Volume 1: Research Component

Brief Psychological Interventions for In-Patients with Co-Existing Mental Health and Substance Use Disorders

Submitted by

Dionne M Harleston

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Department of Clinical psychology
The University of Birmingham
Edgbaston, Birmingham,
B15 2TT, England, UK

This thesis is dedicated to mental health service users and the clinicians who strive, on a daily basis, to offer them support and hope.

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Overview

This thesis was submitted as partial requirement for the Doctorate in Clinical Psychology at the University of Birmingham and consists of two volumes.

The first volume contains the research component and consists of a literature review and an empirical paper. The second volume contains five clinical practice reports (CPRs) of work undertaken whilst on clinical placement.

Volume I: Research Component

The first part of volume one is a literature review of the research on outcome effectiveness of brief interventions (BI) for drug use disorders (DUDs) in inpatient settings. A comparison of the research into brief interventions in emergency departments and psychiatric inpatient units was undertaken. The evidence for efficacy of BI's in such settings remains unclear.

The second part of volume one is an empirical paper exploring the feasibility and outcome of testing a short burst brief integrated motivational intervention with people with severe mental illness (SMI) and co-existing substance misuse disorders (SUDs) in inpatient psychiatric settings.

Volume II: Clinical Practice Reports (CPRs)

The second volume of this thesis comprises four clinical practice reports (CPRs) which were undertaken whilst on clinical placement and the abstract for an oral presentation of a fifth case study.

The first CPR (models) undertakes a psychodynamic formulation of a client with learning disabilities in order to generate collaborative understanding of his difficulties and plan intervention. An alternative systemic formulation, incorporating family beliefs and experiences is also generated.

The service evaluation CPR (CPR Two) reports on a services evaluation within a learning disabilities service of clinicians' subjective confidence in safeguarding adults policy in regards to their knowledge and skills.

CPR three (case study) presents the case of a 13 year old boys anxiety and cognitive behavioural intervention undertaken with him.

The single case design study (CPR four) presents the measurement and evaluation of anger difficulties and subsequent intervention undertaken with a 52 year old woman within an acute inpatient setting.

CPR five (oral presentation) presents the case of a 70 year old woman with memory difficulties. Client background, hypothesis and assessment are focused on.

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Review of the outcomes for brief Interventions in acute hospital settings for patients with illicit drug use disorders

Abstract

A plethora of research has been undertaken over the last twenty years to evaluate the efficacy of brief interventions including many randomised controlled trials (RCTs). However findings are mixed. Despite this there is sparse research on brief interventions focused on illicit drug misuse in inpatient settings. This literature review sought to collate the available research and present the outcomes measured in two main categories of patient settings; hospital emergency departments (EDs) and psychiatric in-patient units. Thirteen studies that examined the impact of a brief intervention in these two inpatient settings were explored. Studies largely focused on reducing the levels of drug use and increasing engagement with substance treatment in both settings. Evidence of the efficacy of brief interventions in positively impacting upon these outcomes was variable. Studies in the emergency department reported change in outcomes to a larger degree than studies in inpatient psychiatric settings. When longer follow-ups were focused on findings indicated a lack of consensus for the evidence for the efficacy of brief interventions in these settings. The review highlighted the need for further research incorporating more rigorous methodology and larger sample sizes testing homogenous brief interventions.

This review will explore the evidence for brief interventions for drug use disorders in inpatient settings. A brief overview on the prevalence of drug use disorders, research on brief interventions and the reasoning behind opportunistic intervention in inpatients settings will be given before this review continues on to present research studies evaluating the efficacy of brief intervention in the inpatient setting.

Terminology

For the purposes of the review the following definitions will be utilised:

Substance Misuse

"The harmful use of any psychotropic substance including alcohol and either legal or illicit drugs. Dependence is characterised by psychological reinforcement of repeated substance-taking behaviour and, in some cases, a withdrawal syndrome. However, substance misuse can be harmful without dependence."

The UK National Institute for Health and Clinical Excellence (NICE, 2011)

Drug use disorders

"Intoxication by, dependence on, or regular, excessive consumption of psychoactive substances leading to social, psychological, physical or legal problems.

(NICE, 2007)

Co-Morbidity

The occurrence of two or more difficulties/disorders (mental or physical). The terms dual diagnosis or co-occurring disorders are often used interchangeably in the literature.

Brief Interventions

What constitutes a brief intervention can vary somewhat within substance misuse literature and research in the area. The term brief intervention (B.I) can be utilised to identify interventions that range from feedback and education to motivational interviewing to structured therapeutic intervention addressing an individual's targeted area for behaviour change. B.I's can range in frequency; between one and four sessions (Kaner et al., 2007) and duration; 5-60 minutes (Kaner et al., 2011).

Emergency Department

Units dedicated to the diagnosis and treatment of unforeseen physical health problems of an accidental, urgent and/or critical nature. Also known as accident and emergency or trauma centres.

Inpatient

Admission to a hospital or clinic that involves an overnight stay.

Introduction

Physical and Mental Health and Co-existing Substance Misuse

Dual diagnosis of substance misuse and a physical or mental health difficulty is a common occurrence in today's society (Public Health England 2012). The issue of substance misuse difficulties amongst acute hospital populations has long been an issue within physical and mental healthcare (Reiger et al., 1990; Kavanagh et al., 2004).

Co-existing substance misuse presents many difficulties. Substance misuse itself may be the trigger that leads to the need for hospital treatment or it may exacerbate the primary physical or mental health difficulty. Effective intervention or treatment for both psychological and physical health difficulties may be greatly impeded by co-existing substance misuse (Sansone and Sansone, 2008).

It is widely acknowledged that substance misuse negatively impacts upon physical, psychological and social wellbeing (Crome, Chambers,Frisher, Bloor & Roberts, 2009; NICE, 2007). Research has found that those with mental health difficulties use substances at a higher rate than the general population and this use poses a greater risk in terms of symptom presentation, recovery, relapses, treatment compliance and mortality (Reiger et al., 1990; Kavanagh et al., 2000; Cleary, Hunt, Matheson & Walter, 2009). Co-existing drug and alcohol use in those with physical health difficulties have also been found to impact upon treatment, recovery, symptom presentation and exacerbation, cost to health services and use of services and mortality (Gossop, Stewart, Treacy and Marsden, 2002; .

