

Volume 1:

Research Component

Co-occurring Substance Misuse and Psychological Distress:

The influence of social networks and the effectiveness of integrated interventions

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for the degree of

Doctorate in Clinical Psychology

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Overview

This thesis was submitted in partial fulfilment of the requirements of the degree of Clinical Psychology Doctorate at the University of Birmingham. There are two volumes to the thesis, which illustrate the research component (Volume 1) and the clinical component (Volume II)

Volume I contains a literature review, research paper and public domain paper. The literature review summarises research that evaluates the effectiveness of group-based psychological interventions for co-occurring depression and substance misuse. The research paper describes an exploratory study, examining the relationships between social networks, psychological distress and substance dependence in a sample of females. It is intended that both pieces of work will be submitted to *'Addiction Theory and Research'* for publication. The public domain paper summarises both the literature review and research paper.

Volume II contains five clinical practice reports (CPRs). CPR1 is a case formulation of a 56year old gentleman with generalised anxiety disorder; his formulation is presented from a cognitive behavioural and psycho-dynamic perspective. CPR2 is a service evaluation exploring adherence of CMHT staff to the debriefing and briefing aspect of their Trust interpreter policy. CPR3 documents a case study of a 43year old gentleman who was admitted to an acute general hospital with neuropsychological difficulties and a history of alcohol and substance misuse. CPR4 describes a single-case experimental design, assessment, formulation and intervention for a 23year old male, with a severe learning disability and autism, who was displaying challenging behaviours. An abstract outlining CPR5 is also included; a clinical presentation of a 56year old gentleman with complex history of alcohol dependence, substance misuse and offending.

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Firstly I would like to **Thank all of the Women** who kindly agreed to take part in my research and to the staff in the services who helped me with recruitment. Without their participation and support this research project would not have been possible.

Volume I: Research Component

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CHAPTER I

Literature Review

Are Group-based Psychological Interventions Effective in the Treatment of Depression in Substance Misuse Services?

Abstract

Background: The prevalence of individuals experiencing co-occurring depression and substance misuse is estimated to be between 30-50% in addiction services. It is recommended that these individuals be offered integrated interventions, with group-based interventions being the most cost effective. Aim: To provide a systematic review of the existing research that has empirically evaluated integrated group-based interventions to reduce depressive symptoms and substance misuse. Method: Electronic databases were searched and 23 studies were identified which evaluated 13 integrated group-based interventions. These studies were reviewed. Findings: The studies identified evaluated a number of therapeutic group approaches; integrated cognitive-behavioural therapy (ICBT), interpersonal therapy, behavioural activation, mindfulness and an integrated group. All studies reviewed reported significant reductions in depressive symptoms post-group. Depressive symptoms increased following the interventions but remained lower than pre-intervention. Six of the studies found that the integrated groups were not superior to substance misuse groups in reducing depressive symptoms or substance misuse. Conclusions: ICBT was the only integrated group intervention to demonstrate effectiveness in reducing substance misuse and depressive symptoms. Group-based substance misuse interventions were also effective in reducing substance misuse and depressive symptoms if they were manualised, promoted activity, challenged cognitions and had an interpersonal element.

*Keywords: Group intervention substance misuse depression comorbidity
systematic review dual diagnosis*

Are Group-based Psychological Interventions Effective in the Treatment of Depression in Substance Misuse Services?

Substance misuse frequently co-occurs with depression. In substance misuse treatment services estimates range from 30 – 50% of the population who experience depression (e.g. Hides, Baker, Kavanagh & Proctor, 2011; Hides, Samet & Lubman 2010; Miller, Klamen, Hoffman & Flaherty, 1996; Weaver, Charles, Madden & Renton, 2002). Although the prevalence of co-occurring substance misuse and depression is generally agreed, the direction of this relationship is debated (Grant et al., 2004; Swendsen & Merikangas, 2000; Zwolinski, 2010). It is known that the use of substances can induce depression, that is the biological action of substances and the associated lifestyle can trigger depression (e.g. Brady & Sinha, 2005). This has been further supported by longitudinal studies, (e.g. Brook, Brook, Zhang, Cohen & Whiteman, 2002; Fergusson, Horwood & Swain-Campbell, 2002) who have suggested that early substance use predicts later development of depression. This induced depression is also supported by the findings that stabilisation or abstinence from substances can relieve the symptoms of depression, without any formal treatment (McIntosh & Ritson, 2001). However, several qualitative studies have described how individuals feel their alcohol or substance use is secondary to underlying independent depression, this tends to be described in the ‘self-medication’ theory literature (e.g. Abraham & Flava, 1999; Duncan, 1974a; Duncan, 1974b; Khantzian, Mack & Schatzberg, 1974; Weiss, Griffin & Mirin, 1992).

Irrespective of whether dependent or induced, individuals dependent on substances who have co-occurring depression are known to have poorer physical health (Carroll et al., 2009; Hides et al., 2011), poorer treatment outcomes (Dutra et al., 2008; Hides et al., 2011; Weaver et al., 2003), more frequent relapses (Carroll et al., 2009; Hides et al., 2010), poorer psychological health (Hides et al., 2011), poorer social and vocational functioning (Hides et

al., 2010; 2011) and are at higher risk of suicide and inpatient psychiatric admissions (Hides et al., 2010; McIntosh & Ritson, 2001, Weaver et al., 2003) than those with either depression or substance misuse alone. They are also more likely to utilise health, social and emergency services to a greater extent than those with either disorder alone, thus are expensive to health services (Cosci & Fava, 2011; Crome, Chambers, Frishers, Bloor, & Roberts, 2009; Dutra et al., 2008; Hoff & Rosenheck 1998; 1999; McIntosh & Ritson, 2001; Sullivan, Fiellin & O'Connor, 2005). As a result of the prevalence and expense the improved management of individuals with co-occurring disorders is a priority for the National Health Service (NHS) in the UK (Banerjee, Clancy & Crome, 2002; Department of Health 2007). The Department of Health (DoH) suggest best practice for this population, irrespective of whether their mental health difficulties were mild or severe, is integrated services provisions (DoH, 2007), where both co-occurring disorders are addressed within the same service (e.g. Cosci & Fava, 2011; Drake, Mercer-McFadden,McHugo & Bond, 1998; Graham, Copello, Birchwood & Mueser, 2003; Kessler, 2004; Weaver et al., 2003). Despite the recommendation, in practice, individuals who experience depression and substance misuse, as co-occurring difficulties, generally continue to receive interventions for their difficulties separately, in different services (Carroll et al., 2009), which can impact negatively on their treatment outcomes (Cosci & Fava, 2011; McIntosh & Ritson, 2001).

Psychosocial Interventions

Although the Department of Health has recommended integrated approaches (DoH, 2007), there are currently no specific guidelines from the National Institute of Clinical Excellence (NICE) for co-occurring substance misuse and depression. Rather, they

recommend that professionals draw from the appropriate NICE guidelines for Depression (NICE, 2009) and Substance Misuse (NICE, 2007; 2011).

Depression Psychosocial Interventions

According to the current NICE guidelines (NICE, 2009) individuals who experience mild depression should be offered cognitive behavioural therapy (CBT), individuals who experience moderate to severe depression should be offered high intensity psychological interventions (CBT, Behavioural Activation (BA) Behavioural Couples Therapy (BCT), Mindfulness-Based Cognitive Therapy (MBCT) or Interpersonal Therapy (IPT)) alongside pharmacological interventions. These interventions, with the exception of BCT, can be offered via individual or group format with similar effectiveness (NICE, 2009).

Substance Misuse Psychosocial Interventions

According to the current NICE guidelines (NICE, 2007; 2011) the recommended psychosocial interventions for substance misuse are contingency management, self-help (Alcoholics Anonymous, AA, or Narcotics Anonymous, NA), BCT, family therapy or CBT. Specifically for alcohol misuse, NICE (2011) also recommends social network and environment-based therapies. These interventions, excluding behavioural couple's therapy, family therapy and social network and environment-based therapies can be offered via individual or group format to similar effect (NICE, 2007; 2011).

Integrating Depression and Substance Misuse Interventions

Research undertaken with individuals with co-occurring depression and substance misuse has reported that utilising any of the evidence based approaches for depression or

substance misuse will have a positive effect on the other (McIntosh & Ritson, 2001).

However, as yet no review has explored the effectiveness of group interventions where both co-occurring disorders are addressed within the same service, as is recommended (DoH, 2007; Magill & Ray, 2009; Sobell, Sobell & Agrawal, 2009). Three reviews were identified which evaluated individual and group interventions (Baker, Thornton, Hiles, Hides & Lubman, 2012; Hesse 2009; Hides, Samet & Lubman 2010) however; they were predominantly individual intervention studies. A Cochrane review is due to be completed (Hides, Baker, Kavanagh & Proctor, 2011), however remains in the protocol phase and no publishing date is currently available. Therefore in order to add to the existing literature and in line with therapeutic recommendations (DoH, 2007) this review will evaluate studies which assessed the efficacy of group-based psychological interventions for co-occurring depression and substance misuse.

Literature Search Strategy

Empirical studies evaluating the effectiveness of group-based psychological interventions for depression within a substance using sample were identified using four electronic databases, PsychInfo, Embase, Ovid Medline and Web of Science. As no previous review was identified all articles since the databases commenced were identified. The following search terms were used to encompass the key elements of the title of this review: (drug usage OR drug use OR drug misuse OR drug abuse OR substance misuse OR substance abuse OR substance usage OR addict* OR drug dependence OR substance dependence) AND ((psycholo* OR behavio* OR cognit* OR art* OR famil* OR psychodynamic* OR psychotherapy* OR motivation* OR psychosocial OR psychoeducation OR interperson* OR mindfulness OR compassion OR accept* adj2 committ* OR CBT OR IPT OR MI OR analytic OR “contingency management”) adj3 (group* adj2 treatment* OR group adj2 intervention* OR group adj2 program* OR group adj2 therap*)) AND (depress* OR dysthymi* OR affect adj2 disorder OR mood adj2 disorder OR major depress* OR low mood).

To be included in this review research articles needed:

- To assess the effectiveness of group interventions for depression and substance misuse
- To include outcome measures for depression and have a dual focus for addressing substance use.
- To be peer reviewed and available in English.

Articles were excluded if:

- They were focussing on Bipolar or Manic Depression, as the evidence base for these disorders has already been reviewed (Weiss et al., 2007).
- They were also excluded if the primary diagnosis for clients was Post-Traumatic Stress Disorder, again psychological group interventions for this client group had already been shown to be effective (van Dam, Vedel, Ehring & Emmelkamp, 2012; Hien, Cohen, Miele, Litt & Capstick 2004).
- They were focussing on an adolescent sample.

The search strategy resulted in the identification of 23 studies. Of these, ten did not evaluate the effectiveness of the intervention per say rather they provided additional findings to the three ICBT treatment protocols presented in Brown et al. (2006), Lyndecker et al. (2010) and Watkins et al. (2011). The 13 studies based on treatment protocols were assessed for their methodological quality (Table 1) and are presented in Table 2. The additional papers are presented in Table 3.

Study Characteristics

Thirteen studies were identified in the search criteria which evaluated the effectiveness of group-based interventions for co-occurring depression and substance misuse. Table 2 provides a summary of the study methodologies and key findings. The 13 studies differed in terms of their sample sizes, setting, participant characteristics, therapeutic orientations, group programme length and intensity, substances use and diagnosis criteria for depression. The impact of these factors on the effectiveness of the group-based interventions will be explored. However, the current review is structured according to the therapeutic orientation to enable a

qualitative comparison of the effectiveness of group-based interventions across therapeutic orientations. The impact of sample characteristics, settings, substance use, depression severity and programme length will be considered within this framework.

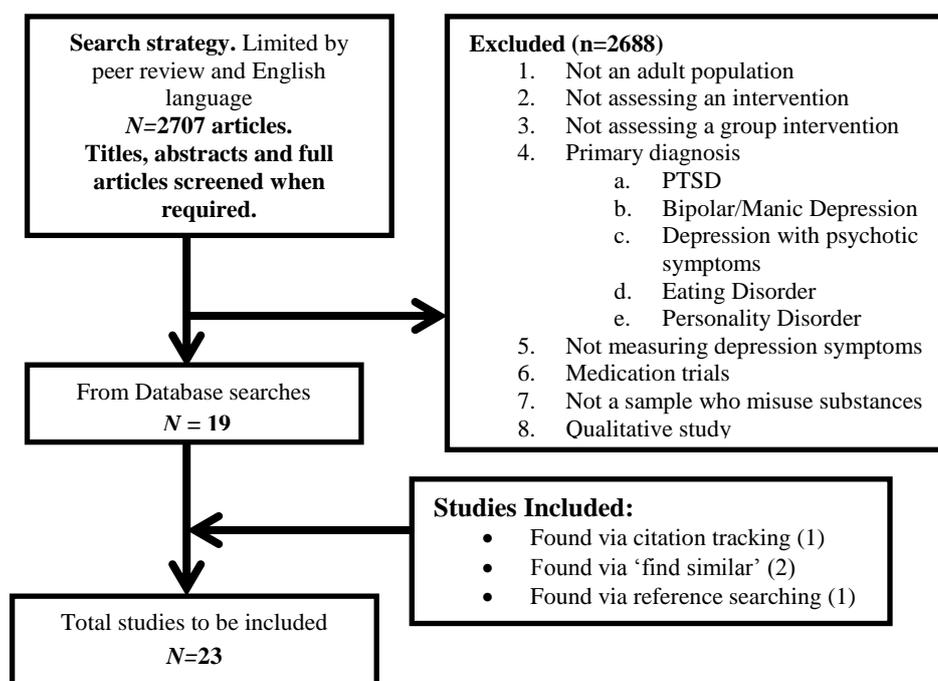


Figure 1 Flow chart for studies included within this review

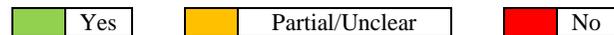
Quality Assessment of Studies Reviewed

In order to assess the reliability of the study findings and conclusions, the quality of the 13 studies which addressed the effectiveness of group-based interventions, was assessed. To ensure they were assessed consistently; a quality assessment tool was used to review the studies. The ‘quality index’ developed by Downs and Black (1998) was chosen (Appendix A). Downs and Black’s tool is reported to be a valid and reliable tool, which provides a comprehensive standardised way of analysing the quality of experimental and non-experimental studies (Deeks et al., 2003; Olivo et al., 2008). Several previously published

reviews in the field of clinical psychology and substance misuse have utilised this tool (e.g. Livingston, Milne, Fang & Amari, 2012; McPherson et al., 2005; Moore, Fazzino, Garnet, Cutter & Barry, 2011; Sullivan et al., 2005). The overall quality assessment of each of the papers is detailed in Table 1. The analysis illustrated that, with the exception of one (Malat et al., 2008), the articles, produced quality percentage of 70% or above. Johnson & Zlotnick's (2012) trial of IPT compared to treatment as usual received the highest quality percentage of 92.59 (50/54). The quality of the studies will influence the reliability and validity of their conclusions, therefore will be considered throughout the review.

Table 1: Quality Assessment

Authors	Reporting							External Validity					Internal Validity – Bias					Internal Validity - Confounding					Power	Percent				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24	25	26	27
Brown et al. (2006)	Yes	Yes	Yes	Yes	Partial/Unclear	Yes	Yes	Yes	Yes	Yes	Partial/Unclear	Yes	Partial/Unclear	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	81.48
Lyndecker et al. (2010)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	85.19
Watkins et al. (2011)	Yes	Yes	Yes	Yes	Yes	Yes	Partial/Unclear	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	77.78
Watkins et al. (2012)	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	62.96
Hunter et al. (2012a)	Yes	Partial/Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	84.48
McHugh & Greenfield (2010)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	77.78
Johnson & Zlotnick (2008)	Yes	Yes	Yes	Yes	Yes	Yes	Partial/Unclear	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	75.93
Malat et al. (2008)	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	51.85
Johnson & Zlotnick (2012)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	92.59
Daughter et al. (2008)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	81.48
Magidson et al. (2011)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	81.48
Witkiewitz & Bowen (2010)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	81.48
Gobbart (2013)	Yes	Partial/Unclear	Yes	Yes	Yes	Yes	Partial/Unclear	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	72.22



Are Integrated CBT (ICBT) Group Interventions Effective in the Treatment of Depression in Substance Misuse Services?

Cognitive Behavioural Therapy (CBT) is a therapeutic approach which combined cognitive therapy with behavioural therapy (Beck, Rush, Shaw & Emery, 1979). There is a plethora of research which asserts that CBT is an effective intervention for the treatment of depression or substance misuse, when offered in individual and group formats (Duckert, Johnsen, Amundsen, Stromme & Morland, 1992; Dutra et al., 2008; Graham, Annis, Brett & Venesoen, 1996; Magill & Ray, 2009; NICE, 2007; 2009; 2011; Schmitz et al., 1997; Sobell, Sobell & Agrawal, 2009; Weiss et al., 2004). Although, across settings CBT can vary slightly depending on the protocol used and whether there is a focus on a specific substance of use or severity of depression (McHugh, Hearon & Otto, 2011), the consistent key elements include identifying and re-evaluating maladaptive cognitions and behavioural patterns and cognitive barriers to change.

Six studies were identified which compared a CBT group, which addressed both depression and substance misuse (ICBT), to a group addressing substance misuse alone (Brown et al., 2006; Hunter et al., 2012a; Lyndecker et al., 2010; McHugh & Greenfield, 2010; Watkins et al., 2011; 2012). These studies differed according to the setting where the intervention was implemented. They will be evaluated according to setting initially and then drawn together, this enabled consideration of whether setting influenced the effectiveness.

ICBT for Veterans recruited from a Dual Diagnosis community service.

Two papers were identified which assessed the effectiveness of ICBT groups with veterans, they were completed by the same group of authors (Brown et al., 2006; Lyndecker et al., 2010). Lyndecker et al. (2010) incorporated Brown et al. (2006) sample into theirs. The

ICBT intervention was manualised and based on CBT for depression (Munoz et al., 1993) and Project MATCH (Kadden et al., 1992). The group programme consisted of 24 sessions, one per week, broken down into two 12 week phases, phase 1 focussed on the CBT model and covered thoughts, activities and people, and phase 2 focussed on relapse prevention. The control group was a manualised 12-step group (TSF) based on Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) which was specifically developed for NIAAA Project MATCH (Nowinski, Baker & Carroll, 1994). The TSF group was designed to follow the same structural format as the ICBT group. Both participants assigned to the ICBT and the TSF group reported significantly lower depressive symptoms and substance use upon completion of their respective group interventions. The difference between the two groups was not significant. However, participants in both groups, although initially experiencing a reduction in symptoms and substance use experienced a gradual increase in depressive symptoms and substance misuse at all four follow-up points (3, 6, 9 and 12 months) . Participants who attended the TSF group reported a greater increase than those who attended the ICBT group; although this difference remained not statistically significant. Alongside the core findings presented in the trial studies described (Brown et al., 2006; Lyndecker et al., 2010), the authors published several papers which provided additional information regarding the effectiveness of the ICBT intervention compared to TSF (detailed in Table 3). In Worley, Tate and Brown (2012) they reported that participants who attended the TSF group were more likely to also attend 12-step community meetings and that this mediated the group difference in depressive symptoms. In Glasner-Edwards et al. (2007) they described how social support and self-efficacy to manage negative affect did not significantly change in either group but self-efficacy to remain abstinent increased following both group interventions. In Tate et al. (2008) they reported that group intervention assignment was not predictive of substance

misuse relapse; whereas increased self-efficacy reduced the risk of relapse and experiencing a life stressor increased the risk of relapse. In Drapkin et al. (2008) they found that irrespective of which module individuals started the group at the outcomes remained significant for reductions in depressive symptoms and substance use. However, participants who started at the 'people' module attended a greater number of sessions than those who started at the 'thoughts' module. In Tate et al. (2011) they explored whether any factors influenced attendance. They found that males, older participants, participants with low levels of social support, those dependence solely on alcohol and participants who described their ethnicity as white were significantly more likely to attend more sessions. Conversely they reported that group assignment, health stressors, motivation, legal status, suicide attempts/ideation, PTSD and depression severity were not predictive of attendance. In Worley et al. (2010) they explored service utilisation following the ICBT and TSF group interventions. They reported that participants who received the ICBT intervention were more likely to attend and continue to be prescribed psychotropic medications compared to those who received the TSF intervention. They also reported that utilisation of outpatient services and residential rehabilitations remained stable for both groups, whereas the inpatient service utilisation decreased over time for the participants who received the ICBT group intervention.

