treatment)</td>
<td>11.20</td>
<td>14.91</td>
<td>-</td>
</tr>
<tr>
<td>Selmi et al. computer treatment</td>
<td>11.09</td>
<td>15.6</td>
<td>-</td>
</tr>
<tr>
<td>Selmi et al. therapist treatment</td>
<td>11.54</td>
<td>9.80</td>
<td>-</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>11.48</td>
<td>11.92</td>
<td>14.92</td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>21.87</td>
<td>19.45</td>
<td>14.56</td>
</tr>
<tr>
<td>SHADE Brief Intervention – Control</td>
<td>8.91</td>
<td>4.57</td>
<td>8.10</td>
</tr>
<tr>
<td><strong>Daily drinking levels</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hester and Delaney computer treatment</td>
<td>3.10</td>
<td>2.07</td>
<td>-</td>
</tr>
<tr>
<td>Hester and Delaney control (wait list)</td>
<td>1.13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Computer-delivered SHADE</td>
<td>3.53</td>
<td>0.95</td>
<td>3.21</td>
</tr>
<tr>
<td>Clinician-delivered SHADE</td>
<td>6.02</td>
<td>5.98</td>
<td>7.11</td>
</tr>
<tr>
<td>SHADE Brief Intervention – Control</td>
<td>3.39</td>
<td>1.77</td>
<td>4.15</td>
</tr>
</tbody>
</table>

\(^*\) Computer-based therapy for alcohol use problems
\(+\) Computer-based therapy for depression

The clinician-delivered SHADE treatment produced superior reductions in BDI-II scores at these assessments relative to the other groups, but at the 12-month assessment (Studies 5 and 6 only) computer-delivered and clinician-delivered participants reported equivalent reductions in their depressive symptomatology. Of note in the comparison of BDI-II scores over time and across studies is the similar rates of reduction in BDI-II scores reported by the computer-delivered treatment groups (around 15 points on the BDI-II at the end-points of the studies). In each study, these reductions are equivalent or better than a control treatment that either matched for therapist contact and content of treatment (i.e. Studies 5 and 6 and Selmi et al., 1990) or a minimal-treatment control group (i.e. Studies 5 and 6 and Proudfoot et al., 2004). In Studies 5 and 6, this is
despite initial levels of depression in the severe range of symptoms and concurrent heavy use of alcohol/other drugs. Importantly, these reductions were maintained over a longer-term follow-up period than ever previously examined (9-months post-treatment). Notwithstanding that these reductions in BDI-II scores were not statistically significant for treatment allocation within Studies 5 and 6, these results are arguably of considerable clinical importance.

Comparing the outcomes for alcohol use across different treatment modalities and research projects yields a similar pattern of reduction as for depression scores. That is, computer-delivered treatments in Studies 5 and 6 and in Hester and Delaney (1997) reveal similar levels of reduction in the quantity and frequency of alcohol use over the follow-up assessment time period. The average reduction in daily alcohol consumption for the computer-delivered treatments was approximately 2.5 standard alcohol units across the follow-up occasions. The brief intervention – control group in Studies 5 and 6 was associated with an equivalent decrease in daily alcohol use (approximately three standard daily drinks) averaged out across the follow-up assessments, and maintained at 12-months. These reductions among both computer-delivered treatments and the control treatment in Studies 5 and 6 were greater than was observed in the Hester and Delaney (1997) wait-list control group, who reported a one-standard drink reduction in alcohol use at the post-treatment assessment. As discussed in Study 5, participants who received clinician-delivered SHADE therapy reported superior reductions in alcohol use relative to the computer- and control conditions (non-significant). It is currently unclear whether the reduced level of improvement in
alcohol use among computer-delivered SHADE participants is associated with the treatment modality itself, or is a consequence of small study numbers. These results for alcohol use remain encouraging and worthy of closer scrutiny and replication.