Both brief and longer term psychological and medical interventions have been attempted to address and treat the misuse of substances and their impact, with varying degrees of success (Emmen, Schippers, Bleijenberg & Wollersheim, 2004; Woolard, Cherpitel & Thompson, 2011, Cleary et al,

2009; Drake, Mueser, Brunette and McHugo, 2004; De Lima, Oliveira, Soares. Reisser and Farrell, 2002; Kirchmayer et al, 2002; Amato et al., 2005; Ferri, Amato & Davoli, 2006).

UK government guidelines advise that specialist mental health services offer integrated care to people with mental health difficulties (Department of health, 2002) and there has been an increasing focus on intervention in primary and secondary physical health settings (Kaner et al 2007). For example Nice Guidance (2007) recommends the use of psychosocial interventions, including brief interventions in the UK healthcare system.

Prevalence and impact of Substance Misuse Presentations in Acute Inpatient Settings

The 2011/2012 Crime Survey for England and Wales (Home Office, 2012) estimated that 8.9% of 16-59 year olds had used illicit drugs in the past year, with cannabis being the most commonly used drug (6.9%). Drug misuse is estimated to cost the NHS £488 million annually and drug related crime £13.9 billion. Additionally drug related deaths cost £2.4 billion in 2011. When considering general hospital admissions, substance misuse statistics on drug misuse in England last year identified 6,173 general hospital admissions with a primary diagnosis of drug related mental health and behavioural disorder and 12,344 for poisoning by drugs (The Information Centre for Health and Social Care, 2012). In 2011 there were 1605 drug related deaths in England and Wales (The Information Centre for Health and Social Care, 2012).

By comparison rates of alcohol use, according to the National Office of Statistics (NOS), are over and above recommended units for 24 % of adults in England (Statistics on Alcohol for England, 2010). Of these Hazardous drinkers 4% were further classified as harmful drinkers and another 6% as dependant drinkers. Alcohol misuse is thought to cost the UK National Health Service £2.7 billion a year and the UK 12.6 billion in total when including crime, antisocial behaviour and employee absence (NICE, 2010). Cherpitel et al. (2005) reported global prevalence of alcohol

related injury presentation to emergency departments as 24% and the Office of National Statistics reported an 11% rise in alcohol related hospital admissions in the UK.

The prevalence of substance misuse amongst people experiencing severe mental health difficulties is thought to be high (Kavanagh et al, 2004). The COSMIC study (Weaver et al, 2002) found as many as 44% of Community Mental Health Team (CMHT) patients reported substance misuse difficulties. Additionally 75% of drug service users and 85% of Alcohol services users were identified as having a psychiatric disorder. Historically the complexity of difficulties for individuals with co-existing difficulties was not adequately acknowledged and they were often either ineligible for referral to substance misuse or mental health services or batted between services leading to lack of treatment for either their substance use, mental health difficulty or both. This impacted upon potential treatment engagement, efficacy and success. In the same year the UK department of health disseminated a Dual Diagnosis Good Practice Guide in an attempt to manage this problem (Department of Health, 2002).

Whilst much has been written about the prevalence of substance misuse amongst inpatient populations the incidence of drug consumption within acute settings by individuals during admission is also an issue. Wilson and Cohen (2000) highlighted the risk of increasing alcohol and drug use on inpatient psychiatric unit and there are many anecdotal reports of both drug and alcohol use occurring in acute hospital settings. Despite this the period after initial admission is thought to be an opportune time to attempt intervention.

Windows of opportunity

It is thought that inpatient settings are the opportune environment to attempt engagement and fostering of motivation amongst individuals with substance misuse difficulties (Department of Health 2006). In mental health between the periods of acute first admission and possible sealing over (a maladaptive, dismissive recovery style identified by McGlashan and Levy, 1977), it is

theorised that as patients psychiatric symptoms become more stable they become more reflective about the reasons for their admission. This is thought to be a window of opportunity for admission. Similarly physical health hospital admissions are considered a window of opportunity for intervention, namely brief interventions (Blow et al., 2010)

Brief Interventions: Goals and Empirical efficacy

Brief interventions will be the focal intervention explored in this review. The main goals of brief interventions for substance misuse are to increase motivation or readiness to change substance misuse (reduction or cessation) and to increase awareness of the risks of drug and alcohol misuse. This is done through assessment, offering feedback and engendering change talk (Miller and Rollnick, 1991). According to the Centre for Substance Misuse Treatment (Treatment Improvement Protocol 34, 1999) six elements encompass brief interventions. These elements are Feedback, Responsibility, Advice, Menu, Empathy and Self-efficacy (FRAMES) and were devised by Miller and Sanchez (1994) as part of motivational interviewing. (Miller and Rollnick, 1991).

Screening, Brief Intervention, Referral and Treatment (SBIRT) is an initiative originating in the United States of America. The concept of SBIRT was originally developed for consistent use in emergency care settings and was later adopted in primary care community settings. The Substance Abuse and Mental Health Service (SAMSHA) developed SBIRT with the aim of utilising early intervention to tackle substance misuse and either prevent serious dependence or facilitate treatment where it already occurs. Similarly in the UK services such as Rapid Assessment, Interface and Discharge (RAID) have been created to cope with the demand of increasing numbers of people with both substance misuse and mental health difficulties presenting to the emergency departments of hospitals. RAID has been found to be cost effective, and reduce both length of stay and readmission rates (Parsonage and Fossey, 2011).