ICBT for Non-Veterans recruited from Community Addiction Services

Two studies were identified which assessed the effectiveness of ICBT groups within community addiction services (Hunter et al., 2012a; McHugh & Greenfield, 2010). Hunter et al. (2012) did not distinguish between independent or dependent depression, nor did they exclude those with mild – moderate depression. They asserted this would increase the generalizability of their findings; as community addiction services were unlikely to assess

either the severity or whether independent or induced depression. They assigned participants using a block-randomization method to either a manualised ICBT group (CBT for Depression, Cuijipers et al., 2009; Hepner et al., 2011a; 2011b; Munoz et al., 2000) or a control group which utilised a 12-step approach (Rawson et al., 1995). Both groups ran for 9 weeks and consisted of 18 group sessions. They found that irrespective of group allocation, both groups reported significantly fewer depressive symptoms and substance use upon completion of their groups compared to pre-group. The difference between the groups was not significant. At 3 and 6 months follow-up, both groups maintained the significant reduction in depression symptoms and substance use from baseline. However, both group participants' depressive symptoms and substance misuse were increasing, but ICBT participant's increase was smaller than those in the 12-step group. McHugh and Greenfield (2010) assessed the effectiveness of an ICBT group that was gender-specific to females; they randomly assigned females to either a 12-week manualised gender-specific ICBT group (Greenfield et al., 2007) or a usual care mixed-gender group (Crits-Cristoph et al., 1999). They reported a significant decrease in depression symptoms for both groups, but not a significant difference between the groups. They also reported similar reductions in substance use across both groups. However by 6 months follow-up there was a greater reduction in substance misuse for participants who received the gender-specific group, although the difference between groups remained not significant.

ICBT for Non-Veterans recruited from a Residential Rehabilitation Service

Watkins et al. (2011) assessed the effectiveness of an ICBT group within a substance misuse residential detoxification and rehabilitation centre. As all participants had undertaken a detoxification from their substance, they reported that their participants all had depression

independent of their substance use. They assigned their participants to either an 8 week manualised ICBT group based on BRIGHT (Munoz et al., 2000; 2005) or usual care, which involved group work. They found that post intervention both groups were effective at significantly reducing depressive symptoms and substance use. However, both at the post intervention point and at 6 month follow up, participants who had been in the ICBT group reported significantly ($p < 0.001$) fewer depressive symptoms and significantly less days substance use ($p < 0.05$) than those who received usual care. In Watkins et al. (2012) they utilised a sub-sample from their original trial to assess whether the effectiveness differed if the sample had major depressive disorder. They excluded all those in the previous sample who did not meet this criterion. Consistent with their original study they found that individuals assigned to the ICBT group reported significantly less severe depressive symptoms and less reported days substance use following completion of the group than those assigned to usual care, but in contrast to their trial they found that this difference was not evident for alcohol consumption at follow up. Alongside the core findings in Watkins et al. (2011) the same group of authors published a paper which explored the longitudinal relationship between depressive symptoms, negative consequences and substance use, (Hunter et al., 2012b). They found it was the reduction in depressive symptoms not the reduction in negative consequences from substance use which predicted the increase in days abstinent. They also reported that the ICBT group was effective at decreasing the association between depressive symptoms and substance use over time. In another study, Hunter et al. (2013), explored whether any demographic factors moderated the ICBT treatment effects. They reported that within their sample gender, education, referral status and pre-treatment substance misuse did not moderate the treatment effect. However, they did report that although not significant, ICBT within a residential setting may be less effective for

participants who are considered to belong to an ethnic minority group. A final paper published by these authors, Watkins et al. (2014), explored the cost implications of implementing the ICBT group within a residential setting. Although they acknowledged that ICBT was more expensive than usual care, they asserted that the treatment cost was comparable to group and individually delivered depression interventions in mental health services.

Summary of ICBT interventions

All six of the papers reviewed assessing the effectiveness of an ICBT group-based intervention found that it was an effective intervention to reduce depressive symptoms and substance misuse post-group. Only when ICBT was compared to usual care (Watkins et al., 2011) did the ICBT group produce results significantly superior to the control group. This group was also the only one implemented in a residential setting and with participants who had all undergone detoxification prior to commencement of the programme. As the quality appraisal of the ICBT studies did not raise any specific quality concerns (Table 1) the findings from the studies were considered reliable and valid.

Across the studies, the results at follow-up differ slightly. However, they agree that both days of use and depressive symptoms began to increase following group interventions and that this increase was slightly steeper for those in TSF compared to ICBT. Despite the increases, irrespective of group assignment the mean scores for depressive symptoms and days of substance misuse remained lower at follow up than prior to commencing the interventions. These consistent findings seem irrespective of the length and intensity of the ICBT programmes, which range from 12 sessions once per week (McHugh & Greenfield, 2010) to 36 sessions (Brown et al., 2006; Lyndecker et al., 2010) twice a week (Hunter et al., 2012a). Furthermore, the findings remain positive irrespective of the severity of depression,

the setting and whether independent or not distinguished. All the studies involved individuals dependent on a range of different substances and do not report that pre-treatment substance misuse neither impacted upon attendance nor mediated the treatment outcomes. However, post-treatment, Watkins et al. (2012) suggest that ICBT has better outcomes for individuals with major depression who were dependent on drugs pre-treatment rather than solely alcohol. Whereas, TSF group intervention in conjunction with community meeting attendance had better outcomes for alcohol abstinence than drug abstinence. In addition, Worley et al. (2010) assertion that inpatient service utilisation is less for the individuals assigned to the ICBT group alongside the findings of Watkins et al. (2014) that an ICBT group is comparable in cost to depression groups within mental health services suggests that an ICBT may be a cost effective intervention.

Are Interpersonal Psychotherapy Groups (IPT) Interventions Effective in the Treatment of Depression in Substance Misuse Services?

Interpersonal Therapy (IPT) is based on interpersonal theory (Weissman, Markowitz & Klerman, 2000) and has a good evidence base in the treatment of depression (Cuijpers et al., 2011, NICE, 2009), but, it is not currently an evidence-based intervention for substance misuse (NICE, 2007; 2011). IPT asserts that depression is linked to interpersonal events and insufficient social support, they argue that depression usually follows a significant life event, bereavement, role dispute or role transition (Markowitz & Weissman, 2004) and that the goal of therapy is to resolve this event, build social skills and help organise their life.

Three of the studies analysed the effectiveness of an IPT group as an intervention for individuals with co-occurring substance dependence and depression (Johnson & Zlotnick, 2008; 2010; Malat et al., 2008). Johnson and Zlotnick's studies are set in a women's prison in

the USA (Johnson & Zlotnick, 2008; 2010). Their IPT group was an 8 week (24 session) manualised programme, (Weissman et al., 2000; Wifley et al., 2000). Due to the prison setting and their assertion that the women would be unable to use substances during their sentence, they did not measure substance use. Thus no conclusions can be drawn regarding the groups effectiveness at addressing substance misuse. Johnson and Zlotnick's (2008) study was a pilot, where they assessed effectiveness of the IPT group but had no control condition. In this study they found that there was a significant reduction in depressive symptoms post-group compared to pre-group. They also found that all of the women reported a significant increase in their perceived social support. In 2012 the authors repeated the study but this time they compared the IPT group to treatment as usual and also included a post-release follow-up. They found that the women who attended the IPT group reported significantly less depressive symptoms than the women who received treatment as usual. However, at the post release follow-up there was no difference between the women. The authors described how the amount of confounding variables (such as housing difficulties, family/relationship difficulties including abuse and financial position) which could have occurred upon release may account for this loss of effect at follow-up (Johnson & Zlotnick, 2010).

Malat et al. (2008) also evaluated the effectiveness of an IPT group; however, their group was implemented in a community alcohol service. They aimed to compare the IPT group to supportive relapse prevention (SRP), but as 73% of participants dropped out the SRP group they were unable to compare the two groups. Consequently, although the study found that IPT was effective at reducing depressive symptoms and alcohol consumption post-group and at the 2-month follow-up. The authors were unable to assert whether this was as a result of the IPT group and not some other factors or interventions within the community service where participants were accessing treatment. The quality appraisal of Malat et al. (2008)

highlighted methodological weaknesses (see Table 1). Therefore, the reliability and validity of their findings needed to be considered within this context.

Summary of IPT Group interventions

Only three studies were identified which evaluated the effectiveness of an IPT group. As only one of these compared IPT to a control group, it is difficult to draw robust conclusions. However, it is noted that Johnson and Zlotnick's (2012) trial was assessed to be of a high quality (92.59%, see Table 1) suggesting their findings could be viewed as reliable and valid and should not be dismissed. Based on these studies, it could be concluded that an IPT intervention was more effective in reducing depressive symptoms than a psycho-educational group for females in prison. However, it is not possible to assert whether this effectiveness is present across all ethnic groups, as the ethnic demographics are either not evenly distributed or are not fully reported. In addition, as all the women were in prison in Johnson and Zlotnick's study the authors did not measure substance use.

In terms of the effectiveness of IPT to sustain changes post intervention, Malat et al. (2008) suggested that changes could be sustained but Johnson and Zlotnick's studies did not. However, they report that this was likely to be as a result of the women's release from prison and stressors associated with this, rather than related to the IPT's ability to sustain change.

Are Behavioural Activation (BA) Group Interventions Effective in the Treatment of Depression in Substance Misuse Services?

Behavioural Activation (BA) is based on behavioural theory and as an intervention for depression has a good evidence base across samples (Kanter et al., 2010). The core components of BA are activity monitoring, activity scheduling, contingency management and

challenging avoidance (Addis & Martell, 2004; Lejuez, Hopko & Hopko, 2001; Martell, Addis & Jacobson, 2001). Although BA is not an evidence-based approach for substance misuse, contingency management which is also based on behavioural theory is (NICE 2009; 2011). Only two studies were identified in the search strategy that described the effectiveness of behavioural activation groups for individuals with co-occurring depression and substance misuse. Both of these studies include four of the same authors, suggesting a replication in design across different settings.

Both studies implemented the group in a residential rehabilitation setting. They both utilised a manualised BA group intervention (LETs ACT, BAT-D, Lejuez et al., 2001), however Daughters et al. (2008) group consisted of 6 sessions over 3 weeks and Magidson et al. (2011) group consisted of 5 sessions over 2 ½ weeks. The initial study (Daughters et al., 2008) described how they recruited individuals who, following detoxification from their substance use continued to report depressive symptoms above the mild range, therefore independent of their substance use. They also described how they excluded any participant who had commenced a psychotropic medication within the last 3 months, to reduce the chance this could account for any changes in depressive symptoms. Magidson et al. (2011) does not report these detailed inclusion/exclusion criterion. Neither study measured substance misuse as all participants were residing in a rehabilitation centre where substance use was prohibited.

Daughters et al. (2008) compared their BA group to treatment as usual, which the BA participants also received. They reported that all participants irrespective of their group assignment reported fewer symptoms on the Beck Depression Inventory (BDI; Beck, Steer & Garbin 1988); however, only the BA group maintained this at the 2-week follow-up. Conversely, when assessing depression using the Hamilton Depression Rating Scale (HDRS;

Hamilton, 1960) individuals who were assigned to the BA group reported significant reduction in depressive symptoms. Magidson et al. (2011) compared their BA group to supportive counselling (SC); all participants also received treatment as usual. They found that irrespective of group assignment participants reported significantly reduced depressive symptoms. However, no significant difference between the groups was reported. There was significantly better retention rates in the BA group compared to SC.

Summary of Behavioural Activation (BA) Groups

As only two studies were identified which evaluated BA group interventions it was difficult to comment reliably on the effectiveness of BA as a group intervention for individuals with co-occurring substance misuse and depression. Despite this, the two studies suggest that in the treatment of depression in a residential substance misuse setting it could be an effective treatment option. However, whether BA is effective in the treatment of substance dependence has not been assessed. In addition, both papers reported that their samples were skewed in terms of ethnic diversity. Daughters et al. (2008) reported their sample were 86% Black, Magidson et al. (2011) reported that their sample were 89.7% African American. Consequently, they were unable to conclude that the findings could be generalised to other ethnic groups.

Are Mindfulness Based Relapse Prevention (MBRP) Group Interventions Effective in the Treatment of Depression in Substance Misuse Services?

Mindfulness Based Cognitive Therapy (MBCT) is a more recently developed therapeutic approach which has promising results for individuals with reoccurring depressive episodes (Coelho, Canter & Ernst, 2013) and substance misuse (Hayes & Levin, 2012).

MBCT was developed by Segal, Williams and Teasdale (2002), it incorporates the mindfulness training as developed by Jon Kabat-Zinn (Kabat-Zinn, 2003) with relapse prevention.

There was only one study identified which described the effectiveness of MBRP (Witkiewitz & Bowen, 2010). In their study they compared an 8 week (8 sessions) manualised MBRP developed for use in a previous trial (Bowen et al., 2009) to treatment as usual (TAU). Within this study TAU consisted of twelve step groups, process orientated groups and psycho-educational groups. Alongside their measures for depression and substance misuse, they also measured alcohol and drug craving using the Penn Alcohol Craving Scale (PACS, Flannery, Volpicelli & Pettinati, 1999). They found that both groups reported significantly reduced depressive symptoms post-intervention and the difference between the groups was not significant. However, in terms of substance misuse the MBRP group illustrated a reduced correlation between craving and use. Thus they concluded that MBRP group intervention lowered the risk of substance misuse relapse. Unfortunately, despite this study describing how the sample was recruited from both a residential rehabilitation and a community addiction service, they do not provide any analysis as to whether settings influenced treatment outcomes. In addition, although they found that MBRP reported fewer days of use at 4 months follow up this wasn't statistically better than TAU. Individuals lost to follow-up may have relapsed but were not included, therefore results may be skewed. Although this is the only paper to evaluate an MBRP group, the results appeared promising. The study found that not only did MBRP reduce depressive symptoms but also reduced the relationship between craving and substance use. This study had few methodological weaknesses (Table 1) thus giving more weight to the reliability and validity of their findings.

Are Integrative Skills Group-Based Interventions Effective in the Treatment of Depression in Substance Misuse Services?

One study was identified which evaluated the effectiveness of an integrative group (Gobbart, 2013). This study was based in Australia and evaluated an existing group intervention programme running in a community addictions service. This was a 12-week group (23 sessions) and covered a plethora of topics including stages of change, health stress and emotional management, grief and loss, problem solving and social networks. It drew on CBT, mindfulness, drama, art and music therapy alongside skill-based activities. The author reported that a significant reduction in depressive symptoms was found for participants. In particular this occurred following sessions informed by CBT, motivational interviewing and mindfulness. However, no change in substance dependence was reported. The qualitative evaluation reported that participants rated the mindfulness sessions as the most significant skill they learnt throughout the course. This study supports the previous papers, which assert that CBT and mindfulness are effective interventions for reducing depression symptoms in a substance using population. However, its lack of a control group reduced the power attributed to the findings. In addition, the sample within this study is reported to be 100% White ethnicity and therefore the generalizability to other ethnic groups is unknown.

Table 2 Psychological Group interventions for depression and substance misuse.

Study	Participants	Substances at Baseline.	Intervention	Control	Measure	Methodology	Results
Cognitive Behavioural Therapy							
Brown et al. (2006)	66 Veterans (61M & 5F) 31–68yrs (M48.8; SD7.9). Community DD service Inc.: MDD* independent of SU* Exc. Bipolar, Psychosis, IV use, cognitive deficit, live > 50 miles from centre and/or homeless.	91.2% Alcohol Dependent 13.1% Cannabis Dependent 54.1% Stimulant Dependent 6.6% Dependent on Other	ICBT (N=37) (<i>Munoz et al., 1993; Kadden et al., 1992</i>) 24 wks. (2xwk for 12 wks. & 1xwk for 12wks) Modules – Thoughts, Activities, People & Relapse Prevention. +psychiatry review & medication if req.	12 Step - TSF (N=29) (<i>Nowinski, Baker & Carroll, 1994</i>) 24wks (2xwk for 12 wks. & 1xwk for 12wks) No specific dep. Content. +psychiatry review & medication if req.	HDRS TLFB ASI Urine Screen	Sequential Randomisation. 2 Groups – ICBT & TSF Measures at baseline, Mid(12wks) & End(24wks) Follow Up – 3 & 6 mths	Both ICBT & TSF significantly reduced depressive symptoms ($p=0.02$) and substance use ($p < 0.001$) post group compared to pre group. The difference between the groups was not significant for depressive symptoms ($p = 0.06$) or substance use ($p=0.3$) ICBT maintained reduced substance use and depression at 6mths f/u whereas TSF increased. This difference at follow up points was not significant.
Lyndecker et al. (2010)	206 Veterans (190M & 16F) No age range (M48.2; SD7.7) Community DD service Inc.: MDD independent of SU Exc. Bipolar, Psychosis, IV use, cognitive deficit, live > 50 miles from centre and/or homeless.	66% Alcohol Dependent 2% Heroin Dependent 19% Cocaine Dependent 12% Cannabis Dependent 16% Amphetamine Dependent 2% Sedative Dependent 2% Hallucinogen Dependent	ICBT (N=107) (<i>Munoz et al., 1993; Kadden et al., 1992</i>) 24 wks. (2xwk for 12 wks. & 1xwk for 12wks) Modules – Thoughts, Activities, People & Relapse Prevention. +psychiatry review & medication if req.	12 Step - TSF (N=99) (<i>Nowinski, Baker & Carroll, 1994</i>) 24wks (2xwk for 12 wks. & 1xwk for 12wks) No specific dep. Content. +psychiatry review & medication if req.	HDRS TLFB ASI	Sequential Randomisation 2 Groups – ICBT & TSF Measures at Baseline, Mid (12wks) & End (24wks). Follow Up – 3, 6, 9 & 12mths	Both ICBT & TSF significantly reduced depressive symptoms ($p < 0.001$) and substance use ($p < 0.001$) post group compared to pre group. The difference between the groups was not significant for depressive symptoms nor substance use At follow up both TSF & ICBT increased in both substance misuse and depressive symptoms but ICBT remained lower. Although this difference was not significant.