In summary, the results of Study 6 suggest that participants with severe, current depressive and AOD use problems will attend and report benefits from a computer-based integrated psychological treatment that are similar in magnitude to those reported by participants in an equivalent clinician-delivered treatment and across several previous studies of computer-based treatment for single conditions (i.e. depression- or alcohol-use only). These benefits include improvements in depressive-, AOD use, general functioning and quality of life outcomes.

The promising results of Study 6 are particularly important, considering the computer-delivered intervention used an average of 12 minutes face-to-face clinician time per session compared with approximately one hour of face-to-face therapy among the clinician-delivered equivalents. In this study, check-in sessions were conducted by a qualified psychologist. The content of these 12-minute check-in sessions included standard risk assessment and education/clarification strategies (e.g. suicide risk, revising homework tasks, creating a plan for completing homework etc.) which arguably could be carried out by many health professionals or primary care workers with minimal mental health, substance use or comorbidity-specific training. The impact of a non-psychologist check-in session on results has not yet been examined, nor has the importance of this check-in session in producing the above improvements.
been tested specifically. Given the potential of computerised psychological treatment to improve access and outcomes among people with comorbidity, these issues are certainly worthy of further exploration in future research.

In Australia, 67% of people with mental health problems do not access treatment for their conditions (Andrews, Hall, Teesson, & Henderson, 1997; NSWHealth, 2000). Together with evidence that the majority of these prefer to manage on their own, including a substantial proportion with comorbid conditions (Andrews, Issakidis, & Carter, 2001), the potential for computer-based “self-help” treatments is promising. For people with comorbid depression and AOD use problems in particular, who report increasing difficulties accessing treatments when sought, computer-based therapy means easier access to evidence-based treatment (Marks, 1999). This could result in more people seeking treatment for their condition, or receiving treatment in an earlier phase of their disorder. Potentially, this could prevent conditions like alcohol misuse, other problematic substance use and depression from becoming more chronic and disabling, relieving the disease burden on mental health services and the community (Marks, 1999).
Chapter 7

A Model for Treating Comorbid Depression and Alcohol/Other Drug Use Problems

The concepts described in this chapter have been published by Kay-Lambkin, Baker and Lewin (2004), see Appendix F.

7.0 Abstract

This thesis has reported on the difficulties people with comorbid mental disorders and alcohol/other drug (AOD) use problems face accessing efficacious treatment developed specifically for the complexities of their comorbid presentation. This is especially true for people with depression and AOD use comorbidity, who encounter personal- and service-level barriers to engagement in treatment. Very little research has been conducted on efficacious treatments for comorbid conditions, and treatment services and policy makers remain confused about appropriate models of management. The high prevalence of depression and problematic AOD use in the general population is a concern, adding to the critical need to develop and test existing and novel treatment approaches with this subgroup of the population. In response to these issues, this thesis has examined the benefits of standard treatment protocols for substance use problems among people with depression and AOD use comorbidity, and has developed and tested a novel, integrated psychological treatment targeted at the specific concerns of this group. The promising results yielded by this body of research have important theoretical and clinical implications for the treatment of comorbid depression and AOD use problems.
Studies 1-6 resulted in the development of a menu of treatment options for people with depression and alcohol/other drug (AOD) use comorbidity, with each treatment approach providing evidence of at least some benefit among the study participants. These treatments included substance-use focussed psychological treatment, integrated psychological treatment delivered by a clinician, integrated treatment delivered via a computer, a brief one-session psychological intervention and a series of minimal contact (assessment-only) treatments that produced a range of improvements over time. Notwithstanding these promising results, Kavanagh, Mueser and Baker (2003) report that services and service providers still need a model to address current comorbidity issues among their clients that translates the available evidence base into clinical practice. There is some urgency with which to achieve this aim, given the high number of people with depression and AOD use comorbidity, who experience increasing obstacles to accessing treatment and distress and dysfunction as a result of their comorbid conditions.