A plethora of research has been undertaken over the last twenty years to evaluate the efficacy of brief interventions including many randomised controlled trials (RCTs). However findings are mixed. Some studies have found brief interventions as efficacious as longer term interventions, when compared to no treatment in multiple countries (Bien, Miller and Tonigan, 1993). Brief interventions have been found to reduce levels of use (Gentilello et al 1999; Vasilaki, Hosier and Cox, 2006; Kaner et al, 2007; Kaner, 2007), injury (Gentilello et al 1999; Monti et al 1999) and medical costs (Fleming et al, 2000; Gentillelo et al 2005, Kraemer, 2007). In one of the most recent UK systematic reviews on the effects of brief interventions for co-morbid populations (substance misuse with either, mental health difficulties, physical health difficulties or another substance misuse difficulty) Kaner, Brown and Jackson (2011) evaluated both methodological quality and research outcomes for 14 brief intervention trials for people experiencing co-morbid difficulties. Of the three trials concerned with co-morbid physical health utilising 10-15 minutes brief interventions, significant improvements amongst the intervention group, compared to control groups at various time points of follow-up, was found. By comparison, the eight trials relating to substance misuse and mental health difficulties showed greater yet non-significant improvement in intervention groups compared with controls. This effect was then lost over longer follow-up times. A systematic review of brief interventions for alcohol misuse highlighted methodological difficulties such as study designs, analysis and interpretation, interpretations of small effect sizes, potential bias from self-reported outcomes and the clinical application of results (Kypros, 2007). Additionally it is important to note that, although RCT'S are widely used in intervention studies, other quantitative and qualitative methodologies offer an equally valuable contribution when attempting to gain both empirical evidence and a better understanding of the clinical experience. Whilst other study methodologies suffer greater risk of bias (e.g studies that lack a control group) RCTs often, conversely, suffer from weaker generalisability due to the constraining nature of the methodology. It is argued that other methods offer comparatively greater ecological validity than RCTs should be afforded equivalent consideration. (Slade and Priebe, 2001). For example systematic case designs make a worthy contribution to pilot studies.

Aims of the Present Review

There is a sparsity of research on brief interventions for drug misuse in inpatient settings for drug use disorders. This literature review will focus on the available research. Based on the information presented, one could argue that similar to the response to substance misuse in criminal justice settings and community healthcare, inpatient physical and mental health settings also need to address substance misuse difficulties with individuals who, often repeatedly, access these settings (National Treatment Agency, 2009, NICE, 2007). To date most research into the effectiveness of brief interventions for substance misuse in hospital settings has focused predominantly on alcohol misuse and research on efficacy with illicit drug use has been nearly exclusively in community settings. There has been little research on the impact of brief interventions for drug misuse in acute in-patient settings. For example whilst there is much research in emergency medicine on brief interventions for alcohol misuse it has been argued that there is hardly any for brief interventions focused on drug misuse (Bogenschutz et al, 2009). As already highlighted in UK and worldwide policy and prevalence data (e.g. Nice Clinical Guidance, 2007; 2011; SAMSHA, 2009, Nice, 2009), there is a need for evidence based interventions and the evidence for what works with the aforementioned population in the inpatient setting is lacking. Researchers have identified the need for evaluation of brief interventions compared with treatment as usual due to their cost effectiveness and simple implementation. (Cleary et al 2010). There is clearly a continued need to find interventions that have clinically targeted efficacious outcomes, are cost effective and reduce demand on services. In other areas brief interventions have been found to do this (Kaner et al, 2007)

Therefore the present review will attempt to collate the available research literature on brief interventions for illicit drug use in acute hospital settings. The review will focus on studies undertaken in this area that centre on the effectiveness of brief interventions on identified outcomes.

The review will be broadly organised in two main categories of acute inpatient settings that include (i) hospital emergency departments and (ii) psychiatric units. Studies for each category will be reviewed and discussed in turn.

In summary the aims of this systematic review are to

1) Explore and summarise the available research evidence for brief interventions for drug misuse undertaken wholly or partially in acute in-patient settings
2) Assess the quality of the studies presented.
3) Consider the findings of the combined two areas for comparison.
4) Finally conclusions and recommendations for clinical practice and further research will be offered.

Method

Search Strategy

Procedure

The following terms were searched on Psych Info, Embase and Medline (1998 to April 2013):

A. Keyword search

   I. "Brief intervention" **or** "Brief therapy" **or** "Motivational intervention" **or** "Motivational interviewing" (all terms exploded)

   II. "Drug misuse" **or** "Drug use" **or** "Drug abuse" **or** "Substance misuse" **or** "Substance abuse" **or** Addiction" **or** "Drug dependence" (all terms exploded)

   III. "Psychiatric Hospital" **or** "Psychiatric unit" **or** "Mental health" **or** "Mental hospital" **or** "Severe mental health" **or** "Inpatient" **or** "Hospitals" **or** "Accident and emergency" **or** "Emergency department" **or** (all terms exploded)

B. Combine I, II and III

Initial exclusion was based on the removal of duplications, non-peer reviewed articles, a title sift and finally an abstract sift. This left 33 remaining journal articles. A reference sift of these papers identified an additional 4 papers that met inclusion criteria. Further examination, with the inclusion criteria adhered to, left 13 papers.

Inclusion and Exclusion Criteria

Articles were included if:

1. They included interventions that met the definition of a brief intervention
2. The intervention focused on the participants illicit drug use (or poly alcohol and illicit drug use)
3. The research setting was an emergency department or in-patient psychiatric unit.
4. They examined the efficacy of the brief intervention.

Articles were excluded if they were:

1. Not English language
2. Not peer reviewed
3. Not about a brief intervention for patients or viewing literature on the subject
4. Not undertaken in the aforementioned settings.
5. Book reviews, commentaries and letters
6. Interventions that included 6 or more sessions
7. Sessions longer than 60 minutes in duration

The Cochrane Handbook (Higgins and Green, 2008) was consulted when considering items to think about when including articles. Articles concerned with evaluating brief interventions for drug misuse in either an emergency department (ED) or psychiatric inpatient setting were included. Although brief interventions for alcohol only were excluded, interventions for both drugs and alcohol, also known as alcohol and other drugs (AOD) were included. Similarly brief interventions in multiple settings, of which one was an ED or inpatient psychiatric settings were included.

Search Results and Analysis

An additional reference sift of the papers found through the search elicited four pertinent papers that also met the inclusion criteria. Thirteen of the remaining papers met the inclusion criteria. Please see page 15 for a diagram of the process (figure 1).

A number of quality frameworks were accessed when considering the systematic methodological review of the studies (e.g. Downs and Black, 1998, CASP, Cochrane handbook, 2006). Guidance from the Cochrane Collaboration handbook (Higgins and Green, 2006) was the primary source for quality assessing all of the studies.

Randomised Control Trials (RCTs) have been identified as the gold standard of research (Sackett et al, 1996; Moher, Jones and Lepage, 2001), due to having the highest methodological standards and rigour (i.e. high internal validity). It is for this reason that evidence from RCT'S are used to indicate the strongest empirical evidence in guidance for clinical practice (e.g. NICE guidance). In reality all RCT'S are not created equal. Issues such as allocation bias afflict RCT studies. Despite most of the research studies in the present review being RCTs it is for such reasons that a quality review of the RCTs in this study are of equal importance to that of any of the other types of studies presented.