Hunter et al. (2012a)	74 Outpatient (39M & 35F) No age range 43.84% < 30yrs of age. Community Addiction service Inc.: BDI>13 (mild), AUDIT-C >4 for men & >3 for women. Exc. Bipolar, psychosis, cognitive impairment.	19.18% Alcohol Dependent 1.37% Heroin Dependent 23.29% Cocaine Dependent 19.18& Cannabis Dependent 31.51% Amphetamines Dependent 1.37% Sedative Dependent 1.37% Hallucinogen Dependent	ICBT (N=47) (<i>Cuijpers et al., 2009; Hepner et al., 2011; Munoz et al., 2000</i>) 9wks (2xwk) Modules – Thoughts, Activities, People & Relapse Prevention. + 2 usual care groups, 1to1 with counsellor & MH input if MDD.	12 Step – TSF (N=26) (<i>Rawson et al., 1995; AA 2001</i>) 12-Step approach & Matrix Model. Group session lasted 90mins. 9wks No specific dep. Content. + 2 usual care groups, 1to1 with counsellor & MH input if MDD.	BDI SF-12 TLFB ASI Urine Swab SIP-AD	Block Randomisation – 2-4 allocated respectively. 2 Groups – ICBT & TSF Measures at Baseline, 3mths & 6mths post baseline.	Both ICBT & TSF significantly reduced depressive symptoms ($p < 0.05$) and substance use ($p < 0.05$) post group compared to pre group. This was maintained at 3 month follow up for depression ($p < 0.001$) for both groups, however for substance misuse both groups reported sig fewer days of problem use post intervention. ICBT group reported significant lower negative consequences of use. At 6 months only ICBT remained significant for number of days of problem use ($p < 0.05$) The difference between the groups was not significant post intervention ($p = 0.147$) or at follow up ($p = 0.52$), however ICBT group had lowest score on both occasions.
Watkins et al. (2011)	N = 299 (155M & 144F) No age range (M36.2; SD10.3) Residential Rehab Inc.: PHQ-8 >5 after 2 week detox. & BDI>17, English Speaking, Exc. Bipolar, psychosis, cognitive impairment, on probation or parole	15.4% Alcohol Dependent 36.8% Amphetamine Dependent 20.4% Cocaine/Crack Dependent 12.4% Heroin Dependent Average use prior to admission 16.3days.	ICBT (N=140) (<i>Munoz et al., 2000; 2005</i>) 8 weeks (2xwk) Modules – Thoughts, Activities, People & Substance Abuse. + 1 orientation session. + Usual care (this counted as 2groups so minus 2)	TAU (N=159) Various programmes within residential care. Substance abuse treatment (1to1), group therapy, vocational skills training, AA/NA/CA meetings, recreational therapy & family services. No specific dep. Content.	BDI SF-12 TLFB ASI	4 residential sites (1 site v 3 sites, rotated intervention every 4 months) 2 Groups – ICBT & UC Measures at baseline & 3mths. Follow up – 3 mths	Both ICBT & TAU significantly reduced depressive symptoms. Substance misuse not measured post group. Post group and at 3 months follow up ICBT participants had significantly fewer depressive symptoms UC participants ($p < 0.001$). At 3mth follow up ICBT group had significantly less reported days use than UC ($p < 0.05$)

Watkins et al. (2012)	<p>N=135 No gender or age demographics provided. Residential Rehab</p> <p>Inclusion and Exclusion as Watkins et al (2011).</p> <p>+ Inclusion: meet criteria for MDD.</p>	<p>No substance dependency information for this sub sample presented.</p>	<p>ICBT (N=140) (<i>Munoz et al.,2000; 2005</i>)</p> <p>8 weeks (2xwk) Modules – Thoughts, Activities, People & Substance Abuse. + 1 orientation session.</p> <p>+ Usual care (this counted as 2groups so minus 2)</p>	<p>TAU (N=159)</p> <p>Various programmes within residential care. Substance abuse treatment (1to1), group therapy, vocational skills training, AA/NA/CA meetings, recreational therapy & family services. No specific dep. Content.</p>	<p>BDI SF-12 TLFB ASI</p>	<p>4 residential sites (1 site v 3 sites, rotated intervention every 4 months)</p> <p>2 Groups – ICBT & UC</p> <p>Measures at baseline & 3mths.</p> <p>Follow up – 6 mths</p>	<p>Individuals in the ICBT group reported less severe depressive symptoms ($p < 0.01$) and higher MH functioning ($p < 0.05$), compared to TAU 3 months post baseline. At 6 months post baseline the BDI was no longer significant between the two groups but SF-12 was.</p> <p>At end group mean was in mild range for individuals in the ICBT group whereas group mean for TAU was moderate.</p> <p>At 3 and 6 months post baseline individuals in ICBT group had minimal symptoms compared to TAU. At 6 months post baseline, ICBT group had used less substances than TAU ($p < 0.05$) but no difference was reported for alcohol.</p>
McHugh & Greenfield (2010)	<p>N=36 (0M & 36F) No age range (M47.6; SD11.4) Community Addiction service</p> <p>Inc.: 18+, English Speaking.</p> <p>Exc. Diagnosis of bipolar, psychosis or PTSD.</p>	<p>92% Alcohol Dependent 13% Substance Dependent</p>	<p>Women’s Recovery Group (WRG) – CBT Relapse prevention (N=29) (<i>Greenfield et al., 2007</i>)</p> <p>12 sessions (90mins) Effects of SU on health relationships & recovery. Violence & SU. Mood, anxiety & eating problems. Stigma & shame. Being a caretaker & recovery. Self-help groups. Achieving a balance.</p>	<p>Mixed Group – Group Drug Counselling. (N=7) (<i>Crits-Christoph et al., 1999</i>)</p> <p>12 sessions (90mins) Abstinence focus, Coping strategies, Mutual Support No specific depression content.</p>	<p>BDI BAI ASI TLFB</p>	<p>Randomised</p> <p>2 Groups – WRG & GDC</p> <p>Measured at Baseline & Post Intervention.</p> <p>Follow Up at 3 & 6 months</p>	<p>Both groups significantly reduced depressive symptoms pre to post ($p < 0.01$) Bu no difference between groups. At 3 months follow up WRG still reduced whereas GDC increased. At 6months WRG had increased but GDC decreased.</p> <p>Addiction severity reduced for both groups ($p < 0.05$) but again not significant difference between the groups was reported. At 3 months follow up both continued to reduce. At 6 months WRG increased again and DGC remained stable.</p>

Interpersonal Psychotherapy

Johnson & Zlotnick, (2008)	N=22 (0M & 22F) 23 – 50yrs (Median36) Prison Inc.: Current MDD/Dysthymia + and SUD prior to prison, Exc. Bipolar or Psychosis, acutely suicidal, leaving prison prior to group.	57.9% Alcohol Dependent 88.5% Substance Dependent.	IPT (N=22) (Wifley et al., 2000; Weissman et al., 2000) 8 weeks (24 groups, 3xweek, 1 hour) Agenda: Family & Friendships, Drug & Crime Involvement, Social Support, Communication, Loss & Group Processes. +Usual Treatment	No Control Group	HDRS BDI	No Control Pre – Post Treatment analysis.	Significant decrease in depression on HDRS (p < 0.001) & BDI (p < 0.001) and significant increase in perceived social support (p < 0.01)
Malat et al. (2008)	N = 30 No gender information No age info. Community Addiction service Inc.: English Speaking, alcohol dependence. Exc. psychosis, cog. impairment. Illicit drug use exc non-dependent cannabis, manic, suicidality, receiving another treatment.	100% Alcohol Dependent N=3 had prior Substance Dependency	IPT (N=15) (<i>Malat & Leszcz 2005</i>) 8 weeks (16 sessions; 2xwk 2hrs) Session 1 - 4 structured Session 5 - 14 here-and-now process illumination and interpersonal learning. Session 15 -16 endings.	SRP (N=15) <i>Annis, Herie & Watkin-Merek, 1996</i>) 8 weeks (2x week) No other details provided. No specific dep. Content.	BDI BSI ASI IIP	Randomly assigned to each group. 2 Groups – MIGT & RP No Group comparison due to high dropout rate. Measures at baseline & post intervention. Follow up at 2 & 8 mths.	A significant reduction in depressive symptoms from baseline to post intervention, (p<0.05) which was sustained at the 2month follow up (p<0.05) but lost at the 8 month follow up. A significant reduction in number of days of drinking (p<0.05) and heavy drinking days (p<0.001) post intervention (p<0.05) but only heavy drinking days sustained at 2month (p<0.05) and 8 month follow up (p<0.05)

Johnson & Zlotnick (2012)	N= 38 (0M & 38F) No age range (M35; SD9.2) Prison Inc.: MDD after 4 weeks abstinence, 10-24 weeks away from release, SU dependence in the one month prior to prison. Exc. Bipolar or Psychosis diagnosis.	58% Alcohol Dependent 24% Heroin Dependent 58% Cocaine/Crack Dependent 21% Cannabis Dependent 21% Sedative Dependent	IPT (N=19) <i>Wifley et al., 2000;</i> <i>Weissman et al., 2000)</i> 8weeks (3xwk; 60-75mins) 1:1 1xpre, 1xmid & 6xpost release. Agenda: Family & Friendships, Drug & Crime Involvement, Social Support, Communication, Loss and Group Processes. + Usual Treatment – abstinence orientated drug education and coping skills, 16-30hrs per week. Group format. Women’s health, relapse prevention, problem-solving, self-help, community recovery training, anger management & parenting.	Psycho-education (N=19) 8weeks (3xweek; 60mins) 1:1 1xpre, 1xmid & 6xpost release. Agenda: Psycho-education around mental health, dual diagnosis, women’s experiences, interactions with substance use, medication & treatment options. + Usual Treatment	HDRS TLFB Urine Screen	Wave Randomisation. 2 Groups – IPT & Psycho-education Measures at Baseline & Post intervention. Follow Up at 2 weeks & 3 months post release.	A significant reduction in depressive symptoms was observed in both groups; however IPT was significantly lower than the psycho-education group. (p=0.016) However, no significant difference was observed in substance using days (p=0.26) or depressive symptoms after release (p=0.38).
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Behavioural Activation:

Daughters et al. (2008)	N= 44 (28M & 18F) No age range (M42.1; SD10.3) Residential Rehab Inc.: aged18+, English speaking, been inpatient for >2weeks, had funding for >60day stay, BDI>10. Exc. Recently started medication <3months diagnosis of psychosis.	BA (27.3%) TAU (40.9%) Alcohol Dependent BA & TAU (68.2%) Cocaine/Crack Dependent BA (36.4%) TAU (31.8%) Heroin Dependent BA & TAU (22.7%) Cannabis Dependent	BA (N=22) (Lejuez et al., 2001) 2weeks (6 sessions; 3xweek) Phase 1 – 3sessions 1 hour Phase 2 – 3 session 30mins 2x follow ups 1xweek Agenda – mood, activities, homework, relaxation, goal orientated, link with SU. +TAU	TAU (N=22) Daily groups Relapse prevention Stress & Anger Management Spirituality Education Job & Life Skills. AA/NA meetings No specific dep. Content.	HDRS BDI BAI No SU measure	Randomly Assigned 2 Groups - BA & TAU Measures at baseline & post intervention for HDRS & BAI Follow up – 2 weeks (still in residential treatment) only BDI	Both groups illustrated a significant reduction in BDI scores at post intervention, (p<0.05) but only BA illustrated significant reductions on HDRS (p<0.01). Only the BA group sustained reductions at the follow up There was a significant difference between the two groups on HDRS scores (p<0.01) post group and at follow up. The BDI was no significantly different post group but was by follow up (p<0.05) No measure of substance abuse.
Magidson et al. (2011)	N=58 (38M & 20F) No age range (M44.78; SD9.39) Residential Rehab. Inc.: aged 18+, BDI>12, English Speaking, SUD. Exc. Diagnosis of Psychosis	24.1% Heroin Dependent 46.6% Cocaine/Crack Dependent 8.8% Cannabis Dependent 47.7% Poly Drugs Abuse	BA (N=29) (Lejuez et al., 2001) 2 ½ weeks (5sessions, 1hour) Agenda – mood, activities, relaxation, goal orientated, link with SU. +TAU	SC (N=29) 2 ½ weeks (5x 1hour) Unconditional support & reflective listening to topics brought by group members. No specific dep. Content. +TAU	HDRS BDI No SU measure	Randomly Assigned. 2 Groups – BA & SC Measures at baseline & post intervention	There were significant better retention rates in BA group. Increased activity was evidenced in BA group. Both groups demonstrated significant reduction in depressive symptoms (p<0.001), but no significant difference between groups (p=0.99)

Other Groups

Witkiewitz & Bowen (2010)	N= 168 (107M & 61F) 18 -70 yrs. (M40.45; SD10.28) Community Addiction service Inc. Fluent English, completed intensive 2 week treatment. Exc. suicidality psychosis dementia, considered to be high risk of relapse/withdrawals	45.2% Alcohol Dependent 36.2% Cocaine/Crack Dependent 13.7% Methamphetamine Dependent 19% Poly drug abuse.	MBRP (N= 93) Mindfulness RP (<i>Bowen et al., 2009</i>) & CBRP (<i>Marlatt & Gordon 1985</i>) 8wks (2hr session) Guided Meditation, experiential daily exercises, homework.	TSF (N=75) Various programmes, outpatient care. 12-step, process-orientated groups & psycho-education. Relapse prevention. No specific depression content.	BDI TLFB PACS	Web-based random number sequencer. 2 Groups – MBRP & TSF Measures at baseline & post group. Follow Up – 4 months.	Both groups significantly reduced depressive symptoms post intervention (p<0.01) but the difference between the two was not significant (p>0.33) MBRP had lower craving scores and fewer days of use at 4 months follow up but this wasn't statistically better than TSF. MBRP reduced correlation between craving and use (p=0.03). MBRP lowers risk of substance misuse relapse.
Gobbart (2013)	N = 30 (13M & 17F) 18 – 55yrs (M35.01) Community Addiction service. Not inclusion or exclusion criteria provided.	11% Heroin Dependent 43% Cannabis Dependent 11% Amphetamine Dependent 11% Methadone Dependent 7% Morphine Dependent 7% Benzodiazepine Dependent 6% Other	Changing Habits (N=30) 23sessions, 12wks (5hr) Stages of change, BBV, mindfulness, cognitive distortions, stress management, emotions grief, loss & support, problem solving, networks. assertiveness, Drama, art & music therapy, circus skills, social activities, yoga, pottery classes	No Control Group	DASS-21 SDS RCQ (TV)	No Control. Pre, Mid and Post Measures. No follow up. Qualitative component.	A significant reduction was illustrated in depression, this occurred between pre and mid, following sessions on CBT, MI & mindfulness. No real change in the SDS scores. Mindfulness was rated as the most significant thing learned.

** MDD – Major Depressive Disorder; SU – Substance Use; SUD – Substance Use Disorder; ICBT – Integrated cognitive behavioural therapy group; TSF – 12 Step facilitated group; IPT – Interpersonal Therapy Group; BA – Behavioural Activation Group; MBRP – Mindfulness Based Relapse Prevention; TAU – Treatment as Usual; SRP – Supportive Relapse Prevention; SC – Supportive Counselling; BDI – Beck Depression Inventory; HDRS – Hamilton Depression Rating Scale; TLFB – Time Line Follow Back Technique; ASI – Addiction Severity Index; PACS – Penn Alcohol Craving Scale; SF-12 – Short form general health survey; SIP-AD – Shortened Inventory of problems modified for alcohol and drug use; IIP – Inventory of Interpersonal Problems; BSI- Brief Symptom Inventory; DASS-21 – Depression, anxiety & stress scale; SDS – Severity of dependence score; RCQ(TV) – readiness to change questionnaire-treatment version; NMR - Negative Affect Regulation; SSQ - Social Support Questionnaire; DTCQ - Drug Taking confidence questionnaire; AAAS – Alcoholics Anonymous Affiliation Scale; SIP-AD – Negative Consequences for use questionnaire **

Table 3: Articles adding to the ICBT trials

Study	Preliminary Paper	Participants	Groups	Measures additional.	Outcomes.
Glasner-Edwards et al. (2007)	Brown et al (2006) N=66 ICBT compared to TSF Inc. & Exc. – As stated in Brown et al.	148 Veterans (138M & 9F) 26 – 68 yrs. (M49; SD7.4) 86% Alcohol Dependent 25% Cannabis Dependent 54% Stimulant Dependent 21% Other	ICBT (78) TSF (70)	NMR; SSQ; DTCQ.	Individuals who attended the TSF group were significantly more likely to attend twelve step meetings at end of treatment (p=0.02). NMR scores did not change during the course of treatment. Self-efficacy improved from pre - post group (p=0.04) but no difference between groups (p > 0.05). No change in social support.
Drapkin et al. (2008)	197 Veterans (179M & 18F) No age range (M49; SD8) Community DD Service Inc. & Exc. – As stated in Brown et al	92% Alcohol Dependent 31% Cannabis Dependent 57% Stimulant Dependent 22% Dependent on Other	ICBT (105) TSF (92)	No additional measures	No significant effect on days abstinent at 12 weeks (p=0.22) or 24 weeks (p=0.63) for treatment entry point. No significant effect on depression at 12 weeks (p=0.13) or 24 weeks (p=0.56) for treatment entry point. No effect for immediate treatment retention, but people who started in the interpersonal group attended more sessions than those who started in thoughts, over the 24 weeks (p=0.04).
Tate et al. (2008)	Brown et al (2006) N=66 ICBT compared to TSF Inc. & Exc. – As stated in Brown et al.	113 Veterans (107M & 6F) No age range (M48.9; SD7.4) 90.3% Alcohol Dependent 29.2% Cannabis Dependent 54.8% Stimulant Dependent	N per group not given	DTCQ Life Stress	Type of treatment received was not significantly associated with risk of substance relapse during treatment (p=0.65). Self-efficacy increased in both groups (p=0.004) and an increase in self-efficacy reduced the risk of relapse. (p=0.003) Life stressors, chronic (p=0.02) & acute (p=0.009) increased risk of relapse.