Miller and Wilbourne (2002) suggest that, for alcohol-focussed treatments, the best model is one which provides a menu of appropriate, evidence-based options from which clinicians can select and tailor a treatment program specific to client needs and distress. Comorbid depression and AOD use treatment could likely benefit from the same approach. It is important for clinicians to have a framework with which to guide their decision making and strategy selection for individual clients (Miller & Wilbourne, 2002), and it has been further suggested that treatment models for comorbidity should include integrated components, assertive engagement, close monitoring, flexibility and step-wise treatments (Ley, Jeffrey, McLaren, & Siegfried, 2002). In consideration of these issues, a
A stepped care approach to treatment for depression and AOD use comorbidity offers promise, given that it could facilitate a larger number of people into treatment, who would otherwise not have had access (Haaga, 2003). By offering low-cost, simple and the least-intrusive interventions as a first step in this model, treatment resources, such as clinician time, are maximized. The results of Studies 3-6 suggest that these minimal interventions
may also help enhance motivation, engagement, and perhaps even improve key treatment outcomes.

A series of interventions are available to the treatment provider, which can be chosen for implementation based on a thorough assessment of the presenting characteristics of the treatment participant. This is in contrast to many existing approaches to treatment planning that are based on the confirmation of formal diagnoses prior to being put into action. A range of client variables, such as levels of current distress, various comorbidities, quality of life, and general functioning etc. as well as formal diagnostic measures can be assessed, and treatment commenced based on the impairment and distress caused by the person’s presentation. This important feature of stepped care models, as applied to depression and AOD use comorbidity, means that the heterogeneity in symptoms and distress encountered by the client can be flexibly accommodated, with the potential to improve treatment outcome (McKay, 2005a). As Westermeyer (2003) explains, this approach also allows for treatment to commence in the absence of a clear diagnosis, as is often the case for comorbid depression and AOD use problems, and can be applied while the person is still actively using alcohol and/or other drugs.

Several authors have suggested that a basic stepped care model involves the key elements displayed in Figure 7.1 (Kay-Lambkin et al., 2004; Newman, 2000; Scogin, 2003; Sobell & Sobell, 2000). As McKay (2005a) suggests, this model is likely to produce most benefit when each step is clearly defined, and the parameters for “stepping up” interventions are well specified. Although the concept of stepped care may be common in
clinical practice, it is yet to receive significant research attention, particularly in terms of how such a model might be applied to psychological treatments (Haaga, 2003). The results of Studies 1-6 potentially set the scene for further development of stepped care approaches to issues of comorbidity, if only to the particular case of comorbid depression and AOD use problems. The stepped care approach displayed in Figure 7.1 is suggested for application to people with comorbid depression and AOD use problems, regardless of the treatment context, and is described in detail below.

**Figure 7.1** Basic components of a stepped care approach for application to comorbid depression and alcohol/other drug use treatment (Kay-Lambkin et al., 2004; Newman, 2000; Scogin, 2003; Sobell & Sobell, 2000).
7.1.1 Comprehensive Assessment and Initial Goal Setting

As indicated by Newman (2000) in the context of anxiety disorders, and confirmed by the results of Studies 1 and 2, people with comorbid depression and AOD use problems experience a range of psychological and functional impairment across several domains as well as possibly meeting criteria for a diagnosable disorder. They will likely present with different stages of change for each of their presenting conditions. Consequently, a first step in the management of these conditions is to gain an understanding of the range of issues impacting on the person with comorbid depression and AOD use problems, and set some immediate goals for change that are relevant to the person at that point in time. As Sobell and Sobell (2000) explain, client distress may need to be triaged within this first step, with immediate pressing concerns such as suicidality, emergency accommodation or other crisis issues given priority over others.