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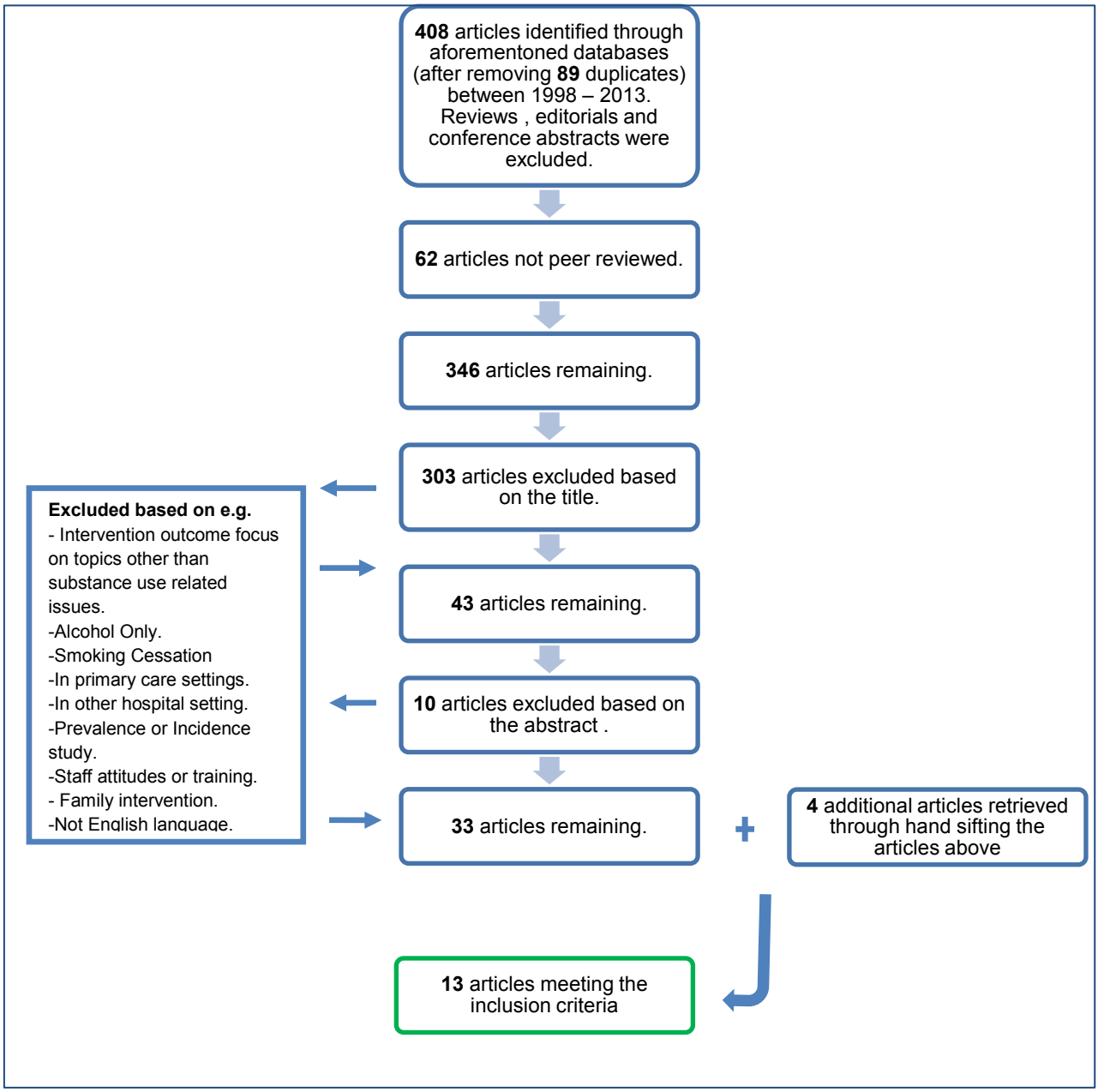
Figure 1: Flow chart of literature search process



The GRADE approach identified in the Cochrane Handbook (Higgins and Green, 2006) denotes a four level hierarchy of quality. Although RCT's are identified as the highest quality of evidence this ranking can be reduced or downgraded dependant on the presence of factors such as risk of bias, study limitations and imprecise methodology. The higher the level and number of factors the greater the downgrade (i.e. single, double or triple downgraded RCT). Table one below depicts the GRADE approach and table two incorporates the studies in this review with the approach.

Table 1: Levels of quality of a body of evidence in the GRADE approach (Taken from the Cochrane Collaboration Handbook, Higgins and Green, 2006)

Underlying methodology	Quality rating
Randomized trials; or double-upgraded observational studies.	High
Downgraded randomized trials; or upgraded observational studies.	Moderate
Double-downgraded randomized trials; or observational studies.	Low
Triple-downgraded randomized trials; or downgraded observational studies; or case series/case reports.	Very low

Table 2: Quality rating of studies reviewed

Quality rating	**Study type**	**Emergency department**	**Psychiatric**
1-High	Randomised controlled trial (RCT)	Tait et al., 2004 & 2005 Bernstein et al., 2009 Woolard et al., 2013	Baker et al., 2002 Kavanagh et al., 2004 Martino et al., 2006
2-Moderate	Case control trial (CCT), Downgraded RCT	Krupski et al., 2010 Magill et al., 2009 Blow et al., 2010	Goti et al., 2010 Swanson et al., 1999
3-Low	Controlled before and after (CBA)		
4-Very low	Interrupted time series (ITS), Evaluations	D'Onfrio and Degustis, 2010 Madras et al., 2009	

The following section reports the outcomes of these remaining studies and two tables are presented. The first table (table 3) on page 19 provides a brief overview of the outcomes for brief interventions for drug misuse in emergency departments (EDs) and the second table (table 4) for brief interventions in psychiatric inpatient settings (page 29). The section utilises the Cochrane reviews framework to examine the methodological quality of the included studies. Quality criteria in Tables three and four included the examination of study design, sample size, the similarity of measurements at baseline and outcome, the homogeneity of condition group characteristics and if studies were protected from sample contamination. Quality criteria also included the exploration of possible bias concerned with selection (i.e. random allocation generation and allocation concealment), performance (i.e. blinding of participants and researchers), detection (blinding of outcome assessments), attrition (i.e. reporting of participant losses, exclusions and completeness of outcome analysis) and reporting (i.e. selective reporting of data). The final column on tables three and four include a column noting risk of bias with a accompanying key at the bottom of each table. As use of quality scores have been deemed to be fairly problematic (Centre for Review and Dissemination's guidance, 2009), after consideration, it was decided that they would not be utilised for this review. The Centre for Review and Dissemination's guidance (2009) note that it is preferable to indicate quality in the synthesis of findings. The section subsequent to this then compares the research in both areas. The concluding section of this review provides a general summary of the research and proffers recommendations for prospective research in the future.