Worley et al. (2010)	Lyndecker et al (2010) N=206 ICBT compared to TSF Inc. & Exc. – As Lyndecker et al	236 Veterans (213M & 23F) 23 – 68 years (M48.2; SD7.9) 89.9% Alcohol Dependent 30.2% Cannabis Dependent 54.8% Stimulant Dependent	ICBT (127) TSF (109)	Utilization 1. Outpatient Therapy, 2. Psychotropic Medication Management 3. Inpatient Hospitalisation 4. Recovery homes	At early follow up more sig more medication management in ICBT group (p=0.006). The utilization of outpatient therapy remained stable for both groups over time. Recovery home utilization reduced for both groups over time (p<0.001). Inpatient service utilisation decreased over time for the ICBT group for not the TSF group. Significant time x group interaction (p<0.05). Being in the ICBT group significantly predicted shorter inpatient stays (p<0.05)															
Tate et al. (2011)	Lyndecker et al (2010) N=206 ICBT compared to TSF Inc. & Exc. – As Lyndecker et al	253 Veterans (225M & 28F) No age range (M48.4; SD8.1) No Substance dependence information provided.	N per group not given	ASI SSQ BDI Neuropsychological functioning Diagnosis PTSD Legal status	Intervention group did not predict attendance (p=0.82). Age ethnicity and type of pre-treatment substance use predicted attendance. Older P's attended more sessions (p<0.001), Caucasians attended more sessions (p=0.004), primary alcohol users attended more sessions (p=0.02), males attended more session but not significant (p=0.07). P's with low social support attended more sessions (p=0.01), chronic financial stress was not predictive. P's with an acute health event prior to start attended more sessions (p=0.02). Health stressors, motivation, legal status, suicide, PTSD, depression severity were not predictive of attendance. In a combined model only age (p<0.001) and ethnicity (p<0.03) remained significant predictors.															
Worley, Tate & Brown (2012)	Lyndecker et al (2010) N=206 ICBT compared to TSF Inc. & Exc. – As Lyndecker et al.	209 Veterans (187M & 22F) No age range. TSF – M49.6; SD7.6 ICBT – M48.8; SD7.8	ICBT (112) TSF (97)	AAAS	TSF group had greater 12 step attendance (p<0.001) and affiliation (p<0.001) than the ICBT group. 12 step meeting attendance predicted lower levels of depression (p=0.014). The effect of TSF on depression was mediated through 12 step attendance (p<0.05) 12 step attendance at the follow ups predicted lower future drinking (p=0.029) but not drug use (p=0.18) Depression was predictive of future alcohol (p<0.001) but not drug use (p=0.75).															
		<table border="1"> <thead> <tr> <th></th> <th>%</th> <th>TSF</th> <th>ICBT</th> </tr> </thead> <tbody> <tr> <td>Alcohol Dep</td> <td></td> <td>87</td> <td>82.2</td> </tr> <tr> <td>Cannabis Dep</td> <td></td> <td>27.8</td> <td>30.8</td> </tr> <tr> <td>Stimulant Dep</td> <td></td> <td>54.4</td> <td>54.2</td> </tr> </tbody> </table>		%	TSF	ICBT	Alcohol Dep		87	82.2	Cannabis Dep		27.8	30.8	Stimulant Dep		54.4	54.2		
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Worley et al. (2012)	N=237 Veterans (214M & 23F) No age range (M48.2; SD8) Community DD service Inc. & Exc. – As Lyndecker et al.	89.9% Alcohol Dependent 27.4% Cannabis Dependent 50.7% Stimulant Dependent	ICBT (125) TSF (109)	HDRS TLFB ASI	A relatively greater decline observed in TSF. During follow up the TSF group had increased again slightly, whereas the ICBT had continued to decline. By 18 months they were similar for both groups.
Hunter et al. (2012b)	Watkins et al (2011) N = 299 ICBT compared to UC	As Watkins et al (2011)	ICBT (140) TAU (159)	SIP-AD	Individuals assigned to ICBT reported significant decreases in BDI and SIP-AD and significant higher PDA over time. The change in BDI predicted change in PDA (p<0.001) and SIP-AD (p<0.001).
Hunter et al. (2013)	Watkins et al (2011) N = 299 ICBT compared to UC	As Watkins et al (2011)	ICBT (140) TAU (159)	SIP-AD	It does not appear that gender, education, referral status, or problem substance moderated the treatment effect. However it may be less helpful among racial/ethnic minority groups.
Watkins et al. (2014)	Cost effectiveness of Watkins et al (2011) ICBT compared to UC	As Watkins et al (2011)	ICBT (104) TAU (159)	Cost Analysis	ICBT is more expensive than UC. However compares favourably to other depression interventions.

** MDD – Major Depressive Disorder; SU – Substance Use; SUD – Substance Use Disorder; ICBT – Integrated cognitive behavioural therapy group; TSF – 12 Step facilitated group; IPT – Interpersonal Therapy Group; BA – Behavioural Activation Group; MBRP – Mindfulness Based Relapse Prevention; TAU – Treatment as Usual; SRP – Supportive Relapse Prevention; SC – Supportive Counselling; BDI – Beck Depression Inventory; HDRS – Hamilton Depression Rating Scale; TLFB – Time Line Follow Back Technique; ASI – Addiction Severity Index; PACS – Penn Alcohol Craving Scale; SF-12 – Short form general health survey; SIP-AD – Shortened Inventory of problems modified for alcohol and drug use; IIP – Inventory of Interpersonal Problems; BSI- Brief Symptom Inventory; DASS-21 – Depression, anxiety & stress scale; SDS – Severity of dependence scale; RCQ(TV) – readiness to change questionnaire-treatment version; NMR - Negative Affect Regulation; SSQ - Social Support Questionnaire; DTCQ - Drug Taking confidence questionnaire; AAAS – Alcoholics Anonymous Affiliation Scale; SIP-AD – Negative Consequences for use questionnaire **

Discussion

This systematic review identified a small body of research comprised of 13 studies which empirically evaluated group-based interventions that target co-occurring depression and substance misuse. The review addressed two questions, firstly whether integrated group-based interventions were effective in reducing both depressive symptoms and substance use. Secondly, were the integrated group-based interventions more effective than substance misuse group-based interventions.

Are group-based integrated psychological interventions effective in reducing depressive symptoms and substance use?

All of the reviewed studies found that integrated group-based interventions were effective in reducing depressive symptoms. Symptoms were significantly reduced post-group, and despite the trend to increase again, they remained lower than pre-group at follow-ups. The studies suggested that integrated group-based interventions were more effective than substance misuse group-based interventions. However, this difference was only significant when the integrated groups were compared to treatment as usual (Daughters et al., 2008; Watkins et al., 2011; 2014). These findings are consistent with those reported for individually delivered integrated interventions (see Baker, Thornton, Hiles, Hides & Lubman, 2012; Hesse, 2009; Hides, Samet & Lubman, 2010 for reviews), suggesting that the delivery format may not influence the effectiveness of the intervention. The consistent findings across the studies reviewed, irrespective of the severity of depression, gender or substances used by the samples, suggested these factors may also not influence the effectiveness of integrated group-based interventions.

One possible factor which may influence the different results between studies could be the therapeutic orientation of the integrated intervention. The six studies exploring the effectiveness of integrated CBT (ICBT) groups, found that they were effective at reducing depressive symptoms and substance misuse post-group. Participants who completed the ICBT group were also able to sustain these changes at follow-ups, to a greater extent than participants who attended the TSF groups. The ICBT group was also significantly superior at reducing depressive symptoms and substance use when compared to treatment as usual (Watkins et al., 2011; 2012). The studies which evaluated the IPT groups and BA groups were both completed in settings where substance use was theoretically not permitted (prison and rehabilitation respectively). Therefore although they reported being effective interventions to reduce depressive symptoms, they were unable to assert any effectiveness at reducing substance misuse. Nor could they report whether their group intervention was more or less effective than substance misuse group treatment alone. The Mindfulness Based Relapse Prevention group (MBRP) demonstrated effectiveness at reducing depressive symptoms and substance misuse post-group and at follow-up. As MBRP is a third-wave CBT intervention (Hofmann, Sawyer & Fang, 2010; Segal, Williams & Teasdale 2002), it not only adds to the findings from the ICBT studies but also provided an interesting addition. Substance misuse has been conceptualised as a chronic condition prone to relapse (e.g. McLellan, McKay, Forman, Cacciola & Kemp, 2005). One of the strongest predictors of relapse is craving (e.g. Witkiewitz, Bowen, Douglas & Hsu, 2013). In all of the studies reviewed a proportion of participants were reported to relapse, whether during or post intervention. The MBRP study described how mindfulness was successful in reducing the association between craving and substance misuse.

Witkiewitz and Bowen (2010) therefore assert that incorporating mindfulness into substance misuse services could lower the risk of substance misuse relapse.

Mindfulness was also reported to be a significant skill that participants were keen to learn in Gobbart's study (2013).

The only trial of ICBT to produce significant superior reductions in depressive symptoms and substance misuse was Watkins et al. (2011; 2012). This paper differed to the others which evaluated ICBT in terms of setting and control group. It was the only ICBT study to be undertaken in a residential rehabilitation setting and to compare ICBT with treatment as usual. Therefore, these may be key mechanisms that influenced treatment effectiveness. In order to participate in Watkins et al. (2011; 2012) trial within a residential rehabilitation service participants had completed a detoxification. Substance use throughout the intervention was also strictly prohibited. Current substance misuse is reported to have an impact on various neurological functions, (e.g. Ershe & Sahakian 2007), which may influence participant's capacity to engage in the interventions. Therefore it may be that substance use at onset of the intervention and/or during the course of the intervention influences the effectiveness of integrated group-based intervention. Future research may benefit from exploring this further.

In conclusion, to answer the question posed, integrated group-based interventions are effective in reducing depressive symptoms and substance use. However, based on the research reviewed, only when informed by CBT are the integrated group-based interventions effective in reducing both depressive symptoms and substance use. In addition, the current review suggested that the effectiveness of the ICBT group interventions may be improved by incorporating a mindfulness component and if participants undertook substance detoxification prior to commencement. ICBT

may also have greater efficacy for males, older participants and those with lower levels of social support. However, providing ICBT within gender-specific groups may have greater efficacy for females.

Are Integrated Group-based Psychological Interventions to address co-occurring depression and substance misuse more effective than Group-based Psychological Interventions to address substance misuse?

Previous research has described the trend for integrated approaches for the treatment of depression and substance misuse delivered on a one-to-one basis to produce better outcomes than one-to-one treatments to address substance misuse alone (see Baker, Thornton, Hiles, Hides & Lubman, 2012; Hesse, 2009; Hides, Samet & Lubman, 2010 for reviews). However, they have all reported that this difference is rarely significant. This review of group-based interventions found similar results. Participants who attended manualised twelve-step groups (Brown et al., 2006; Hunter et al., 2012a; Lyndecker et al., 2010; Witkiewitz & Bowen, 2010), the structured mixed-gender group, (McHugh & Greenfield, 2010); or the supportive counselling group (Magidson et al., 2011), reported significant reductions in depressive symptoms despite this not being a focus of the intervention. Furthermore, these results were not statistically different to the groups with an overt depression intervention. Only when integrated group-based interventions were compared to treatment as usual (Daughters et al., 2008; Watkins et al., 2011; 2012) or a psycho-educational group (Johnson & Zlotnick, 2012) were they statistically superior. Comparing the components of the group interventions, it appeared that group-based interventions which were not manualised and covered a variety of topics were the ones which were less effective. This suggested

that being manualised and structured may be important components of interventions in the treatment of co-occurring substance misuse and depression. In addition, it may be that these approaches were also unintentionally providing an intervention for depression. It is acknowledged that amongst evidence-based interventions for depression (NICE, 2009) are common themes of promoting activity, challenging negative thoughts and/or promoting interpersonal relationships. The substance misuse group-based interventions which demonstrated effectiveness in reducing depressive symptoms were all structured, manualised, promoted activity (through attendance), encouraged interpersonal connections and challenged maladaptive cognition. Thus, these group-based interventions aimed at addressing substance misuse alone, may be offering an integrated intervention for both depression and substance misuse, due to their group structure encompassing these core themes. It has also been reported that self-help groups, irrespective of approach, have an inherent therapeutic factor (Moos, 2008). Group-based interventions promote interpersonal relationships, reduce individual's perceptions of isolation and increase their perceptions of support. This alongside their effectiveness at reducing substance misuse may be sufficient to reduce depressive symptoms. McIntosh and Ritson (2001) described how addressing substance misuse alone would provide improvements in depressive symptoms.

In conclusion, based on the studies reviewed, integrated group-based interventions demonstrate a trend to be more effective when compared to substance misuse interventions. They are significantly more effective post-intervention than substance misuse interventions which did not provide a structured, manualised approach. Integrated group-based interventions also appear to sustain changes more effectively than substance misuse interventions alone.

Limitations of the current review

This review is limited in its generalizability as only 13 studies were identified in the search strategy, these were written by 8 different groups of authors and 9 had small sample sizes (<100). In addition, the small number of studies alongside the variety in participants, settings, depression severity, outcome measures, what rate of attendance constitutes completing the intervention, the differing timings of follow ups and the different control group programmes, meant that the review was only able to provide a qualitative evaluation as opposed to a quantitative meta-analysis. The small number of studies and the uneven distribution across therapeutic approaches also limited the generalizability of the findings to different settings and populations, for example it remains unknown whether an ICBT intervention would be effective in prisons for both males and females or whether an IPT or BA group would effective in reducing substance misuse.

Recommendations for future research

Future research in this area would be recommended to increase the reliability and validity of any conclusions and to enable a meta-analysis of the effectiveness to be considered across therapeutic approaches. Conducting some of this research within the UK would increase the generalizability of the findings to a UK population. It would also be a recommendation, that future studies use treatment as usual as the control. This would reduce the likelihood that they are offering an integrated intervention and be representative of what is currently available within substance misuse services.

The effectiveness of incorporating mindfulness into interventions also warrants further research. Hides, Samet and Lubman (2010) also recommended that third-wave CBT interventions, such as MBRP receive greater research attention as they

acknowledge the promising results beginning to be published (Brooks, Fay-Lambkin, Bowman & Childs, 2012; Forman, Herbert, Moitra, Yeomans & Geller, 2007; Hayes & Levin, 2012; Livingston et al., 2012; Luoma, Kohlenberg, Hayes & Fletcher, 2012)

Clinical Implications

Acknowledging the above limitations, this review produced interesting findings which have specific clinical implication. The prevalence of co-occurring depression and substance misuse alongside the associated poorer outcomes has resulted in the recommendation that individuals be offered integrated interventions within one service (Cosci & Fava, 2011; Crome, Chambers, Frishers, Bloor, & Roberts, 2009; DoH, 2007; Drake et al., 1998; Graham, Copello, Birchwood & Mueser, 2003; Hides et al., 2011; Hoff & Rosenheck 1998; 1999; Kessler, 2004; Weaver et al., 2003). This review concluded that, based on the current literature, ICBT group-based interventions are effective in reducing depressive symptoms and substance misuse. Compared to substance misuse treatment alone ICBT demonstrates a greater capacity to sustain the changes over time. Therefore, based on this review, it would be recommended that individuals with co-occurring depression and substance misuse within addiction services be offered the opportunity to engage in ICBT group-based interventions.

The current review drew similar conclusions to reviews which evaluated the effectiveness of individually delivered integrated interventions (Baker, Thornton, Hiles, Hides & Lubman, 2012; Hesse, 2009; Hides, Samet & Lubman, 2010). However, as group-based interventions are considerably more cost effective (Magill & Ray, 2009; Sobell, Sobell & Agrawal, 2009, DoH, 2007), it would be recommended that implementing the ICBT group-based intervention into addiction services should be the preferred method of delivery.

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CHAPTER II

Empirical Paper

**Social networks, substance misuse and psychological distress in women
attending community drug services**

Abstract

Background/Aim Social network characteristics and social support have been found to influence recovery and psychological well-being in mental health and substance misuse samples. The current study explored the relationships between social network characteristics and social support with substance dependence and psychological distress for women engaging in addiction services. Method: A cross-sectional questionnaire design was used with a convenience sample of women ($N=59$). Participants completed measures of current substance dependence, psychological distress, social network structure and social support. Results: Participants were predominantly White British, single, had children who lived elsewhere, were poly-substance users, experienced psychological distress within the clinical range and had a mean age of 36.2 years. The mean social network size was 4.98, excluding professionals. Analysis revealed that structural components of participants' social networks did not significantly predict psychological distress or substance dependence. However, participants' perceptions of social support significantly predicted both psychological distress and substance dependence. Specifically, the sense of belonging influenced substance dependence. Discussion: The structural components of participants' social networks and the clinical profile were consistent with previous research. The relationship between perceptions of social support and psychological distress and substance dependence are discussed in the context of Relational Regulation Theory. Enhancing perceptions of social support within addiction interventions are recommended.

Keywords: *Substance misuse* *Social Networks* *Women/Females*
Mental Health *Comorbidity* *Psychological Distress* *Social Support*

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attending community drug services

Social networks and the social support available within these networks are reported to have a positive effect on the health and well-being of adults of all ages (e.g. Andrew, 2005; Bronfenbrenner, 1986; Tew et al., 2012; Thoits, 2011; Uchino, 2004, 2009; Uchino, Bowen, Carlisle & Birmingham, 2012; Umberson & Montez, 2010). Across physical and mental health, social networks can be a protective factor for developing a multitude of illnesses and can promote recovery (e.g. Berkman, Glass, Brisette & Seeman, 2000; Uchino, 2009). It has been found that positive and supportive social networks can protect individuals' from harm and enhance psychological wellbeing whereas negative and conflicted social networks can maintain and perpetuate 'destructive behaviours' (e.g. Bandura, 1986; 1999; Laudet et al., 2000).

Substance Misuse and Mental Health

Substance misuse is a significant global problem with huge economic, social, psychological and health implications (Degenhardt et al., 2013; European Drug Report, 2013; National Institute of Drug Abuse, 2014; Whiteford et al., 2013; World Health Organisation, 2000). Not only does substance misuse have these implications for the individual but also for the family, friends and community (Day et al., 2012; Galea, Nandi & Viahov, 2004; Jalilian et al., 2014). These associated implications are more likely to be experienced by women in a shorter time period than males, described as 'telescoping' (Greenfield, Back, Lawson & Brady, 2010) irrespective of which substance they used. As a result, upon entry to addiction services women tend to present with more severe clinical profiles (psychological, social,

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economic, behavioural and biological) than males (Marsh, Cao & D'Aunno, 2004; Yeom, 2011). Females are more likely than males to have experienced abusive childhoods (e.g. Batholomew et al., 2002; Doherty, Green, Reisinger & Ensminger, 2008; Shand et al., 2011), further complicating their clinical profile.

Individuals who misuse substances are also reported to be highly likely to have a co-occurring diagnosis of mental health difficulties (Cosci & Fava, 2011; Kessler, 2004; Sellman, 2009; Weaver et al., 2003); in fact these authors assert that comorbidity of substance misuse and mental health difficulties should be regarded as the rule rather than the exception. This is particularly the case for women, who are more likely to be diagnosed with a mood or anxiety disorder (e.g. Greenfield, Back, Lawson & Brady, 2010; Khan et al., 2013a; 2013b; Pasche, 2012), an eating disorder (e.g. Holderness, Brook-Gunn & Warren, 1994; Hudson, Hiripi, Pop & Kessler, 2007), post-traumatic stress disorder (PTSD) (e.g. McLean, Asnaani, Litz & Hofmann, 2011; Najavits, Weiss & Shaw, 1997) or attachment related disorders (Grella, 2007; LaFond, Padykula & Conklin, 2010; Tafam & Baiocco, 2009) than males. It is women's more complicated clinical profile and subsequent poorer treatment outcomes (Dutra et al., 2008; Weaver et al., 2003) which resulted in the recommendation that research should focus on women alone or ensure sufficient samples sizes to enable gender comparisons (Wenzel et al., 2009).

Social Networks, Substance Misuse and Mental Health

There are two psychological models in the literature that attempt to make sense of the role of social networks in people who experience mental health difficulties. The first is the Stress-buffering model (Cohen & Wills, 1985; Cohen, Underwood & Gottlieb, 2000) which conceptualises the functional role of social support in buffering stress. The second is the main

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effects model (Cohen & Wills, 1985) which focuses on the direct relationship between social network characteristics and health outcomes. The stress buffering model proposes that social network characteristics are related to mental health only when the person experiences a stressful event, whereas the main effects model proposes that social networks influence mental health irrespective of the stressors individuals' experience. Although the impact of social networks on individuals who are dependent on substances and/or present with mental health difficulties is present across genders, it is argued the impact is greater for women, with poorer support and smaller networks being said to have a greater negative impact on their well-being and recovery from both mental health and substance misuse, than for their male counterparts (Grella & Greenwell, 2007; Grella, 2008; Rothman, Anderson & Stein 2008; Savage & Russell, 2005; Tracy et al., 2012; Tracy & Biegal, 2006).