7.1.2 Brief, Minimal Intervention

Following assessment, a minimal intervention could be offered to people with depression and AOD use comorbidity that addresses their immediate goals for change. This may take the form of psychoeducation about depression, symptom management, and information about non-hazardous AOD use or other self-help booklets as appropriate. Brief advice or suggestions about other lifestyle factors that might be enhanced or reduced may also be included at this time. Motivational interviewing may be commenced as per the brief intervention offered to participants in Study 5, and the content of this discussion could be directed at depression, AOD use or be integrated to include each of these conditions. As Scogin, Hanson and Welsh (2003) suggest, this tier of intervention is
ideally focused on encouraging lifestyle modifications in line with the changes people identify they are ready to make.

The results from Studies 3 and 4 provided evidence for a benefit of assessment, provision of self-help and monitoring (i.e. the control condition) over a six- to 12-month period on both depression and substance use outcomes for many participants in the study. Furthermore, the brief intervention offered in Study 5 produced changes across several depressive and AOD use domains over the short-term, even among those with severe levels of depression and substance use at entry to the study. Provision of this low-cost, minimal intervention would potentially allow a larger number of people to access treatment, and could be accessed in either mental health, AOD or primary care settings (Kay-Lambkin et al., 2004; Scogin et al., 2003).

7.1.3 Monitoring of Responses

Following the brief (minimal) intervention, response to treatment should be assessed to determine the need for continued monitoring, referral, crisis support or more intensive intervention. At this time, issues that need crisis intervention and immediate action may be identified, such as suicide risk, risk to others, urgent medical care, detoxification etc.

In these cases, treatment would be suspended and people referred immediately onto the relevant service, including, if necessary, an external agency (Kay-Lambkin et al., 2004). Following resolution or containment of these issues, the person could re-enter the stepped care treatment plan and resume treatment at the relevant stage.
Aside from these immediate issues, several authors have suggested one-month as a suitable period of time for the person to register a response to the brief, minimal intervention step (Kay-Lambkin et al., 2004; Scogin et al., 2003). The results of Study 5 indicated that the brief intervention produced the majority of change in outcomes between the initial and post-treatment assessments. A system of contact or monitoring between the person with comorbid depression and AOD use problems and the treatment provider could be negotiated, based on suicide risk, availability and other client need. However, within one month of receiving the first tier of intervention (brief treatment) the person should be re-assessed across several key areas (e.g. depression, AOD use at a minimum) to determine the need for further intervention.

At this monitoring point, the plan may be to continue with regular monthly monitoring, as negotiated between clinician and client, with the option to re-enter a more active treatment or be discharged from the service at a later stage. For some people with comorbid depression and AOD use problems, monitoring over an extended period may be preferred in some cases, given this approach places less burden on the person, and for that reason may encourage compliance with treatment over the longer term (McKay, 2005a; 2005b).

Those people who have not responded to the brief intervention could be offered the next step of treatment. Currently, there exists no evidence to suggest, from the outset, which set of interventions will be most appropriate for a particular individual. Certainly there is
not an established set of rules to guide clinician decision making about when to “step up”
treatment to the next tier. In light of this, Haaga (2003) recommends that treatment
providers use their clinical judgement to decide on an appropriate course of action, taking
into account the need for crisis intervention, the severity of conditions, client stage of
change and engagement with the treatment program.

7.1.4 More Intensive Intervention

If a person with comorbid depression and AOD use problems has not responded to the
brief intervention, and/or has some residual symptoms or issues to address, a more
intensive intervention is suggested. At this step, depending on the person’s readiness to
address both their depressive- and AOD use issues, an integrated or serial approach to this
tier of treatment could be taken (McKay, 2005a). Regardless of the focus, psychological
intervention (e.g. cognitive behaviour therapy) is recommended at this step, given its
potential to prevent relapse and continue to produce improvement outside the active
treatment phase (Scogin et al., 2003).