Outcomes for Brief Interventions for Drug use in Inpatient Settings

Research in both ED and inpatient psychiatric settings have explored the feasibility of undertaking brief interventions in such environments (Madras et al., 2009; Kaner et al 2011). Evidence for the efficacy of BIs in each setting will be presented each in turn by outcome.

Outcomes for brief interventions in Emergency department settings

Eight of the thirteen studies reported in this review were undertaken in ED settings. The type of physical health difficulties participants presented to the ED were reported in only two of the eight studies. Two of the eight studies included participants who were using illicit drugs only whilst 4 studies included those using illicit drugs and alcohol and 2 studies using cannabis and alcohol only. Six of the 8 studies were RCTs, one a secondary analysis and one was a prospective observational study.

Please see page 19 for a summary table (table 3) of the research on brief interventions in EDs. The table includes setting, study type, follow-up length, measurement and outcome.

1. Levels of drug and alcohol use (reduction and abstinence)

Most of the studies exploring the impact of brief interventions in the ED had modification of levels of use as a main outcome measure of efficacy. Five of these were RCTs (Magill et al, 2009; Tait et al, 2004, 2005a and 2005b; Bernstein et al, 2009; Woolard et al, 2013; Blow et al, 2010) and one was a secondary analysis study (Madras et a, 2009). Reductions in levels of drug use were measured at different follow-up time points amongst the studies. The longest follow-up for outcomes of effective reduction in use was up to 12 months (Magill et al, 2009; Tait et al, 2004, 2005a and 2005b; Bernstein et al, 2009; Woolard et al, 2013). The RCTs measuring the impact of BI's on poly cannabis and alcohol use (Woolard et al., 2013 and Magill et al., 2009) found significantly greater reductions in cannabis and alcohol use in the intervention group at 12 months.

Table 3: Summary table of brief interventions for drug misuse in emergency departments

Author, Year, Country,	**Setting**	**Study Design**	**Sample** **Substance**	**Intervention (Number x Duration)**	**Follow-up and Attrition**	**Measures**	**Outcomes**	**Quality**
Tait et al 2004, 2005a, 2005b Australia	Multiple Emergency Departments	RCT	127 Young people Vs. 122 non-AOD presenting adolescents Drug and Alcohol	BI (plus consistent support person) (1- duration not given) Vs. TAU	4 Months 12 months (31% s)	Demographics and drug use of teenagers questionnaire Hospital records AUDIT GHQ-12 (Psychological wellbeing)	4 months post intervention=Significantly greater number of the BI group had attended treatment than the TAU group Regardless to attendance at drug use intervention the BI group had more improved scores on the GHQ-12 than the TAU group. (p=<0.05) Across groups a greater proportion of those who attended treatment moved to "safer" drug use behaviour (non-hazardous alcohol consumption and/or non-injecting drug use (IDU) Across groups a greater decline on a composite total drug use score Limited success in engagement with SU treatment BUT can significantly reduce ED presentations.	AA= Y AC= Y BO= Y BC= Y IA= Y KP= Y PC= Y SR= Y OB= U IT= Y

Madras et al 2009 USA	*6 States/sites (1- 4 included ED's amongst	Secondary analysis of SBIRT data (Admin data)	10% of + drug use screens (459,599 screened. 22.7% positive screen) Drugs and alcohol	+ Screen (Use in past month 5+ drinks/any illicit drugs) Trained staff delivered: 81.5/15.9% BI recommended-Moderate risk 8.6/3.2% BT recommended-Heavy use 9.6/3.7% Referral to specialist treatment-Criteria for Addiction (1x varied duration by site=15-60 minute session)	6 Month (Self report) (0.9- 10.3%)	Universal screening of drug and alcohol use in the past 30 days. (DAST, AUDIT, NIAA, SUQQ, CAGE-AID)	Drug use 67.7% lower ($p<0.01$) in BI group. Heavy alcohol use 38.6% lower ($p<0.01$) Self reported improvements in general health, housing, criminal behavior, employment and mental health. ($p<0.01$) from BT group. Feasible to screen for drug use along with alcohol use	AA, AC, BO, BC, KP, PC, SR, OB, IT= Not applicable IA= Y SR= U
Magill et al 2009 USA	Emergency Department	RCT	215 18-24 year olds Alcohol and Cannabis	M.I (1x30-45 minutes plus 20-30 minute telephone booster at 1 and 3 months) Vs. Personalised feedback (with 5-10 minute booster session at 1 and 3 months) (Updated feedback report posted to both	3, 6 and 12 months	TLFB 30 days Readiness Ruler The Brief Situational Confidence Questionnaire Drug Use frequency questionnaire Audit Rutgers Alcohol Problem Index (risk)	No difference at baseline between cannabis and non-cannabis users on readiness to change or self-efficacy. Current cannabis users found to be younger, 'more likely to be white', use more alcohol, other illicit drug use and more alcohol related consequences than non-cannabis users. Baseline- 6 months: Cannabis use not a moderator for BI group response.	AA= U AC=U BO= Y BC=N IA= U KP=U PC= U SR=Y OB= U IT=U