Although the stress-buffering model (Lazarus, 1966; Cohen & Willis, 1985) has tended to dominate the social support research, (e.g. Clark, 2001; Forrester-Jones et al., 2012; Schofield et al., 2001) it has not been adequate when attempting to account for the highly replicable main effects between social network characteristics and mental health (Kawachi & Berkman, 2001; Lakey & Cronin, 2008). However, the main effects model has previously struggled to offer a theoretical framework to conceptualise the findings (Lakey & Cronin, 2008). Thus the Relational Regulation Theory (RRT) (Lakey & Orehek, 2011) has been proposed. This theory provides a way of conceptualising the main effects findings, specifically that it was the individual's perception of social support which was most strongly associated with health and well-being, rather than the enacted supportive behaviours of the network members (Heaney & Israel, 2008). RRT specifically posits that individuals regulate their affect through their interactions with others. They suggest that *'perceived support typically does not cause affect directly but emerges from the types of social interactions that*

successfully regulate affect' (p. 490). RRT incorporates one of the fundamental principles of attachment theory (Bowlby 1969), the need to belong (Baumeister & Leary, 1995; Maslow 1954). Lakey and Orehek (2011) describe how RRT also utilised Bowlby's concept of internal working models to describe how individuals develop what they term 'cognitive representations' of others, relationships and the availability of support. Thus negative cognitive representations lead to heightened levels of psychological distress. RRT also offers an explanation for the homogeneity of social networks (McPherson et al., 2001; Wrzus et al., 2013). RRT describes how individual's need to share thoughts, attitudes, beliefs and activities with others in order to regulate affect.

Within the field of substance misuse, these two models have been less widely utilised and explored. Although social networks have been reported to play a crucial role in the initiation, maintenance and abstinence of substance use (Tracy et al., 2012; Valente, Gallaher & Mouttapa, 2004) as well as influencing treatment compliance and recovery outcomes (Dobkin et al., 2002; Drake, Brunette, & Mueser, 1998; Lewandowski & Hill, 2009) these findings have been conceptualised within 'peer influence' literature and models (Bohnert, Bradshaw & Latkin, 2009; Degenhardt et al., 2010; Ray, 2011), rather than the models utilised within physical and mental health (Cohen & Willis, 1985; Kawachi & Berkman, 2001; Lakey & Cronin, 2008; Uchino, 2004, 2009; Uchino et al., 2012). Despite Tracy and Biegel (2006) describing the importance of assessing an individual's social network, in mental health, addiction and dual diagnosis services in identifying sources of stress, pressure and support that may positively and/or negatively impact on recovery. The literature exploring the social networks of those who use substances (reviewed below) has tended to solely focus on descriptive accounts of social networks and perceptions of support rather than exploring

the relationships social network characteristics and mental health and/or substance misuse nor have they attempted to conceptualise the findings within any model or theoretical framework.

Size of Social Networks

The size of a social network is considered to be an important characteristic as it argued to be an indication of the support resources available to an individual (Wrzus, Hanel, Wagner & Neyer, 2013), it is suggested that a larger network size is associated with better health and well-being (Carstensen, 1991; 1992; Kahn & Antonucci, 1980; Pinquet & Sorensen, 2000; Thoits, 2011). It has been widely asserted that individuals who use substances and may have co-occurring mental health difficulties have smaller networks compared to those that do not and that this is even smaller for females, typically ranging from 4 to 10 (El-Bassel et al., 1998; Goldberg, Rollins, & Lehman, 2003; Pickens, 2003; Savage & Russell 2005; Skeem et al. 2009; Tracy & Biegel, 2006; Tracy et al., 2012). However, when comparing these studies against a meta-analysis of social network sizes for non-clinical samples (Wrzus et al., 2013) which reported an average network size 6.1 (*SD* 3.4) for non-clinical samples, this does not seem to support the argument. It is, however, acknowledged that network sizes can vary considerably across studies depending on what measures or prompts are used to create the list (Hill & Dunbar, 2003; Roberts, Dunbarm Pollet & Kuppens, 2009; Wrzus et al., 2013) or whether certain network members are included or excluded, such as children (Tracy & Martin 2007).

Composition of Social Networks

Social networks typically comprise of individuals categorised as partners, family, friends or work colleagues. In a review of non-clinical populations Wrzus et al. (2013) describe family relationships as being consistently present and relatively stable within an

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individual's social network. However, this may be different for individuals who misuse substances or have co-occurring substance misuse and mental health difficulties. For these individuals, family contact can be lessened due to many factors, they may have exhausted the support available from family (Falkin & Strauss, 2003), they may withdraw in order to reduce the levels of conflict associated with their substance misuse (Copello, 2003), to reduce their feelings of guilt or shame (Drake, Brunette & Mueser, 1998; Hawkins & Abrams, 2007) or to protect themselves from abusive relationships (Savage & Russell, 2005).

By adulthood individuals tend to develop homogenous friendship groups, that is, individuals within their network tend to be alike to the individual (McPherson, Smith-Lovin & Cook, 2001; Wrzus et al., 2013). This has been asserted to be a particular difficulty for individuals who misuse substances and/or have mental health difficulties, as the homogenous group can reinforce substance misuse (Arbour-Nicitopoulos, Kwan, Lowe, Taman & Faulkner, 2010; Min et al., 2013; Tyler, 2008; Valente et al., 2004), normalise risky behaviours (Lakon, Ennett & Norton, 2006; Skeem et al., 2009) and/or deter the individual accessing treatment (Wenzel et al., 2009).

Perceived Social Support

In addition to size and composition, the support available to an individual within their network has been explored. Supportive networks are said to serve as a buffer for stressful events, protect from physical and mental illness and promote recovery, (Andrew, 2005; Berkman, Glass, Brissette & Seeman, 2000; Tew et al., 2012; Thoits, 2011; Uchino, 2004; 2009; Uchino et al., 2012; Umberson & Montez, 2010). This is known as the 'stress-buffering hypothesis' (Lazarus, 1966; Cohen & Willis, 1985). Alternatively the 'main effects model' (Cohen & Willis, 1985) posits that it is the individual's perception of the support which is

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most strongly associated with health and well-being, rather than the actual supportive behaviours of the network members (Heaney & Israel, 2008). Research which asserts that poor social support has been directly associated with loneliness, mental illness and suicide (Forrester-Jones et al 2012) supports this model.

Although some traditional approaches to substance abuse treatment emphasize severing past ties to achieve abstinence (Trulsson & Hedin, 2004), proponents of gender-sensitive treatment for women have cautioned about the downside of this approach, because a woman's identity and sense of self are often entangled in her connections to others, approaches that cut her social ties can leave a woman alone and vulnerable (MacDonald et al., 2004). Thus, improving rather than avoiding women's social networks has become an important focus in treatment planning for individuals with mental health difficulties and/or who use substances, (Department of Health, 2009).

Study Aims

The current study had two aims, firstly as previous research has predominantly been undertaken in the USA (Buchanan & Latkin, 2008; El-Bassel et al., 1998; Falkin & Strauss 2003; Savage & Russell, 2005; Tracy et al., 2012) the current study aimed to add to the existing research by comparing descriptive social network information from a UK based community sample of women who used a variety of substances. In addition, in order to add to the existing studies and enhance the generalizability of previous findings, the current study also broadened the inclusion criteria, previously used within similar studies, to reflect the diversities present within addiction services. Specifically this was achieved by recruiting women from community and outreach addiction services within a large city in the UK West Midlands which provide treatment to a diverse population with minimal exclusion criteria.

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In addition, research has used samples with a broad age range usually spanning from late adolescence through to middle adulthood (Bohnert et al. 2010; Buchanan & Latkin, 2008; El-Bassel et al 1998; Falkin & Strauss, 2003; Hawkins & Abrams, 2007; MacDonald et al. 2004; Savage & Russell, 2005; Shand et al. 2011; Tracy et al. 2010; Tracy et al. 2012; Watson & Parke, 2011). Developmental psychologists assert that size and composition of social networks change depending on developmental stages (Arnett 2005; Erikson 1959 cited in Carr & McNulty, 2011; Hartup & Stevens 1997; 1999). Therefore it is difficult to ascertain whether the findings reported are merely reflections of developmental changes over time or meaningful descriptions of these participants' network size and compositions. Wrzuz et al (2013) draws together literature related to social network changes over the life span in non-clinical samples, they conclude that several normative events alter the size and composition of a social network over the course of an individual's life. Therefore the current study also utilised age as a variable to ascertain whether this influence the social network characteristics.

As detailed, the previous studies undertaken have provided descriptive information regarding social network characteristics and perceptions of support at different stages of treatment (Falkin & Strauss 2003; Tracy et al. 2012), in relation to specific substances of use (Buchanan & Latkin, 2008; El-Bassel et al. 1998) or specific clinical difficulties (Savage & Russell, 2005) and at times they have compared different groups (Tracy et al. 2012) but overall the studies have omitted to explore the relationships between these variables. Therefore the second aim of the current study was to go beyond the descriptive accounts and explore the inter-relationships between substance misuse dependence, psychological distress, age, social network size and composition and perceptions of social support. However, in order to explore these relationships consideration was given to which measures to utilise. As the study aimed to recruit people who used a range of substances, this raised the additional

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difficulty with respect to the identification of a measurement of substance dependence as each substance is typically associated with different patterns, frequencies, biological impacts and routes of use. Therefore a focus was placed on perceived psychological aspects of dependence (e.g. salience; impaired control) with the use of the Leeds Dependence Questionnaire (Raistrick et al. 1994). The term 'dependence' is not without its own difficulties, as it is commonly used interchangeably to describe physical dependence, psychological dependence or a combination of both (Miller, 2006; O'Brian, 2011; O'Brian & Volkow, 2006). For the purpose of the current study the term 'dependence' is used to describe an individual's perception of their psychological dependence on their self-identified primary substance of use. The measure chosen (Leeds Dependence Scale, detailed below) has been validated to measure perceptions of psychological dependence across substances. The study also aimed to establish a measure of psychological distress irrespective of 'mental health' diagnosis. Diagnosis of a 'mental health' can be complicated as a result of comorbid substance misuse, (Cosci & Fava, 2011; McIntosh & Ritson, 2001), thus the proportion of individuals engaging in addiction services with a mental health diagnosis is considered to be an under representation of the actual prevalence (Weaver et al 2003), therefore a measure of psychological distress would reduce the chances of inaccurately excluding participants and increase generalizability of the study's findings. Therefore, a measure of psychological distress (Global Severity Index within the Brief Symptom Inventory, Derogatis, 1992, detailed below) which is widely used was considered the valid measurement to indicate mental health for this sample.

Based on previous evidence reviewed, the study aimed to test five specific hypotheses to both enable exploration via comparison to previous studies, but also extend research from descriptive findings to consider the inter-relationships between variables:

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1) In line with previous findings reviewed, a positive correlation was predicted between the network size and the women's' perceptions of social support so that larger networks would be associated with more positive perceptions of support

2) Based on previous literature on the impact of low levels of available social support on mental health and substance use, it was hypothesised that women's' current psychological distress and dependence on their primary substance would be negatively correlated with network size and perceptions of social support

3) As size and influence of social support changes over different stages of people's lifetime (Wrzus et al., 2013), it was predicted that age would influence the size of the social network reported and the perceptions of social support. This was an exploratory hypothesis, with no stated direction.

The final two hypotheses (4 and 5 below) aimed to further explore the relationship between social network structural variables (i.e. size and composition) as well as the women's' perceptions of social support and their associations of both of these with psychological distress and psychological substance dependence. The findings from these hypotheses enabled exploration of whether the stress-buffering model or the main effects model (Cohen & Willis, 1985; Lakey & Cronin, 2008; Lakey & Orehek, 2011) are suitable frameworks to conceptualise and explain the findings. The main effects model (Cohen & Willis, 1985) suggests that it is the *individual's perception of social support* which would be most strongly associated with health and well-being. In contrast, the stress-buffering model (Cohen & Willis, 1985) would suggest that it is the structural components (i.e. size and composition) of the social network would be most strongly associated with health and well-being. Neither model has previously specifically been tested in relation to substance misuse in an all-female

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population. Therefore hypotheses 4 and 5 tested the role of social network characteristics (i.e. perceived social support, size of network and number of substance users) in predicting both psychological distress and substance dependence. Psychological distress and substance dependence were the dependent variables. The specific hypotheses were:

4) The level of participants' 'dependence' on their primary substance, the size of their network and their perceptions of social support will be predictive of current psychological distress

5) The number of individuals within the women's social network who use substances, their perceptions of social support and the size of their network will be predictive of their current psychological dependence on the primary substance used.

Method

Design

The current study used a cross-sectional correlational questionnaire design. The sample was a convenience sample of women receiving treatment for substance misuse within community addiction services. A target was set to recruit 65 females to enable a medium effect size (0.2) to be observed (see Appendix E). The current study achieved a recruitment figure of 59, although this has an impact on the effect size (0.22) which can be observed it is considered an acceptable balance between economy and precision within the resources available for the study and allows for the detection of medium to large relationships (Cohen's (1988)).

Participants

Participants were recruited from three out of the four community based addiction services within a large NHS trust in the West Midlands alongside a citywide charity organisation working in partnership with the NHS to provide addiction services to women via outreach and/or who have co-occurring substance misuse and mental health difficulties. To be included in the study women needed to be currently accessing treatment through one of the services and to be using substances currently or have a history of substance misuse. All participants needed to be able to speak English. Participants were excluded if they were in prison, currently undertaking a community detoxification or residential detoxification, too acutely unwell physically or mentally during recruitment period, due to give birth or had just had a baby. These exclusions were in place to protect individuals who may have been unable to give informed consent and/or to ensure, as much as possible, an accurate reflection of

psychological well-being. Participants were required to attend the services to undertake the interview and therefore inability to attend services was an additional exclusion criterion.

Procedure

The research was approved by the National Research Ethics Service Committee West Midlands (Solihull) (REC reference 13/WM/0080) and by the Research and Development department within the participating NHS trust (Appendix A).

Potential participants were identified from recovery workers caseloads. A recovery worker was any member of the multi-disciplinary team who was providing a service to the participant. Potential participants were then approached by a member of the team, who they were familiar with, and provided with brief information about the study. If they expressed an interest in participating verbal consent was obtained to meet with the researcher. The researcher then met with participants to provide information about the research, both verbally and in writing (see Appendix B). If potential participants agreed an interview with the researcher was arranged. At the time of the interview the information sheet was revisited with participants and written consent was obtained (see Appendix C). During the research appointment all participants were asked to complete the measures detailed below. For all participants the researcher read out each question and the participant utilised templates to allow them to choose their most appropriate response. Using the same method of delivery for all participants reduced the likelihood of any misunderstandings of questions, as clarifications were provided consistently by the researcher. Interviews lasted approximately 45 minutes and took place within the participants' community addiction services in a clinical interview room. Participants were all entered into a prize draw as an incentive to participate and bus fare incurred attending the interview was refunded.

Measures

Five measures were used; all administered in the same order (see Appendix D). These measures are listed below. Demographic information about participants was also collected during the interview using a standardised format.

1. Treatment Outcome Profile (TOP)

The TOP is routinely used by the addiction teams within the NHS trust where participants were recruited from to monitor progress of an individual through their treatment. It is a measure consisting of 20 items, focussing on four important treatment domains as defined in the National Treatment Agency (NTA) care planning practice guide, (Substance use, Injecting Risk Behaviour, Crime and Health and Social functioning). The concurrent validity tests of each domain are detailed below and were assessed via correlation with standardized scales or objective measures. The domains used for the current study were the Substance Use and Health and Social Functioning. Both of these domains are reported to have a 'satisfactory' level of reliability and validity (see Marsden et al., 2008 for full details). The concurrent validity of the 'Substance Use' domain was assessed by comparing to oral drug testing, (Cohen's Kappa < 0.61 , threshold for 'substantial agreement'). The concurrent validity of the 'Health and Social Functioning' was assessed using Pearson's correlation with the Patient Health Questionnaire (PHQ-15, $p < 0.001$), General Health Questionnaire (GHQ-12, $p < 0.001$) and Social Functioning Questionnaire (SFQ, $p < 0.001$). The test-retest reliability of the domains within the TOP were reported to be 'acceptable', that is for all domains Cohen's kappa was greater than 0.75 (Marsden et al., 2008). The questionnaire provides frequency and descriptive information about the individuals' use of substances within the last 28 days, it does not produce any significance scoring nor does it have any clinical cut off scores. The

TOP also includes three rating scales, these ask the participant to rate their psychological health, physical health and quality of life on a scale of 0 – 20, with 0 being poor and 20 being good.

2. Leeds Dependence Questionnaire (LDQ)

Consisting of 10-items designed to measure psychological dependence upon a variety of substances, the measure is sensitive with a range from mild to severe dependence (Raistrick et al., 1994). Participants are asked to respond to questions with never (0), sometimes (1), often (2) or nearly always (3). The LDQ is a well-used measure, the reliability and validity of this measure is reported to be 'satisfactory' across a range of substance (see Heather et al., 2001; Raistrick et al., 1994 for details). Eight pilot studies were undertaken to ensure the content validity of each item within the measure. The items mapped onto the diagnostic manuals criteria for substance dependence (e.g. pre-occupation, salience, compulsion, planning, maximizing effect and perceptions of lack of control). Concurrent validity was initially established by comparing the LDQ scores with other standardised measures for alcohol and opiate use (Spearman's correlation coefficient < 0.01 ; Raistrick et al., 1994). But more recently concurrent validity has been established across a range of substances (Spearman correlation $p < 0.0001$; Heather, Raistrick, Tober, Godfrey & Parrott, 2001; Kelly, Magill, Slaymaker & Kahler, 2013). The test-retest reliability was originally reported to be 0.95 (Raistrick et al., 1994), this has been replicated in subsequent studies (Heather et al., 2001; Kelly et al., 2013). The measure produces a raw score between 0 and 30, this is then categorised as no dependence (score 0), low to moderate dependency (1 – 10), moderate to high dependency (11 – 20) and high dependence (21 – 30). The scoring was utilised as a continuum of dependency for the analysis (Heather et al., 2001).

3. Brief Symptom Inventory (BSI).

The BSI (Derogatis, 1993) consists of 53 self-report items, drawn from the Symptom Checklist-90-R (Derogatis, 1993) and assesses an individual's current psychological symptomology and distress. Each symptom is rated on a five point scale of distress (0 – 4), ranging from not at all (0) to extremely (4). The nine subscales are Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic anxiety, Paranoid ideation and Psychoticism. The BSI also includes three indices of global distress: the Global Severity Index (GSI) which measures the severity of symptoms, Positive Symptom Distress Index (PDSI), which measures the intensity of the symptoms and the Positive Symptom Total (PST), which measure number of positively reported symptoms.

The BSI produces raw scores for each subscale, from which means can be produced and compared to the normative means provided within the manual. These raw scores can also be transformed into T-scores. The BSI manual provides normative data for four groups' adult non-patients, adult psychiatric outpatients, adult psychiatric inpatients and adolescent non-patients; each group has data separated for males and females. Based on adult non-patient norms the following criteria are provided to indicate what Derogatis (1993) refers to as 'case', that is the score is seen in only 10% of the population and is therefore reported to be clinically significant. The guidelines to assessing this are 1) a T-score of 63 or above on the GSI or 2) a T-score of 63 and above on any two dimensions. As there is strong evidence for the prevalence of mental health difficulties among those in substance misuse treatment the adult psychiatric outpatient group was chosen as the reference population. The BSI has demonstrated good internal consistency reliability for the nine dimensions, ranging from .71 on Psychoticism to .85 on Depression (Derogatis, 1993). The GSI had strong internal consistency and reliability with a Cronbach's alpha coefficient of 0.97. The test author advises

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that the Global Severity Index is the scale that is the most sensitive single indicator of distress. Although all subscales will be reported, the GSI will be the measure of psychological distress used within the analysis.