The evidence presented in Studies 3 and 4 suggest that people with depression and AOD
use comorbidity will report benefits from a single-focussed psychological treatment, such
as one that targets substance use. If mental health or AOD treatment can be accessed,
Studies 3 and 4 indicate that people with this comorbidity should not be excluded from
these services, as even in the presence of high levels of depression and hazardous current
use of substance, people with comorbid issues will report some response to a single-
focussed treatment. However, Study 5 revealed that outcomes were enhanced when an integrated intervention was offered to this comorbid group.

If an integrated intervention is appropriate, this could be offered to participants at the second tier of intervention using the computer-delivered version of therapy. The computer-based intervention is designed so that any health professional, with minimal psychological training, could deliver the integrated treatment effectively, and could use the treatment program within any treatment agency or primary care setting. As McKay (2005a) suggests, this is an important consideration given the limited resources currently available within AOD treatment services to integrate psychiatric approaches into existing treatment programs.

Scogin et al. (2003) suggest the benefits of self-administered treatments at this step in the model are most applicable to people with mild-moderate levels of depression. However, the results from Study 5 suggest that people with severe levels of depression and current harmful use of AOD drugs may also respond favourably to these approaches. Scogin et al. (2003) suggest regular weekly contact during the period of completion of the self-administered treatment to monitor progress, assess for suicidal ideation and changes in mood, and to answer any questions the person may have about the treatment program. The content of the brief check-in sessions in Study 5 encompassed these suggestions, and were designed for delivery by non-mental health or AOD use specialists.
The further benefit of a self-administered treatment at this step, particularly as described in Studies 5 and 6, is the reduced face-to-face clinician time required to carry out the treatment, thereby potentially facilitating more people with comorbid depression and AOD use problems (or indeed other conditions as per the service context) into treatment. As Scogin et al. (2003) further suggest, self-administered treatments such as the computer-delivered SHADE therapy may overcome financial, geographical, attitudinal and service barriers to accessing treatment and allow the person to work at their own pace to develop skills that may assist them over the longer term.

### 7.1.5 Targeted Interventions

Following completion of the second tier of treatment and a one-month monitoring period, residual symptoms and other problems may still require attention. For example, Studies 3-6 indicated slight differences in the response of people with comorbid depression and alcohol use problems to the various treatment programs under evaluation. The clinician-delivered integrated therapy in Studies 5 and 6 seemed to produce the most improvement in alcohol use, aside from the increased therapist time and skill required to deliver the intervention. If alcohol issues persist at this stage, this intervention could be implemented. This approach is supported by McKay (2005b), who suggests that extended treatment programs may be an essential next step among people with substance use disorders who have not made significant improvements in outcome following the completion of a brief program of treatment.
Several options exist for extended, targeted interventions at this stage of treatment, including pharmacotherapy, extended psychotherapy, and inpatient treatment, and these will vary in length and frequency of contact (McKay, 2005b). For example, pharmacotherapy may be considered, for either the depression or the AOD use condition, despite the limited evidence for the use of medications among this comorbid group (see Chapter 2). Traditionally, antidepressants or other medications may have been introduced earlier in the treatment plan, particularly if people were being managed in primary care settings (Churchill, Wessely, & Lewis, 2000), where time, financial and other resources are limited. However, the use of medication as a first-line treatment for comorbid depression and AOD use problems requires further investigation, particularly given the preference of many people for psychological approaches (Maisto, Carey, Carey, Purnine, & Barnes, 1999). Further, the results of Studies 3-6 suggest improvement in outcomes is associated with participation in psychological treatment, even for people with severe symptomatology and hazardous AOD use. Schoenbaum (2001) also reports that psychological interventions can actually be more cost-effective than pharmacotherapy options over the longer-term, at least for depression, with the potential for computer-based and alternative modes of delivery of treatment to improve efficiency.