				groups at 3 months.)			6 Months-12 months: Cont'd reductions in cannabis use for MI group only. Reduction in number of days poly cannabis use with alcohol 'appeared' to be function of reduced alcohol consumption. Young poly users generally at a higher risk but responded to BI and reduced alcohol and cannabis.	
Bernstein et al 2009 USA	Paediatric Emergency Department	Pilot RCT (Prospective, Blinded)	210 Adolescents (14-21 yrs. olds) Cannabis	BI (1x 20-30 minutes) Plus 10th day telephone booster Vs. Assessed controls (AC) Vs. non-assessed controls (NAC)	3 months 30% attrition 12 months 29% attrition	Youth and young adult health and safety needs survey TLFB PHQ PCL-C-ptsd	No significant changes or differences at 3 month follow-up. Significant increase in abstinence in BI group compared to AC group at 12 months. No evidence for assessment reactivity- No difference between AC group and NAC group at 12 months.	AA= Y AC=Y BO= Y BC= Y IA= U KP= Y PC= Y SR=U OB= N IT= Y
Blow et al 2010 USA	Level 1 Emergency Department	RCT	957 19-60 year old adults with Substance Use Disorder (SUDs) Alcohol and drugs	BMI post discharge (2x60) Vs. Case Management Intervention-tau (5x60) Vs. Enhanced usual care	3 and 6 months (unknown)	Demographics Visit type Medical Outcome study short form-Physical and mental health Readiness to change questionnaire	50% attended at least one session of the intervention. Only 14% of the case management group attended all 5 sessions. Only 23% of the BI group attended both sessions Those attending significantly more likely to be older,	AA=U AC=U BO=Y BC=Y IA=U KP=U PC=Y SR=N OB=U IT=Y

				(Leaflet only)		Self-efficacy Substance use average consumption and frequency -past 30 days and last year.	unmarried, in action stage of change, insured and unemployed. Demographics, Reason for ED visit, Health functioning. RTC, Self-efficacy and substance use= *Report of outcomes for future paper.*	
D'Onfrio and Degustis 2010 USA	Level 1 Trauma Centre	Cohort study (Descriptive program evaluation)	2,606 18-64 Yrs. Drugs and alcohol	SBIRT BNI (1 x 5-10 minutes) Plus information leaflets No control group	1 Month telephone follow-up (for high risk group only-referrals) 16% attrition	Pre & Post: Health Needs History Alcohol/Drug Use Screen	54% of referrals enrolled in engagement with specialized drug treatment program Direct referrals 30x more likely to enroll than indirect referral. ASSERT can be fully integrated to the ED. Demographic factors affect enrollment (being white, having insurance and being married).	AA, AC, BO, BC, IA, KP, PC, SR, OB, IT = Not applicable
Krupski et al., 2010 USA	Emergency Department	Prospective Observational Study	4, 986 18-64 years old	2, 493 BI (1x 10 minutes) Vs. 2, 493 Screening and feedback only (Matched comparison group).	1 and 6 month records check for engagement.	Audit DAST	BI group significantly more likely to engage in substance misuse treatment than TAU group. No prior engagement: The BI group were 1.90 times more likely to engage than the control group (95% CI:1.61, 2.23)	AA, AC, KP, PC, SR, IT= Not applicable BO=Y IA= U BC= Y (Adjusted with propensity scoring OB= U

Woolard et al., 2013 USA	Emergency Department	RCT	515 18 yrs and over Cannabis	249 BI (2x minutes) Vs 266 TAU	3 and 12 months 17% attrition	Levels of alcohol and cannabis use Negative consequences of use (Risk)	12 month FU: Significant difference between groups for decrease in days of poly alcohol and cannabis use: (M=1.25.1:95% CI=0.81–1.54) for the Bi group Vs. (M=2.16:95% CI=1.56–2.86) for the TAU group. And binge drinking days: (M=0.72:95% CI=0.36–1.12) for the BI group Vs. (M=1.77:95% CI=1.19–1.57) for the TAU group. No significant difference in negative consequences between groups.	AA= Y AC= Y BO= Y BC= Y IA=U KP=Y PC= Y SR= Y OB=U IT= Y

Intervention key:-

BI- Brief Intervention, BNI- Brief Negotiated Interview, BA= Brief advice, BT=Brief Treatment , BMI= Brief Motivational Intervention, TLFB- Time Line Follow Back, SBIRT- Screening Brief Intervention and Referral to Treatment, SBI- Screening and Brief Intervention, MI- Motivational Intervention, DDMI- Motivational Interviewing adapted for dually diagnosed psychotic and drug-related disordered patients

Quality key:-

AA= Allocation adequately generated, AC= Adequate allocation concealment, BO= Baseline outcome measurements similar, BC= Baseline characteristics similar, IA= Inadequate outcome data adequately addressed, KP= Knowledge of allocated interventions prevented, PC= Protection from contamination, SR=Free from selective reporting, OB=Free from other bias, IT= Intention to treat analysis Y=Yes N=No U=Unclear

The benefit of both longer and multiple follow-up periods in assessing the impact on levels of use was illustrated in the RCT by Berstein et al. (2009) with 45% of the intervention group identified as abstinent (by self-report and 30 day time line follow back [TLFB]) compared to 22% of the standard assessed control group at 12 months. However at an earlier 3 month follow-up no significant difference was found in abstinence between cases and controls although consumption levels were significantly lower and efforts to modify cannabis significantly higher for the BI group at the three month mark.

In regards to frequency of drug use the studies by Tait et al. (2004, 2005a and 2005b) and Woolard et al. (2013) found fewer days of use following the intervention for the BI group compared with the TAU group. This was significant in the latter study but was a non-significant finding in the Tait study (Tait et al et al, 2004). The impact on levels of use with further engagement as a treatment modifier was also found. Those who attended further treatment had a greater reduction of total drug use compared to non-attendees in the study by Tait et al. (2004, 2005a and 2005b) regardless of whether they were a case or a control. However a significantly greater number of those who received the BI attended substance misuse treatment. For studies with a shorter follow-up length significant reductions in drug use were also found. Madras et al. (2009) was the only study measuring levels of use that was not an RCT and with a maximum follow length of six months. This secondary analysis of SBIRT interventions in multiple healthcare settings (the majority were EDs) found drug use to be 67% lower in those who undertook a BI at 6 month follow-up.

Given the setting of these studies Bernstein et al. (2009) was the only study to also examine the potential effects of post-traumatic stress disorder (PTSD) on intervention effect. Rates of abstinence and intervention effect were lower in those diagnosed as having PTSD.