4. Important People Drug and Alcohol Interview (IPDA).

The IPDA is adapted from the Important People and Activities (IPA) interview used in Project MATCH, (Longabough, Wirtz, Zweben & Stout, 1998). Participants are asked to provide the names of individuals who have been important to them in the past 6 months, irrespective of whether they liked them or not. Space for up to 12 individuals is provided. The participant is asked to exclude children 17 years or younger. The interviewer then guides the participant through 9 questions which provide information about the nature of their relationship with the network member, their level of contact, importance, support received, the network members substance misuse and attitudes toward the participants substance misuse and treatment. It is due to these subsequent questions that the age limit is applied. The IPDA has been utilised in previous research (Day et al., 2012; Zywiak et al., 2009) and social network interviews following these prompted recall formats are considered the most reliable (Wrzus et al., 2013). This measure provides frequency and descriptive information but does not provide any clinical cut offs or significance data.

5. Interpersonal Support Evaluation List (ISEL).

The ISEL is a 40 items self-report scale designed to measure social support across 4 domains: tangible – the perceived availability of material assistance, belonging – the perceived opportunity to engage in social and leisure activities, appraisal – perceived availability of someone to talk to about your problems and self-esteem – perceived

availability of a positive comparison when comparing oneself to others. The authors report a good level of internal consistency (Cronbach's alpha between 0.88 and 0.90) and the authors assert 'satisfactory' content, concurrent, discriminant and convergent validity, however do not provide their detailed analyses (Cohen & Hoberman, 1983; Cohen & Wills, 1985). The ISEL was developed by the authors who proposed the stress-buffering and main effects models, thus has been widely utilised within research exploring these two models. Although higher total scores are described as indicating higher levels of perceived social support, a cut-off value for the optimum level of perceived social support is not provided with this measure.

Data Analysis

Data was analysed using IBM SPSS for windows version 20 (Statistical Package for the Social Sciences). All variables utilised within the analysis did not deviate significantly from the normal distribution ($p > 0.05$; see Table 1), therefore parametric tests were used. To address the first aim a combination of descriptive statistics were employed to provide a detailed description of the sample characteristics, their substance use, psychological well-being, social networks and their perceptions of social support.

To assess the relationships between network size with social support (hypothesis 1) and psychological distress and dependence on primary substance with social network size and social support (hypothesis 2) one-tailed Pearson's correlation analysis was undertaken. To assess hypothesis 3 a two-tailed Pearson's correlation analysis was undertaken to assess whether age influenced social networks. Regression analyses was then employed to establish whether dependence on primary substance, social network size and social support predicted psychological distress (hypothesis 4) and whether the density of other substance users, social support and size of the network predicted dependence on substance used (hypothesis 5).

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Table 1 Kolmogorov – Smirnov test for normality.

Variable	Mean	Standard Deviation	Kolmogorov – Smirnov Test (D)	P
Age (years)	36.200	8.552	0.610	0.850 ^{NS}
Dependence (LDQ)	12.050	8.310	0.762	0.606 ^{NS}
Psychological Distress (GSI)	1.835	0.845	0.872	0.433 ^{NS}
Support (ISEL)	69.560	25.733	0.615	0.843 ^{NS}
Size of social network	6.305	2.680	0.972	0.302 ^{NS}
Density (%)	23.598	18.821	1.17	0.129 ^{NS}

^{NS} Not Significant

Results

Sample

A total of 322 women met the inclusion criteria for the study. Of these, 37% ($N=119$) were approached by their recovery workers to take part in the study¹. Of the 119 who were asked; 26% ($N=31$) declined, 24% ($N=28$) agreed but subsequently did not attend the research interview and 50% ($N=60$) agreed and undertook the interview. However, one of the women decided to withdraw from the study, resulting in a final sample of 59 women, which equated to a recruitment rate of 18% for those who met the study inclusion criteria.

Participant Characteristics

The sample constituted 18% of the overall sample, therefore the age and ethnicity of the study sample were compared to the respective statistics for the overall service population to explore if they were significantly different. Although age of participants showed a smaller range than the population from which they were sampled, the mean age of participants in the study sample, was not significantly different ($t= - 0.697, p=0.488$). The study participants were predominantly White British ($N=43, 72.9\%$), this was representative of the entire population from which they were recruited where 71% were White British.

Table 2 Age of sample compared to sample from which they were recruited

Age (years)	Study ($N=59$)	Overall ($N=322$)	T
M(SD)	36.2 (8.55)	35.34(8.91)	- 0.697 ^{NS}
Range	20 – 58	20 – 77	

^{NS} - Not Significant

¹ Recovery workers cited individuals not engaging or not remembering as the reasons for not asking.

Table 3 Sample Characteristics

Just over half of the participants in the study were single at the time of the interview ($N=35$, 57.6%). The majority of the participants had children ($N=49$, 83.1%), on average the women had 2 children ($M = 2.15$, $SD = 1.71$, range 0 – 8). At the time of interviews the 59 women in the study had a total of 127 children. Of these 127 children, 23% ($N=29$) lived with the participant, 29% ($N=37$) lived with an alternative family member, 24% ($N=31$) were being looked after by the local authority and 24% ($N=30$) were above the age of 18 years. The majority of the participants reported being secure in their current accommodation ($N=50$, 84.7%) and just over half lived in council or housing association properties ($N=30$, 50.9%). Table 3 shows the demographic characteristics of the sample.

Substance Use

Just under half of the women, ($N=26$, 44%) reported at the time of the interview to be using more than one substance. The substances most commonly used were alcohol ($N=25$, 42.4%) and heroin ($N=13$, 22%). In terms of past use, heroin was the most common substance used ($N=25$, 42.4%). This prevalence was also reflected in what participants reported to be their primary substance of use, 27.1% ($N=16$) reported alcohol and 25.5% ($N=15$) reported heroin. The women were also asked how old they were when they commenced primary substance use, responses ranged from 10 to 42 years old, with the mean age being 20 years ($SD=8.02$). Just over half of the women ($N=33$, 56%) were prescribed an opiate substitute medication, with the majority prescribed methadone ($N=25$, 75.6%). The levels of dependence on their primary substance, as measured by the Leeds Dependence Questionnaire (LDQ), were varied, (range 0 – 29) with a mean of 12.05 ($SD=8.31$), which is categorised as moderate – high dependence. Tables 4 and 5 illustrate the substance use characteristics of the sample

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	M(SD) Range	N	%
Age	36.2years(8.55) 20 – 58 years		
Ethnicity			
White British		43	72.9
White Irish		3	5.1
Asian or Asian British (Indian)		1	1.7
Asian or Asian British (Pakistani)		4	6.8
Black or Black British (Caribbean)		1	1.7
Black or Black British (African)		1	1.7
Mixed (White & Black Caribbean)		3	5.1
Mixed (White & Black African)		1	1.7
Mixed (White & Asian)		1	1.7
Mixed (White & Other)		1	1.7
Relationship Status			
Single		34	57.6
In a relationship (living together)		11	18.6
In a relationship (not living together)		7	11.9
Married		6	10.2
Separated		1	1.7
Children			
Have children		49	83.1
Number of children	2.15(1.71) 0 – 8 children		
Where Children reside (N=127)			
Living with mother (participant)		29	23
Living with a family member		37	29
In Local Authority care		31	24
18+ (independent)		30	24
Housing status			
Secure		50	84.7
At risk of eviction		9	15.3
Type of Housing			
Council		22	37.3
Homeless/Hostel		4	6.8
Staying with friends		2	3.4
Private rental		12	20.3
Living with family		4	6.8
Own property		2	3.4
Housing Association		8	13.6
Recovery House		3	5.1
Supported accommodation.		2	3.4
Current level of functioning (TOP) (0 poor – 20 very good)			
Physical health rating	10.37(5.10)		
Psychological health rating	9.29(4.57)		
Quality of life rating	9.05(4.94)		

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Table 4 Substances of Use

	Mean(SD) Range	N	%
Heroin.			
Past		25	42.4
Current		13	22
None		21	35.6
Current Users – Days used in past 28 days	9.69 (10.152) 0 – 28 days		
Crack			
Past		20	33.9
Current		12	20.3
None		27	45.8
Current Users – Days used in past 28 days	5.67(8.679) 0 – 24 days		
Cocaine			
Past		9	15.3
Current		2	3.4
None		48	81.4
Current Users – Days used in past 28 days	3.5(3.536) 1 – 6 days		
Cannabis			
Past		12	20.3
Current		17	28.8
None		30	50.8
Current Users – Days used in past 28 days	18.65(11.191) 0 – 28 days		
Alcohol			
Past		12	20.3
Current		25	42.4
None		22	37.3
Current Users – Days used in past 28 days	14.16(11.067) 0 – 28 days		
Amphetamines			
Past		6	10.2
Current		1	1.7
None		52	88.1
Benzodiazepines			
Past		6	10.2
Current		6	10.2
None		47	79.7
Codeine			
Past		0	0
Current		2	3.4
None		57	96.6
Barbiturates			
Past		1	1.7
Current		0	0
None		58	98.3
Poly Drug Use			
Past		20	33.9
Current		26	44.1
None		13	22

Table 5 Substance Use Characteristics

	Mean(SD) Range	N	%
Current reported primary substance of use			
Heroin		15	25.4
Crack		10	16.9
Heroin & Crack		7	11.9
Cocaine		1	1.7
Cannabis		7	11.9
Alcohol		16	27.1
Other		3	5.1
Route of Use of current primary substance of use			
Smoke		36	61
Inject		3	5.1
Snort		1	1.7
Oral		18	30.5
All		1	1.7
Age of onset of primary substance of use	20years(8.02) 10 – 42 years		
Currently on an opiate substitute prescription			
Methadone		25	42.4
Subutex		8	13.6
Total		33	56
Level of Dependence (Leeds Dependence Scale)	12.05years(8.31) 0 – 29 score		
No dependence (0)		4	6.8
Low – Moderate dependence (1 – 10)		24	40.7
Moderate – High dependence (11 – 20)		20	33.9
High dependence		11	18.6

Psychological Well-Being

The Brief Symptom Inventory (BSI) scores obtained by the study sample were compared to normative data to which they were the closest matched, (adult female outpatients; Derogatis, 1993). Independent two tailed t-tests were calculated comparing the current study means with the means from the normative data presented by Derogatis (1993), (see Table 6). Significant differences were reported on 8 of the 12 domains. The current sample scored significantly higher in the following domains; levels of psychological distress (GSI), Somatization, Obsessive-Compulsive, Phobic Anxiety and Paranoid Ideation , Interpersonal Sensitivity, Positive Symptom Distress Inventory and Positive Symptom Total than would be expected of females attending outpatient psychiatric services (Derogatis, 1993).

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This indicated that the women in the current study on average experienced significantly more symptoms within these domains than women in outpatient mental health services. However, there was no significant difference on the Depression, Anxiety, Hostility and Psychoticism domains.

Derogatis (1993), proposed a clinical cut-off on the BSI, he reported that a T-score of 63 or greater on any of the nine subscales or a T-score of 63 or greater on two or more subscales indicated a level of psychological distress seen within 10% of the population. Therefore any individual who met the criteria would warrant further assessment of their mental health and may require specialist evidence-based interventions. Table 7 provided the percentages of participants who met the criteria from the current study.

Table 6 BSI scored compared to normative samples

BSI Subscale	Current Sample		Normative Samples		
	N = 59		Psychiatric Outpatient Females (N=577)		Current Sample compared to outpatient
	Mean	SD	Mean	SD	T score
Somatization	1.62	1.03	0.94	0.84	5.105***
Obsessive-Compulsive	2.16	0.97	1.60	1.01	4.423***
Interpersonal Sensitivity	2.03	1.06	1.66	1.04	2.699*
Depression	1.98	1.17	1.90	1.05	0.510 ^{NS}
Anxiety	1.98	1.10	1.82	1.02	1.095 ^{NS}
Hostility	1.26	1.01	1.23	0.95	0.263 ^{NS}
Phobic Anxiety	1.77	1.24	0.91	0.91	5.338***
Paranoid Ideation	1.92	0.98	1.21	0.97	5.524***
Psychoticism	1.64	1.09	1.24	0.89	2.843 ^{NS}
Global Severity Index	1.83	0.85	1.40	0.72	3.956***
Positive Symptom Distress Inventory	2.52	0.67	2.22	0.59	3.439**
Positive Symptom Total	36.69	12.36	31.81	11.35	3.035*

*** p < 0.001 ** p<0.01 *p<0.05 ^{NS} Not Significant

Table 7 BSI Significant percentages.

BSI Subscale	N	%
Somatization	20	33.9
Obsessive-Compulsive	12	20.3
Interpersonal Sensitivity	10	16.9
Depression	8	13.6
Anxiety	6	10.2
Hostility	9	15.3
Phobic Anxiety	23	39.0
Paranoid Ideation	20	33.9
Psychoticism	14	23.7
Global Severity Index	20	33.9
Any two subscales are greater than or equal to a T score of 63 when compared with the norms for the particular population in question.	35	59.3

Social Networks and Social Support

With the exception of one participant in this sample everyone was able to identify at least one person within their social network. The mean number of people identified was 6.31 (*SD* 2.68). The majority of participants identified professionals from their treatment services within this network list, therefore for comparison to the normal population the mean was also calculated for the number of people identified excluding professionals, the mean then reduced to 4.98 (*SD* 2.24).

In terms of the composition, the social networks of the women were made predominantly of family (*M*33.82%, *SD*22.47) and then friends (*M*20.76%, *SD*21.41). Majority of the women's network was made up of non-users or abstainers (*M*73.86%, *SD*23.10), most were described by the women as supportive (*M*68.68%, *SD*24.77) and important to them (*M*77.90%, *SD*23.99). The majority of women had at least weekly contact with someone within their network (*M*73.63%, *SD*22.17); about a third had daily contact (*M*33.83%, *SD*22.36)

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The mean for the level of perceived support, as measured by the interpersonal support evaluation scale (ISEL), was 69.56 ($SD25.73$). Across the different subscales appraisal support was the highest rated ($M19.58$, $SD7.83$).

Table 8 Interpersonal Support Evaluation Scale Scores

Interpersonal Support Evaluation Scale	Mean(SD)	Range
Raw Score (0 – 120)	69.56(25.73)	11 – 111
Appraisal Support (0 – 30)	19.58(7.83)	2 – 30
Tangible Support (0 – 30)	16.24(8.27)	0 – 30
Self Esteem (0 – 30)	16.73(6.60)	1 – 29
Belonging (0 – 30)	17.02(7.58)	0 – 30

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Table 9 Social Network Characteristics.

Social Network Variables	M(SD)	Range
Number in Network	6.31(2.68)	0 – 12
Number in Network (excluding treatment)	4.98(2.24)	0 – 12
Percentage of network who use heroin, cocaine or cannabis substances moderately or a lot	10.76(15.63)	0 – 66.67%
Percentage of network who use alcohol moderately or a lot	16.10(16.21)	0 – 50%
Percentage of network who use any substance moderately or a lot	23.60(18.82)	0 – 66.67%
Percentage of network who are non-users or abstainers	73.86(23.10)	0 – 100%
Percentage of network who accept or encourage individuals use	19.20(22.10)	0 – 83.3%
Percentage of network who oppose individuals use	51.02(31.73)	0 – 100%
Percentage of network who support individuals addiction treatment	70.53(28.84)	0 – 100%
Percentage of network who oppose individuals addiction treatment	1.79(6.22)	0 – 33.33%
Percentage of network who support the individual (supportive / very supportive / extremely supportive)	68.68(24.77)	0 – 100%
Percentage of network who are important (important / very important / extremely important)	77.90(23.99)	0 – 100%
Composition		
Percentage of network composed of partners	8.93(12.3)	0 – 66.67%
Percentage of network composed of immediate family	33.82(22.47)	0 – 100%
Percentage of network composed of wider family	5.06(10.94)	0 – 41.67%
Percentage of network composed of any family	40.22(22.74)	0 – 100%
Percentage of network composed of friends	20.76(21.41)	0 – 100%
Percentage of network composed of treatment providers	18.65(19.94)	0 – 80%
Contact		
Percentage with at least once per week contact	73.63(22.17)	0 – 100%
Percentage with daily contact	33.83(22.36)	0 – 85.71%

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The results relating to the study hypotheses are reported. The aim was to explore the relationships between social network size, social support, substance dependence, psychological distress and age.

Hypothesis 1: There will be a positive correlation between Network Size and Perceptions of Social Support (ISEL).

Pearson's correlation found that participants network size was significantly associated with overall perceived support ($r = 0.283, p = 0.03$). Across the four subscales, network size was significantly associated with self-esteem ($r = 0.295, p = 0.023$) and belonging ($r = 0.413, p = 0.001$) but not tangible support ($r = 0.095, p = 0.472$) nor appraisal support ($r = 0.180, p = 0.171$). These results suggest that the larger the participant's network the higher their perceptions of self-esteem and feelings of belonging, whereas perceptions of appraisal support and tangible support were not associated with network size.

Hypothesis 2: Women's current psychological distress and dependence on primary substance will be negatively correlated with network size and perceptions of social support

Pearson's correlation analysis was undertaken comparing current psychological distress (GSI) with perceptions of social support (ISEL) and current dependence on primary substance used (LDQ) with perceptions of social support (ISEL). This showed that there was a significant negative relationship between current psychological distress and perceptions of social support within their network, ($r = -0.450, p < 0.001$). A significant negative relationship was also found between current dependence on their substance of use and perceptions of social support within their network ($r = -0.260, p = 0.047$). However, network

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size was not significantly associated with either psychological distress ($r = -0.194, p = 0.140$) or substance dependence ($r = -0.135, p = 0.306$). The results suggested that women with lower levels of perceived support in their network are more likely to report greater psychological distress and substance dependence. However, the size of their network did not influence levels of psychological distress or substance dependence.

Table 10 Correlation matrix for support, psychological distress and dependence.

	Network Size	Overall	Appraisal	Tangible	Self-Esteem	Belonging
Psychological Distress (GSI)	-0.194 ^{ns}	-0.450**	-0.344**	-0.387**	-0.321*	-0.469**
Substance Dependence (LDQ)	-0.135 ^{ns}	-0.260*	-0.150 ^{ns}	-0.121 ^{ns}	-0.294*	-0.339**

* * $p < 0.01$ * $p < 0.05$ ^{ns} Not Significant

Hypothesis 3: Current age will influence network size and levels of perceived social support

To assess whether the age of the participants influenced their network size and support, a Pearson's correlation was carried out. Neither the network size ($r = 0.092, p = 0.488$) nor the support ($r = -0.100, p = 0.450$) were significantly associated with age. Neither was any aspect of the composition, as illustrated in the correlation matrix in Table 11. Thus suggests that a women's current age is not related to the size of her network, who her network is comprised of or how supported she feels. Thus the hypothesis was not supported.

Table 11 correlation matrix for age with social network composition

	Percentage of social network made up of:					
	Partners	Immediate family	Wider family	Friends	Treatment providers	Other users
Age	-0.123 ^{ns}	0.089 ^{ns}	-0.071 ^{ns}	0.176 ^{ns}	0.166 ^{ns}	-0.122 ^{ns}

^{ns} Not Significant

Hypothesis 4: The level of participants' dependence on their primary substance, the size of their network and their perceptions of social support will be predictive of current psychological distress

A multiple regression analysis was undertaken to assess whether a women's current dependence on her primary substance of use and her perceptions of social support within her network are predictive of current levels of psychological distress. Network size was not added into the analysis as it had already been shown not to be correlated with psychological distress. The analysis illustrated a significant overall regression, ($r^2 = 0.342$, $F(2, 56) = 14.565$, $p < 0.001$), the combination of variables accounted for 34.2% of the variance in psychological distress (GSI). The analysis suggested that substance dependence significantly predicted psychological distress ($\beta = 0.387$, $p = 0.001$), as did perceived level of support ($\beta = -0.349$, $p = 0.003$). This supported the hypothesis, that women with greater dependence on substances and lower levels of perceived social support report higher levels of current psychological distress.