Consequently, longer programs of psychological treatment, if available could also be considered. Other interventions might focus on relapse prevention, community intervention, relationship counseling, trauma intervention etc. as suggested by the ongoing monitoring process (Kay-Lambkin et al., 2004; Zatzick et al., 2004). McKay (2005b) suggests that at this stage of treatment, an approach that encourages sustained contact
between the client and therapist is likely to enhance outcomes. These approaches could include traditional face-to-face treatments, telephone monitoring and contact or further computerised interventions (McKay, 2005b).

6.1.6 Subsequent Steps

The next and any subsequent steps in treatment would be determined by the results of ongoing monitoring and assessment, following completion of a previous step in treatment. As Kay-Lambkin et al. (2004) explain, at any stage, the person with comorbid depression and AOD use problems may be transferred to the monitoring or crisis management, with the option of re-engaging with the stepped care treatments at any time. Treatment providers may also offer a previously successful intervention and monitor for a treatment response, rather than offering a more intensive step.

7.1.7 Summary and Conclusions

Clearly, more research into the practical application of stepped care approaches to treatment of comorbid depression and AOD use problems is required. No randomised controlled trials currently exist to test the efficacy of the above model for this client group. Nevertheless, the framework outlined above serves as a useful synthesis of the research currently available on treatment approaches for people with comorbid depression and AOD use problems, including a suggested strategy for implementing the treatments evaluated as part of this thesis. Many stages in the above model could be implemented by any health care professional, regardless of service context or experience with comorbidity.
Further, there is scope within the stepped care framework for the incorporation of new evidence-based interventions as they are developed and tested.

Comorbid depression and AOD use problems are commonly encountered in clinical settings and rates of this comorbidity are on the increase in the general population. Yet the complexity of presentations among people with comorbid depression and AOD use problems, coupled with the exclusion of this population from many mental health and AOD services, has meant that this important sub-group has received very little research attention. A model of appropriate, evidence-based treatment has not been developed or tested.

The results of Studies 1 and 2 suggested that people with comorbid depression and AOD use problems experience higher levels of disability, dysfunction and psychological distress than do people without depression. Newman (2000) suggests that the costs of not addressing these issues could well outweigh any costs associated with treating these conditions effectively. Studies 3 and 4 assessed the application of a standard treatment for substance use to people with comorbid depression and substance use problems, and revealed some benefit for this comorbid group was achieved. Studies 5 and 6 tested an integrated treatment program that simultaneously targeted depression and AOD use issues, and offered treatment via an alternative computer-delivered mode. The stepped care model based on these results provides a good framework for incorporating the key outcomes of this research and to guide clinician decision making and treatment planning for this population. The model is flexible enough to be easily applied to people
presenting with a range of different conditions, whether comorbidity is present or not, and unlike some existing approaches, is not reliant on establishing the presence of an a priori set of conditions or symptoms (e.g. primary depression, primary AOD use problem) before treatment is commenced. This could potentially foster earlier engagement with treatment services and motivation and optimism among people with comorbid depression and AOD use problems. These are important issues for service development and delivery of appropriate treatments to this underserved population.

7.2 Issues for Future Research

Several important issues remain unanswered. Firstly, the present results relating to treatment response for people with depression and alcohol use comorbidity need further exploration. It is unclear from the results of Studies 3-6 whether a specific intervention needs to target the unique combination of depression and alcohol use problems. The clinician-delivered SHADE intervention produced the most improvement in alcohol use, but it is not known whether the mode of therapy was associated with this response, or whether this was a function of the study sample size. Future research could consider these issues, to determine an optimal approach to treatment of this group.

In addition, the small sample size of Studies 5 and 6 in particular mean that, while encouraging, the results await confirmation in a larger trial. Further to this, a service-based implementation trial of the computer-delivered SHADE therapy (Studies 5 and 6) should form the subject of future research in this area to determine the practical issues associated with the use of computer-based approaches in real world settings. The trial
of computer-based SHADE treatment within primary care and rural/remote settings seems warranted given these settings are those in which this mode of delivery potentially has the most utility.
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