2. Engagement and predictors of engagement

Four of the eight studies examined the impact of a BI on engagement issues for patients with drug misuse. Two of the studies were SBIRT studies undertaken in the USA (Blow et al., 2010; D'onfrio and Degustis, 2010). Also follow-up periods varied widely by study from 1 month (D'onfrio and Degustis, 2010) to 12 months (e.g Magill et al, 2009)

Three of the studies found that those undertaking a BI were found to be more likely to engage in further treatment (D'onfrio and Degustis, 2010; Krupski et al., 2010; Tait et al., 2004, 2005a and 2005b). One of these studies however was descriptive (D'onfrio and Degustis, 2010) and did not have a follow-up period for all cases or a comparative control group.

No differences were found between groups on characteristic predictors of engagement (older, insured, unmarried, unemployed and in the action stage of change) in the study by D' Onfrio and Degustis (2010). Despite measuring predictors for engagement at baseline, Blow et al (2010) study did not report these results for engagement post intervention. They did note that these outcomes will be reported in the future.

It must be noted that in D'Onfrio and Degustis' (2010) study, assessment based patterns of use determined steps within the intervention. Some participants were directly referred, while others were given information on referral dependant on risk. They found that those who were directly referred were 30 times more likely to attend treatment. However due to the short follow- up (1 month), and only high risk patients being directly referred findings should be read with caution.

BI's in the ED were also found to impact on improving existing engagement for those already undertaking an intervention at 6 months post intervention (explored in one study only by Krupski et al, 2010).

3. Health and socio-demographic factors

Significant self-reported improvements were reported in a number of heath and socio-demographic areas by one of the intervention groups (brief treatment group) in the study by Madras et al. (2009) and one study (D'onfrio and Degustis, 2010) elicited demographic factors that impacted on the odds of patients attending further treatment (patients who were older, insured, unmarried or unemployed) and in the action stage of change)

4. Associated risk behaviours/Harm reduction

Of the studies, that examined in full this outcome, none found any significant difference in risky behaviour or employment of harm reduction between BI and control groups (Tait et al., 2004, 2005a and 2005b; Woolard et al., 2013)

5. Psychiatric symptoms and psychological wellbeing

Two studies explored symptoms and wellbeing. One (Tait et al., 2004, 2005a and 2005b) found improved scores on measures of psychological wellbeing for the BI group (regardless of attendance). Although behavioural and psychological outcomes were also measured at baseline in the study undertaken by Blow et al. (2010), the authors offered no analysis of intervention effectiveness by way the repeat of measures post intervention or at any subsequent follow-up time points.

6. Assessment reactivity

One study (Bernstein et al., 2009) explored assessment reactivity but found no significant difference between the standard assessed control group and the non-assessed control group.

7. Repeat presentation to the ED

One of the studies (Tait et al., 2004, 2005a and 2005b) found a significant reduction in return presentations to the ED for those who received the BI.

The next section will explore the outcomes for brief interventions undertaken in inpatient psychiatric settings.

Outcomes for brief interventions in Inpatient psychiatric settings

Five of the thirteen studies reported in this review were undertaken partially or fully with inpatient psychiatric patients. Four of the five studies were based in inpatient settings only and one was in multiple settings including inpatient wards. All five studies were RCTs. The intervention ranged from 1 to 6 sessions and ranged in session length from ten minutes to one hour.

Please see page 29 for a summary table (table 4) of the research on brief interventions in psychiatric in-patient units. The table includes setting, study type, follow-up length, measurement and outcome.

1. Levels of drug and alcohol use (reduction and abstinence)

Four of the five studies within the psychiatric impatient setting attempted to examine the interventions impact on levels of drug use (Baker et al., 2002; Kavanagh et al., 2004; Martino, Carroll, Nich & Rounsaville, 2006). Follow-up periods ranged from 12 weeks (Martino et al., 2006) to 12 months (Kavanagh et al., 2004). Only one of the four studies measuring modification of drug use found a significant reduction in the participants receiving a BI (Kavanagh et al 2004). This was the study that included both the greatest number of follow-up periods (four) and the longest follow-up period length (12 months). This Australian pilot randomised controlled trial (RCT) evaluated a brief intervention in 13 first episode psychosis (FEP) patients and compared them with a control group of 12 FEP participants who received 'treatment as usual' (TAU) across three in-patient units. The authors report the whole brief intervention group showing significant improvement in reduction in substance use at six months, up until one year compared with half of the TAU group. The small sample size in this study is noted and indicates limited generalisability.

Table 4: Summary table of brief interventions for drug misuse in Psychiatric hospitals

Author, Year, Country,	**Setting**	**Study Design**	**Sample** **Substance** **Diagnosis**	**Intervention (Number x Duration)**	**Follow-up and Attrition**	**Measures**	**Outcome**	**Quality**
Baker et al 2002 Australia	Inpatient	RCT	160 participants Cannabis and Alcohol Depression and Psychosis	79 MI (1x 45 minutes) Vs 81 TAU	3 months (45%)	TLFB (Previous 90 days use) Attendance	Non-significant reduction of use in the MI group (slightly greater than the TAU group). No significant change in attendance to treatment.	AA= Y AC=Y BO=Y BC= Y IA= U KP= Y PC=Y SR= N OB= U IT=Y
Swanson et al 1999 USA	Inpatient	RCT	121 patients Drugs and Alcohol SMI	TAU + MI (1x60 minutes) Vs TAU	No follow-up	Attendance database URICA	Significantly higher initial outpatient attendance (first appointment) in the MI group	AA= Y AC=U BO= Y BC=N IA=U KP=U PC= Y SR=Y OB=U IT= Y
Goti et al 2010 Spain	Inpatient	RCT	103 12-17 year olds Drugs and Alcohol SMI	59 BI (6-9 x10 minutes) Vs. 44 TAU	1 month	Knowledge of use Risk perception Intention to use	Post Intervention: Significant rise in knowledge about drug use and perception of risk in intervention group post intervention. One month follow-up: Significant increase in knowledge about drug use in the intervention group Vs. control at one month follow-up. No significant differences were found between the groups for perception of risk or intention to use.	AA= Y AC= U BO=Y BC=N IA= U KP=U PC=Y SR= Y OB=U IT= Y
Martino et al 2006	Outpatients and Inpatients	RCT Pilot Study	44 participants (24 vs. 20)	Dually Diagnosed Motivational	4, 8 and 12 weeks	30 day Substance use Calendar at each time point (Frequency of	Significant change across groups between baseline and 12 week follow-up.	AA=Y AC=Y BO= Y BC=Y IA=U KP=N