Table 12 Summary of regression analysis for variables predicting psychological distress

Variable	Psychological Distress (GSI)		
	B	SE B	B
Dependence	0.039	0.012	0.384*
Perceived Support	-0.011	0.004	-0.337*
R ²		0.342	
F		14.565**	

** p < 0.001

* p < 0.01

Hypothesis 5: The density of individuals who use substances within the women's social network, their perceptions of social support and the size of their network will be predictive of their current dependence on primary substance used

A multiple regression was undertaken to assess whether the density of individuals who used substances within the social network and/or their perceptions of social support are predictive of current dependence on their primary substance used. Network size was excluded, as it had already been found not to be associated with substance dependence (Table 10). The regression analysis illustrated that there was a significant overall regression, ($r^2 = 0.118$, $F(2, 55) = 3.662$, $p = 0.032$), the combination of variables accounted for 11.8% of the variance in substance dependence (LDQ). The analysis suggested that only perceived support significantly predicted the variance, ($\beta = -0.297$, $p = 0.023$), percentage of other users within the network did not predict dependence ($\beta = 0.202$, $p = 0.117$). However the absolute values for the standardized beta coefficient were quite substantial, therefore this should be interpreted with caution due to limited power of this analysis (see Appendix E). Therefore this finding may suggest that perhaps women with lower levels of social support have greater dependence on the substance they use. However, the density of other substance users within their network did not appear to influence dependence on the current substance they use.

Table 13 Summary of regression analysis for variables predicting substance dependence.

Variable	Dependence on Substance (LDQ)		
	B	SE B	β
Perceived Support	-0.098	0.042	-0.297*
Percentage of others who use within the network	0.090	0.057	0.202 ^{ns}
R^2		0.118	
F		3.662*	

* $p < 0.05$ ^{ns} Not Significant

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As the correlation between substance dependence and the subscales of social support, measured by the ISEL, illustrated that not all of the subscales were correlated (Table 10), a regression analysis was undertaken to explore which of the subscales significantly predicted dependence. The analysis illustrated a significant overall regression, ($r^2 = 0.165$, $F(4, 54) = 2.665$, $p = 0.042$), the combination of variables accounted for 16.5% of the variance in dependence. The analysis suggested that only the belonging subscale significantly predicted dependence ($\beta = -0.544$, $p = 0.031$), see Table 14 for the beta values for all subscales. This finding suggests that women who felt like they belonged to their network were less dependent on the substance they used. Conversely the findings suggest that perceptions of appraisal and tangible support did not influence the women's dependence of the substance they used.

Table 14 summary of regression analysis for support predictors of dependence.

Variable	Dependence on Substance (LDQ)		
	B	SE B	β
Appraisal support	0.132	0.199	0.124 ^{ns}
Tangible support	0.249	0.192	0.248 ^{ns}
Self-esteem	-0.126	0.215	-0.100 ^{ns}
Belonging	-0.596	0.269	-0.544*
R^2		0.165	
F		2.665	

* $p < 0.05$ ^{ns} = not significant

Additional Mediation Analysis

Given that the two regression models (hypotheses 4 and 5) illustrated the predictive role of perceived social support on both psychological distress and substance dependence, a further analysis was undertaken to explore whether substance dependence had a mediating effect on the relationships between perceived social support and psychological distress.

Preacher and Hayes (2004; 2008) provide a strategy to undertake mediation analysis with

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small samples. They recommend a nonparametric bootstrapping approach, using 10000 bootstrapped samples. Mediation is evidenced through 95% bias corrected confidence intervals which do not include zero and this must include the total of indirect effects (that is, the combined path through mediators). A significant direct effect indicates a partial mediation. Prior to conducting the mediation analysis all of the variables were transformed into z scores in order to standardise the regression parameters.

The total effect of Perceived Support on Psychological Distress was $\beta = -0.4498$ ($t = -3.803$, $p < 0.01$) which was reduced to $\beta = -0.3493$ ($t = -3.1120$, $p < 0.01$). The indirect effect (as mediated by Substance Dependence) was $\beta = -0.1006$ (95CI -0.2632 to -0.0046). Accordingly, a partial mediation effect was observed. The findings suggest that whilst there is a direct relationship between social support and psychological distress, this relationship is partly mediated by substance dependence, so that lower levels of perceived social support lead to poorer psychological health in part through substance dependence. This analysis is illustrated in Figure 1 below.

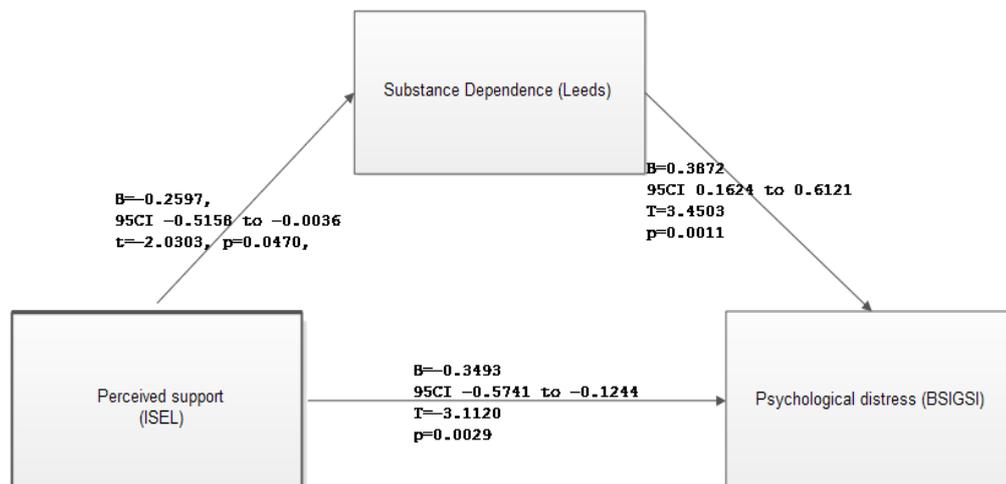


Figure 1 Visual representation of the Mediation Model

Discussion

The current study explored psychological wellbeing and its relationship to social network characteristics in a UK sample of women attending community addiction services. It also investigated the relationships between levels of substance dependence, psychological distress, social network characteristics and perceptions of social support.

The study findings showed that participants' social network size and composition were consistent with previous research studies reported, which has been predominantly undertaken in the USA (El-Bassel et al., 1998; Falkin & Strauss, 2003; Goldberg, Rollins, & Lehman, 2003; Lewandowski & Hill, 2009; Pickens, 2003; Savage & Russell 2005; Skeem et al., 2009; Tracy & Martin, 2007; Tracy et al., 2012). Despite this concordance, the current study suggested that the **structural** aspects of the social network were less influential in predicting psychological well-being and substance dependence than the **perceptions** of social support.

In terms of **structure**, although the current study showed that having a larger social network (in terms of numbers of network members) was associated with higher levels of perceived social support, it was not significantly associated with level of psychological distress or substance dependence. Furthermore, the presence of other substance users within the social network did not significantly predict dependence. **Perceived social support**, however, was significantly predictive of psychological distress and substance dependence. That is, women who felt they were unable to access social support from their network, reported higher levels of psychological distress and dependence on their substance of use than women who felt they could access social support from their network. In relation to substance dependence specifically, women who felt they did not belong within their network reported

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greater dependence on substances. These findings are discussed and clinical implications considered.

Consistent with previous research regarding the clinical profile of women who misuse substances, (Ashley, Marsden & Brady, 2003; Brady & Ashley, 2005; Greenfield et al., 2007; 2010), just over half of participants in the current study produced scores suggesting clinical levels of psychological distress. The results of the current study also illustrated the strong relationship between substance dependence and psychological distress, which has been reported in previous studies for many decades, (e.g. Abou-Saleh, 2004; Kessler 2004).

The average social network size, found in the current study was also consistent with previous research both within clinical (Tracy & Biegel, 2006) and non-clinical (Wrzus et al., 2013) populations. Of note, some of the women in study included health professionals as part of their social networks. Once these were excluded the mean network size dropped to approximately 5, suggesting women in substance misuse services have smaller networks than the non-clinical population, (approximately 6) as asserted in previous studies (El-Bassel et al., 1998; Goldberg, Rollins, & Lehman, 2003; Pickens, 2003; Savage & Russell 2005; Skeem et al., 2009; Tracy et al., 2012). The composition of the network is reported by some studies to be the most important factor to promote health and well-being (e.g. Hawkins & Abrams, 2007). In particular, the presence of family members has been reported to improve the outcomes for women who misuse substances (Lewandowski & Hill, 2009). Family members are reported to be consistently present in the networks of both non-clinical (Wrzus et al., 2013) and clinical samples (Falkin & Strauss, 2003; Savage & Russell, 2005). This finding is reflected in the current study. The majority of participants reported that their network comprised of some family members (44.22%, Table 9).

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The size of an individual's social network has been considered important as it is argued to be associated with better support, health and psychological well-being (Carstensen, 1991; 1992; Kahn & Antonucci, 1980; Pinquet & Sorensen, 2000; Thoits, 2011; Wrzus et al., 2013). In the current study having a larger social network size was associated with the women perceiving they had more social support available to them. However, having a larger social network did not reduce their psychological distress or substance dependence. A possible explanation for the different results across studies may be the different methods of measuring network sizes. Within the current study, participants were encouraged to provide a list of individuals who had been important to them within the past 6 months. In contrast other studies have asserted the importance of creating a network size of relationships that have lasted a specific period of time, 'stable', as the number of stable relationships is argued to be predictive of psychological distress and substance dependence rather than number alone (Lau-Barroco & Collins, 2011).

The presence of other network members who misuse substances is another social network characteristic that has been negatively associated with treatment outcomes (Wenzel et al., 2009; Williams & Latkin, 2007). In the current study just under a quarter of the women's networks were made up of other individuals who used substances ('moderately' or 'a lot'), this was not significantly associated with their substance dependence. Previous studies have reported an association between density of other substance users and behavioural actions such as, frequency of use, (Arbour-Nicitopoulos et al., 2010; Min et al., 2013; Skeem et al., 2009; Tyler, 2008; Valente et al., 2004), route of use (Lakon, Ennett & Norton, 2006; Skeem et al., 2009) and/or treatment access and retention (Wenzel et al., 2009). The contrasting results within the current study may reflect the measurement differences. The current study measured dependence. Dependence is said to occur when an individual is no

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longer able to stop using without experiencing distress and where the individual struggles to exert any self-control over continued usage (NIDA 2014). Thus, it may be that network members influence the substance using behaviours of each other, but not their individual concept of dependence on substance(s).

The current study also sought to further understand the role of perceived social support on women's current levels of psychological distress and their current dependence on substance(s). Consistent with previous research it was found that women with lower perceived levels of support in their network were more likely to report higher levels of psychological distress and substance dependence (Forrester-Jones et al 2012; Heaney & Israel, 2008; Stein, Dixon & Nyamathi, 2008; Williams & Latkin, 2007). However, the current study found that although women who reported lower perceived availability of appraisal, tangible, self-esteem and belonging support were more likely to reported high levels of psychological distress. Only the women who described feeling like they did not belong within their network were more likely to report greater substance dependence. The significance of an individual's perception of not belonging has previously been associated with increased substance use and psychological distress (Hwang et al., 2009; Napoli, Marsiglia & Kulis, 2003; Yalom, 2005).

The result from the final mediational analysis conducted in the current study suggests that psychological dependence on substances partially mediated the effect between perceived social support and psychological distress. This result suggests that although perceptions of social support may be directly predictive of psychological distress, for women who use substances this relationship is also partially accounted for by the participants' level of psychological substance dependence. That is, for women who use substances, poorer perceptions of social support from their network are associated with greater psychological

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dependence on substances which in turn leads to greater psychological distress. Hence, lower levels of perceived social support are associated with poorer mental health but this relationship in part operates via substance dependence.

The findings from the current study, that women's perception of social support is predictive of their perceptions of psychological substance dependence and psychological distress, seems to support the main effects model (Cohen & Willis, 1985). The stress buffering model (Cohen & Willis, 1985) proposed that social network characteristics are related to mental health only when the person experiences a stressful event. Whereas the main effects model (Cohen & Willis, 1985) proposed that social networks influence mental health irrespective of the stressors individuals' experience. The current study found that it was the individual's perception of social support which was most strongly associated with health and well-being, consistent with the main effects models (Cohen & Willis, 1985). Whereas, the structural components of the network members did not predict psychological distress or dependence, as the stress buffering model (Cohen & Willis, 1985) would posit, (Heaney & Israel, 2008).

One main effects model which provides a useful framework to consider the current study findings is the Relational Regulation Theory (RRT) (Lakey & Orehek, 2011). This model describes the association between social support and psychological distress as reflecting "*some unknown mixture of recipient personality and social influences*" (Lakey & Orehek 2011; p. 490). Thus the authors acknowledge that additional factors are likely to influence this main effect relationship. The results from the current study would concur that understanding women's perceptions of support is critical when addressing psychological distress, however, would suggest that another variable which needs to be considered would be a women's level of perceived psychological dependence on substances.

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Women who misuse substances are significantly more likely to have been sexually and/or physically abused during their childhood (Bartholomew et al. 2002; Doherty et al 2008; Hirsch, 2001; Langan & Pelissier, 2001; Liebschutz et al., 2002; Messina et al., 2000, 2003; Pellisier & Jones, 2005; Robinson et al., 2001; Shand et al., 2011). Childhood abuse is strongly associated with insecure attachment profiles, which in turn increases the likelihood of developing clinical levels of psychological distress and substance misuse (Grella, 2007; Obegi & Berant, 2009; Padykula & Conklin, 2010; Tafam & Baiocco, 2009). Accordingly, it could be argued that women who misuse substances are likely to have developed negative internal working models/cognitive representations around relationships, the availability of support and consequently experience difficulties self-soothing (Obegi & Berant, 2009; Lakey & Orehek, 2011). The high levels of psychological distress evidenced within the current study may be understood within this context.

Limitations of the study

The current study has a number of limitations; the small sample size limits the power of the study and meant that more powerful statistical analyses could not be used. It would be important to examine the interactions between the predictive variables; however, the small sample size did not allow this to be done. The effect size required compared to sample size obtained is illustrated in the graph in Appendix E. A cross-sectional study also limits causal relationship exploration of the findings.

The measures used within the study may also limit the findings. All the measures involved self-report that may be subject to response, reporting and/or recall bias, none of the results were independently verified. Although utilising self-report data can impact on the validity of the data, reviews suggest self-report measures in substance misuse and mental

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health have moderate to strong degree of reliability and validity (Darke 1998). In addition, due to the confidential nature of the interviews, the women had minimal incentive to provide an inaccurate account. Furthermore, as it is the individual's perception of social support which is considered to be the most strongly associated with health and well-being (Heaney & Israel, 2008), this limitation is less applicable for the social support measure. Another limitation relates to the sampling methods used, as participants were approached by their recovery workers this method could have introduced some bias in the sample. It is an ethical requirement in the UK that potential participants are approached by their case workers and not directly by the researcher, therefore, an element of selection bias was inevitable within this study. Furthermore, although the inclusion criteria were broad to increase the generalizability of the findings, inadvertently the participants may represent certain levels of motivation and/or treatment stage, as attendance was a requirement to participate. Additionally, as demographic information was not obtained from individuals who declined to participate or who did not attend their research interview, the study could not establish whether the women who took part were representative of those who were asked to participate, thus reducing the external validity of the study.

Although the distributions of substance used, levels of dependence and lack of mental health diagnosis increases the generalizability of the findings, it also is a limitation as it is not possible to assess whether these findings are equally represented across substances and/or mental health diagnoses. Future research would need to control for substances used and diagnosis within the analysis. As the majority of the women in the current study were also of White British ethnicity the generalizability of the findings to other ethnic groups cannot be made from these findings.

Future Research:

The current study produced important results, which need further replication in future research. The findings lend support for Lakey and Orehek's (2011) Relational Regulation Theory (RRT), which explains the significance of the relationship between social support and mental health and how it applies to women who use substances in a problematic fashion. However, Lakey and Orehek (2011) describe the association between social support and psychological distress as reflecting "*some unknown mixture of recipient personality and social influences*" (p. 490). Therefore future research may need to include measures of propensity to connect to others, to access/accept support, attachment styles and personality characteristics. It would be important to assess whether incorporating these factors increases the variance explained by the regression models within the current study and/or whether they mediate the main effect observed between social support and psychological distress.

Clinical Implications

The findings of the current study also have important clinical implications. Firstly the high levels of psychological distress evident within this sample highlighted the need for clinical evidence-based psychological interventions for women who misuse substances. The findings of the current study also suggest that social support based interventions would be more promising than interventions focussed on encouraging women to sever their ties with network members who misuse substances (Tracy & Johnson, 2007; Trulsson & Hedin, 2004) or interventions which solely focus on increasing network membership. These interventions

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could include structured social support interventions such as social behaviour and network therapy (Copello, Orford, Hodgson, Tober & Barrett, 2002; Copello, Williamson, Orford & Day, 2006) or network therapy (Galanter et al., 2004). However, based on RRT it would be important for any of these interventions to focus on affect sharing, for everyday events as well as those relating to their specific difficulties. RRT describes how *'if a provider regulates a recipients affect well when discussing ordinary events, the recipient will disclose increasingly more personal thoughts and experiences, including upsetting experiences'* (Lahey & Orehek, 2011: p.489). These new experiences of regulating affect could then facilitate the adaptation of their cognitive representations. The role of dependence on substances as a partial mediator between perceptions of social support and psychological distress would suggest that for women who use substances interventions should aim to not only enhance perceptions of social support but to also reduce their perceived psychological dependence on the substance they use.

The current study also highlighted the need for addiction services for women to consider children both from the point of view of the impact of the problem on them as well as the potential contribution to the wellbeing of their mothers. The impact on parental substance misuse on children has been well documented (e.g. Barnard & McKeganey, 2004) and therefore clinicians need to ensure children are safeguarded from harm. In addition, substance misuse services may need to ensure they have sufficient childcare provisions. Furthermore, it may be important to consider the role the child(ren) take within the social network of the female (e.g. Campbell, Alexander & Lemak, 2009; Niccols et al., 2012; Tracy & Martin, 2007).

Conclusions

The findings of the current study lend support to the theoretical main effects model (Cohen & Wills, 1985; Lakey & Cronin, 2008) which focuses on the relationship between the social networks and its direct relationship with health outcomes. A recent development of this main effects model, Relational Regulation Theory (RRT; Lakey & Orehek, 2011) provides a useful framework to consider these findings. The current study specifically found that women's *perceptions* of social support within their social network are important in determining the amount of psychological distress they experience, rather than the structural aspects of the network. The current study also highlighted the partial mediation role of substance dependence within the relationship between perceived social support and psychological distress. These results suggest that in order to reduce the levels of psychological distress experienced by this sample of females, interventions targeted at both reducing perceptions of psychological dependence on substances and promoting perceptions of social support would be effective. This finding is of particular importance when considered alongside the finding that just over half of the women within this sample were experiencing psychological distress within a clinically significant range.

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CHAPTER III

Public Domain Paper

Public Domain Briefing Document

This document provides an overview of the thesis submitted in partial fulfilment of the requirements of the Doctorate in Clinical Psychology (Clin.Psy.D.) at the School of Psychology, University of Birmingham.

Background

Individuals who misuse substances (e.g. cannabis, alcohol, other drugs) are highly likely to have a co-occurring mental health problems and difficulties (Cosci & Fava, 2011; Kessler, 2004; Sellman, 2009; Weaver et al., 2003); in fact it has been asserted that co-occurring substance misuse and mental health difficulties should be regarded as the rule rather than the exception. This document summarises firstly a systematic review of research considering the effectiveness of group-based treatment for depression and co-occurring substance misuse. Secondly, this document summarises a research study completed which explored the relationships between psychological distress, substance misuse and social network (e.g. family and friends) characteristics and social support for women attending community addiction services.

Chapter I: Literature Review

The prevalence of individuals in substance misuse services who experience co-occurring depression with their substance misuse is estimated to be 30-50%. Individuals with co-occurring depression and substance misuse are known to do worse from treatment than individuals with either problem alone. It has been recommended that those with co-occurring difficulties be offered integrated interventions (that address both difficulties at the same time)

within one service (Cosci & Fava, 2011; Crome, Chambers, Frishers, Bloor, & Roberts, 2009; DoH, 2007; Drake, Mercer-McFadden, Graham, Copello, Birchwood & Mueser, 2003; Hides et al., 2011; Hoff & Rosenheck 1998; 1999; Kessler, 2004; Weaver et al., 2003). Group-based interventions are the preferred format for these interventions as they are the most cost effective and provide additional benefits, such as reducing isolation and promoting social relationships. However, the effectiveness of integrated group-based interventions was unknown. Therefore the aim of this article was to provide a systematic review of the existing research that had evaluated group interventions to reduce depressive symptoms for individuals with co-occurring depression and substance misuse, within addiction services.

A number of therapeutic group approaches; integrated cognitive-behavioural therapy (ICBT), interpersonal therapy, behavioural activation, mindfulness and an integrated group, were reviewed. All approaches were found to be effective in reducing depressive symptoms. However, only when informed by CBT were the integrated group-based interventions effective in reducing both depressive symptoms and substance use problems. They were also more effective at sustaining these changes over time.

The recommendation that emerged from the review was that individuals with co-occurring depression and substance misuse within addiction services need to be offered the opportunity to engage in ICBT group-based interventions. Group-based interventions appeared to be as effective as one-to-one interventions but are more cost effective.

Chapter II: Empirical Paper

Social network characteristics and social support have been found to influence and aid recovery and psychological well-being for people with mental health and substance misuse problems. However, the majority of research to date has provided descriptive accounts, whereas this study, sought to explore the relationships between substance dependence, psychological distress, age and the size, compositions and perceptions of support within the social networks of women engaging in community addiction services.

Method

59 women agreed to take part in the research. They were all attending community addiction services for treatment of substance dependency. These women represented the range of substances used and stages of treatment usually present in these services. Participants attended one interview with the researcher. At this time, their substance use, mental health, social networks and perceptions of social support were assessed using standardised research measures.

Results

The average age of the women who took part in the study was 36.2 years. The women were predominantly White British, single, had children who lived elsewhere and tended to use more than one substance. Heroin and alcohol were the most common substances used. The women also on average experienced significant psychological distress.

With the exception of one woman, all of the participants were able to identify at least one person who was part of their social network; the average number identified by the women in the study was 6. This number reduced to 5 when professionals were excluded from the

social network count. The social networks consisted of mostly family and friends. The majority of the network was also made up of people who did not use substances problematically or abstained from use and most were described by the women as supportive and important to them. The majority of women also said that they had at least weekly contact with someone within their network; about a third had daily contact with someone in their network.

The women who believed that they had more social support in their network were less likely to experience psychological distress and less likely to have a high dependency on the substance they used. A women's sense of belonging within her network seemed important. When a woman felt like she did not belong, she was more likely to describe being heavily dependent on the primary substance(s) she used.

The number of other people who used substances in the women's networks did not predict how dependent the women felt on the substance she used.

Conclusions

This study highlighted the levels of psychological distress experienced by many women who attend community addiction services. It was therefore concluded that women should be offered the opportunity to receive evidence-based interventions to help reduce their levels of psychological distress. It was also found that the structural aspects of the social network (size and number of other substance users within the network) were less likely to affect a women's psychological well-being or her substance dependence than her own perceptions of the social support available to her. Therefore, interventions which encourage women to sever ties with her existing network or attempted to increase her network size

would be less effective than interventions to promote social support as perceived by the women in these circumstances.

Although the current study recommended that interventions be offered to enhance the social support available to women, such as Social Behaviour and Network Therapy (Copello, Orford, Hodgson, Tober & Barrett, 2002; Copello, Williamson, Orford & Day, 2006), it also highlighted the need for interventions to consider the woman's attachment style. A theory known as Relational Regulation Theory (RRT) (Lakey & Orehek, 2011) incorporates both social support and attachment literature. This theory describes the need to understand an individual's personality, their experiences of relationships and their ability to share emotions with others alongside the characteristics of the social network available to her. This theory proposes that social support interventions which incorporate all of the above areas would be the most effective in promoting women's health and wellbeing.

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Volume I
Appendices

Chapter I

Appendix A

Down & Blacks Tool

Down and Black (1998) Assessment Tool

Quality Domain	Questions
Reporting	<ol style="list-style-type: none"> 1. Is the hypothesis/aim/objective of the study clearly described? 2. Are the main outcomes to be measured clearly described in the introduction or methods section? 3. Are the characteristics of the patients included in the study clearly described? 4. Are the interventions of interest clearly described? 5. Are the distributions of principal confounders in each group of subjects to be compared clearly described? 6. Are the main findings of the study clearly described? 7. Does the study provide estimates of the random variability in the data for the main outcomes? 8. Have all important adverse events that may be a consequence of the intervention been reported? 9. Have the characteristics of patients lost to follow up been described? 10. Have actual probability values been reported for the main outcomes except where the probability value is less than 0.001?
External Validity	<ol style="list-style-type: none"> 11. Were the subjects asked to participate in the study representative of the entire population from which they were recruited? 12. Were the subjects who were prepared to participate representative of the entire population from which they were recruited? 13. Were the staff, places and facilities where the patients were treated, representative of the treatment the majority of patients receive?
Internal Validity - Bias	<ol style="list-style-type: none"> 14. Was an attempt made to blind study subjects to the intervention they have received? 15. Was an attempt made to blind those measuring the main outcomes of the intervention? 16. If any of the results of the study were based on "data dredging", was that made clear? 17. In trials and cohort studies, do the analyses adjust for different lengths of follow up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls? 18. Were the statistical tests used to assess the main outcomes appropriate? 19. Was compliance with the intervention/s reliable? 20. Were the main outcome measures used accurate (valid and reliable)?
Internal Validity – Confounding	<ol style="list-style-type: none"> 21. Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population? 22. Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time? 23. Were study subjects randomised to intervention groups? 24. Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable? 25. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn? 26. Were losses of patients to follow up taken into account?
Power	<ol style="list-style-type: none"> 27. Did the study have sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%?

All items were marked 2 for yes, 0 for No and 1 if unclear or partially reported; thus producing a quality percentage. There has been some ambiguity regarding the power item (item 27), therefore the checklist was modified to assess whether the authors reported power calculations and required sample size (2), made no comment (0), or if only partially reported (1).

Chapter II

APPENDIX A

Letters from Local Ethics Committee and Trust

Chapter II

APPENDIX B

Participant Information Sheet

UNIVERSITY OF
BIRMINGHAM

Participant Information Sheet.

Title of Project: *Exploring the relationships between substance misuse, mental health and age in the quality of social network relationships of females engaging in drug services.*

Name of Researcher: Clare Thompson

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish.

Ask me if there is anything which is not clear, or if you would like further information. Take time to decide whether or not you wish to take part.

What is the purpose of this study?

This is a student research project as part of a Doctorate in Clinical Psychology at the University of Birmingham. The purpose of this study is to gain insight and awareness of the social networks of females who are dependent on substances. It is hoped that exploring relationships will facilitate social network treatment plans.

Why have I been chosen?

You have been chosen because you:

- Are currently engaging with drug services within Birmingham and Solihull Mental Health Foundation Trust.
- Are female
- And are 18 years and older.

Research into women has been under represented therefore this study will just explore females social networks.

Do I have to take part?

No, it is up to you to decide whether or not to take part. If you do decide to take part, you are still free to withdraw at any time, without having to give a reason. A decision to withdraw at any time or a decision not to take part will not be known by any other party.

What will happen to me if I agree to take part?

If you choose to take part in the study, you will be required to meet with the researcher. During this meeting you will be asked to complete several questionnaires on your substance use, mental health and social networks. Completion of these questionnaires should take approximately 1 hour but may take up to 1 ½ hours. The researcher will be present to support you to complete the questionnaires and will take place where you currently are receiving treatment.

Your anonymity will be maintained at all times, your name will not be included on any document. Your participation in this study will not impact upon your treatment and the service you receive.

Expenses and Payments:

Unfortunately we are unable to reimburse your travel expenses for this study. However, we will make an appointment with you which fits around your existing appointments. You will also be automatically entered into a prize drawer to win an Apple Ipod Shuffle and iTunes voucher.

What are the possible disadvantages and risks of taking part?

The only disadvantage to yourself is the time that would be required to complete the questionnaires; in addition you may find thinking about your social network difficult/distressing; however support from your care team will remain available to you.

What are the possible benefits of taking part?

The benefits of taking part in this study relate to you having the opportunity to express your views and share your experiences. In addition, although there may not be a direct benefit to you, the information I get may support the services offered to individuals who use substances in the future.

What if I want some support before and/or after I agree to take part?

- Your drug worker and care team will all be available if you need any support before, during and/or after completing the questionnaires.
- You can also contact MIND as an additional source of support - **0300 123 3393**, info@mind.org.uk
- If you would like any additional support about taking part in research you may contact: Patient Advice and Liaison Service (PALS) – 0800 953 0045,

What if something goes wrong?

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed.

Will my taking part in this study be kept confidential?

Yes, although you will be asked to complete questionnaires, no personal information will be included or attached to any of these.

What will happen to the results of the research study?

The research will be typed up in a formal report and handed in for assessment at the University of Birmingham. The results may also be written up for publication and for presentation at conferences. Any written report would only include group data and no individual participants will be identifiable.

Who is organising and funding the research?

This research is unfunded and is being undertaken as part of my Doctorate in Clinical Psychology at Birmingham University.

Who has reviewed the study?

This study has been reviewed and approved by the University of Birmingham and West Midlands –Solihull Research Ethics Committee.

Contact for further information.

If you would like to clarify any of the above points or ask any other question before deciding whether to take part in the research, then please feel free to contact, Clare Thompson, the main researcher.

c/o School of Clinical Psychology. University of Birmingham, Edgbaston, Birmingham B15 2TT

You may also wish to contact my supervisors, Dr Hermine Graham or Dr Alex Copello, using any of the means below.

School of Clinical Psychology. University of Birmingham, Edgbaston, Birmingham B15 2TT

Chapter II

Appendix C

Participant Consent Form

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Appendix D

Questionnaire Pack

The Leeds Dependence Questionnaire

Participant Number: _____

On this page there are questions about the importance of alcohol and/or drugs in your life.

Think about your drinking/other drug use in the last week and answer each question ticking the closest answer to how you see yourself.

		Never	Sometimes	Often	Nearly Always
1	Do you find yourself thinking about when you will next be able to have another drink or take more drugs?				
2	Is drinking or taking drugs more important than anything else you do during the day?				
3	Do you feel that your need for drink or drugs is too strong to control?				
4	Do you plan your days around getting and taking drink or drugs?				
5	Do you drink or take drugs in a particular way in order to increase the effect it gives you?				
6	Do you take drink or other drugs morning, afternoon and evening?				
7	Do you feel you have to carry on drinking or taking drugs once you have started?				
8	Is getting the effect you want more important than the particular drink or drug you use?				
9	Do you want to take more drink or drugs when the effect starts to wear off?				
10	Do you find it difficult to cope with life without drink or drugs?				

THE IMPORTANT PEOPLE DRUG AND ALCOHOL INTERVIEW

Participant Number _____

I am going to ask you some questions about the people who have been important to you, and with whom you have had contact during the past 6 months. These people may be family members, friends, people from work, or anyone that you see as having had a significant impact on your life, regardless of whether or not you liked them.

1) NAME	2) RELATIONSHIP	3) During the past 6 months on average, how frequently have you been in contact with?	4) How important has this person been to you?	5) Generally supportive of you?	6) Drinking/substance use			7) How often does this person use drugs or alcohol?			8) How has this person reacted to your drinking or drug use? Or How would this person react to your drinking or drug use?	9) how has this person felt about your coming for treatment?	10) In your opinion, how much is this person negatively affected by your drug use?		
(first name and last initial, or nickname)	Write # and specify 1 = partner 2 = immediate family 3 = extended family 4 = friend 5 = from work 6 = self-help/treatment 7 = other	7= daily 6= 3 to 6 times/week 5= once or twice/week 4= every other week 3= about once/month 2= less than monthly 1= once in past 6 months	6= extremely important 5= very important 4= important 3= somewhat important 2= not very important 1= not at all important	6= extremely supportive 5= very supportive 4= supportive 3= somewhat supportive 2= not very supportive 1= not at all supportive	5= uses a lot 4= uses a moderate amount 3= uses a little 2= non-user 1= did use, now drink/drug-free 8= don't know				7= daily (7 times a week) 6= three to 6 times a week 5= once or twice a week 4= every other week 3= about once a month 2= less than monthly 1= once in past 6 months 0= not in past 6 months 8= don't know				5= encouraged t 4= accepted it 3= neutral 2= did not accept it 1= left, or made you leave when you are drinking/using 8= don't know	6= strongly supports it 5= supports it 4= neutral 3= mixed 2= opposes it 1= strongly opposes it 8= don't know how they would feel	4 = a lot 3 = a moderate amount 2 = a little 1 = not at all 8 = don't know
					Opioid	Coc	Alc	Opioid	Coc	Alc					
1)															
2)															
3)															
4)															
5)															
6)															
7)															
8)															
9)															
10)															
11)															
12)															

Interpersonal Support Evaluation List (ISEL)

Participant Number: _____

This scale is made up of a list of statements each of which may or may not be true about you. For each statement check “definitely true” if you are sure it is true about you and “probably true” if you think it is true but are not absolutely certain. Similarly, you should check “definitely false” if you are sure the statement is false and “probably false” if you think it is false but are not absolutely certain.

		Definitely True	Probably True	Probably False	Definitely False
1	There are several people that I can trust to help solve my problems				
2	If I needed help fixing an appliance or repairing my car, there is someone who would help me.				
3	Most of my friends are more interesting than I am				
4	There is someone who take pride in my accomplishments				
5	When I feel lonely, there are several people I can talk to				
6	There is no one that I feel comfortable talking to about intimate personal problems				
7	I often meet or talk with family or friends				
8	Most people I know think highly of me				
9	If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me				
10	I feel like I’m not always included in my circle of friends				
11	There really is no one who can give me an objective view of how I’m handling my problems				
12	There are several different people I enjoy spending time with				
13	I think that my friends feel that I’m not very good at helping them solve their problems				

Interpersonal Support Evaluation List (ISEL)

Participant Number: _____

		Definitely True	Probably True	Probably False	Definitely False
14	If I were sick and needed someone (friend, family member or acquaintance) to take me to the doctor, I would have trouble finding someone				
15	If I wanted to go on a trip for a day (e.g. to the mountains, beach or country), I would have a hard time finding someone to go with me.				
16	If I needed a place to stay for a week because of an emergency, I could easily find someone who would put me up.				
17	I feel there is no one I can share my most private worries and fears with				
18	If I were sick, I could easily find someone to help me with my daily chores.				
19	There is someone I can turn to for advice about handling problems with my family				
20	I am as good at doing things as most other people are				
21	If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.				
22	When I need suggestions on how to deal with a personal problem, I know someone I can turn to				
23	If I needed an emergency loan of £100, there is someone (friend, relative or acquaintance), I could get it from				
24	In general, people do not have much confidence in me.				
25	Most people I know do not enjoy the same things that I do				
26	There is someone I could turn to for advice about making career plans or changing my job				

Interpersonal Support Evaluation List (ISEL)

Participant Number: _____

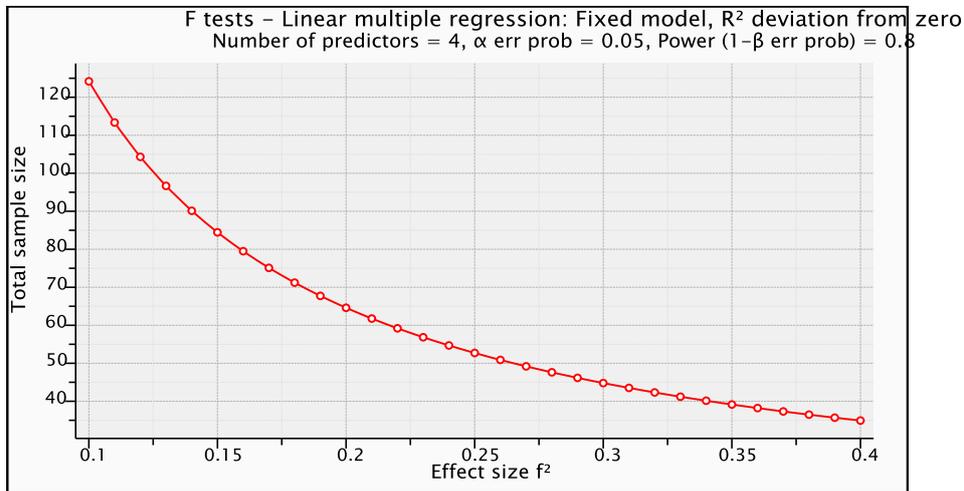
		Definitely True	Probably True	Probably False	Definitely False
27	I don't often get invited to do things with others				
28	Most of my friends are more successful at making changes in their lives than I am				
29	If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment.				
30	There really is no one I can trust to give me good financial advice				
31	If I wanted to have lunch with someone, I could easily find someone to join me				
32	I am more satisfied with my life than most people are with theirs.				
33	If I was stranded 10 miles from home, there is someone I could call who would come and get me.				
34	No one I know would throw a birthday party for me				
35	It would be difficult to find someone who would lend me their car for a few hours.				
36	If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.				
37	I am closer to my friends than most people are to theirs				
38	There is at least one person I know whose advice I really trust.				
39	If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.				
40	I have a hard time keeping pace with my friends.				

Chapter II

Appendix E

Power Calculation

Power Calculation



d	r	r ²	f	f ²
2	.707	.499849	.9996981	.9993963
1.9	.689	.474721	.9506578	.9037502
1.8	.669	.447561	.9000859	.8101547
1.7	.648	.419904	.8507953	.7238526
1.6	.625	.390625	.8006408	.6410257
1.5	.6	.36	.7500001	.5625001
1.4	.573	.328329	.6991596	.4888242
1.3	.545	.297025	.6500198	.4225257
1.2	.514	.264196	.5992141	.3590576
1.1	.482	.232324	.5501208	.3026329
1	.447	.199809	.4997016	.2497016
.9	.41	.1681	.4495192	.2020676
.8	.371	.137641	.399512	.1596099
.7	.33	.1089	.3495834	.1222085
.6	.287	.082369	.2996042	.0897627
.5	.243	.059049	.2505087	.0627546
.4	.196	.038416	.1998768	.0399507
.3	.148	.021904	.149648	.0223945
.2	.1	.01	.1005038	.010101
.1	.05	.0025	.0500626	.0025063
0	0	0	0	0

Chapter II

Appendix F

Guidelines for Authors to submit to

‘Addiction Research and Theory’