USA			Cannabis Cocaine Heroin Ecstasy Alcohol	Interview (DDMI) (2X 1 hour) Vs. Standard psychiatric interviews (SI) (2x 1 hour)	14%, 16% and 23% respectively	use) Psychiatric medication adherence (self- report verified for 70%) Treatment engagement: Clinician verification of and recorded of attendance days to ambulatory programme Weekly urine drug screens (>87% consistent with self report) Symptom severity- PANSS BDI GAS ASI Readiness to change- URICA Interview experience- WAI	Reduced frequency: 44% in primary drug use. 40% in secondary drug use. 37% in alcohol use No significant difference between all users in DDMI Vs. Si groups Primary cannabis users more likely to be male, younger and less motivated to change. Cannabis users significantly higher reduction of cannabis use amongst SI group (p=0.00) but no reduction of alcohol in both groups. Cocaine users significantly larger reduction across time points in the DDMI (80%) Vs. the Si (24.5%) group (p=0.01) Significant increase in medication adherence by 18.8 % across the sample (p=<0.01) but no significant difference between groups. (By sub group this remained for primary users of cocaine but not cannabis) No significant difference in treatment engagement but a trend towards DDMI group (79 vs. 55% admitted to the treatment)	PC=Y SR=N OB=U IT= Y

							However no patient remained in treatment at 12 week follow-up. But how long was program meant to be? Rates of treatment entry and days of attendance Addiction severity, psychiatric symptom and psychosocial severity significantly reduced across time amongst both groups (all p=<0.01). Negative symptoms = Significantly slower decline across time for the DDMI group (p=0.03) Increase in general function across groups (p=0.01) Readiness to change primary drug use and psychiatric problems there was no significant difference across groups. Interview experience (therapeutic alliance and satisfaction) rated highly and no significant difference found between groups.	
Kavanagh et al 2004	Inpatients	RCT Pilot	25 18-35 with a first episode of psychosis Cannabis	MI + CBT (3x 1 hour) Plus weekly telephone booster	6 weeks & 3, 6, 12 months 25%	Levels of drug use. Related problems (Risks)	Significantly greater reduction in use in the intervention group at post intervention and 12 months compared with the TAU group.	AA= Y AC= Y BO=Y BC=Y IA= Y KP=Y PC=Y SR=Y OB=Y IT= Y

Australia			Amphetamine Alcohol	 Vs TAU			Non significant improvement in substance related problems (risk).	

Intervention key:-

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Quality key:-

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Y=Yes N=No U=Unclear

In contrast to the smaller sample of Kavanagh's pilot RCT, another Pilot RCT by Martino et al. (2006) randomised participants to either a dually diagnosed motivational interview (DDMI) or treatment as usual in the form of a standard psychiatric interview (SI). The 24 DDMI and 20 SI patients both received two one hour sessions of their allocated intervention. All patients were followed up at 4, 8 and 12 weeks. However attrition was large, follow-up short and the study recruited from both in and outpatient services. Martino et al (2006) found no significant differences between the groups or across time points. Both groups were found to have made changes for the primary outcome measures of reduced frequency of primary drug use (44%), secondary drug use (40%) and alcohol use (37%). Despite no significant differences for whole groups when regression analysis was undertaken by sub groups for primary drug use patients those who used cocaine in the DDMI group were found to have significantly reduced their primary drug use in comparison with their contemporaries in the SI group. Numbers for analysis however were small (N=25) and this was acknowledged by the authors. Unfortunately other class A drug subgroups could not be separately analysed due to very small numbers. Interestingly cannabis users in the SI group were found to have reduced the frequency of their cannabis use over time points significantly more than the DDMI group. Both cannabis subgroups (N =13) however did not reduce alcohol use. The authors do note the non-secondary drug use and low baseline use of alcohol amongst the DDMI group limiting the possibility of between group effects for these variables.

Although some of the studies were able to identify slight trends in a greater reduction in levels of drug use for intervention cases the difference was generally not large enough to be significant. For example Baker et al's (2002) study was not significant. However when analysed for single substance abusers, alcohol and amphetamine use actually reduced more in controls that the intervention group. For cannabis use again a non-significant difference in mean scores was found in the short term for the BI group. At the longer time points of six and 12 months no substances resulted in reduced use in the intervention group compared to controls.

2 Engagement and predictors of engagement

Three of the five studies undertaken in the inpatient psychiatric settings measured change in engagement with substance misuse treatment as an outcome of the BI (Swanson et al., 1999; Baker et al., 2002; Martino et al., 2006). It is evident that none of the studies explored engagement with mental health services as an outcome in this dually diagnosed population. Swanson et al. (1999) compared the efficacy of a one off 60 minute brief motivational intervention with treatment as usual for 121 psychiatric inpatients. They found statistically higher attendance to the first outpatient appointment for the intervention group compared to the control group, indicating the benefits of brief intervention in supporting engagement to continued psychiatric care in the community.

As with levels of use, again although some studies reported a trend towards participants receiving the intervention engaging more than controls at follow-up, these studies findings did not indicate a significant difference in comparison with control groups (e.g. Baker et al 2002; Martino et al 2006). However what constitutes a control group and potential confounders are contemplated. Details of control group conditions show that whilst some patients received TAU others receive what may be considered interventionist treatment. For example in the 2002 study by Baker et al. (measured levels of engagement in an outpatient specialist substance misuse services) controls received a self help booklet about drug use.

3. Knowledge and awareness (of drug use and risks)

Only one of the studies in the inpatient setting looked at an increase in knowledge about the negative impacts of drug use as an outcome of the intervention. In Goti et al's 2010 RCT pilot of a one off BI with 103 Spanish teenagers. Outcome was measured in terms of awareness of knowledge, awareness of risk and intention to use substances. At follow-up knowledge about drug use and perception of risk had significantly risen within the intervention group. This remained

significant, compared to controls for overall knowledge only. No significant differences were found between the groups for perception of risk or intention to use. The follow- up for this study however was relatively short (one month). The authors did note they were exploring short term effectiveness.

4. Associated risks/Harm reduction

One of the five studies explored reduced harm as an outcome. Kavanagh et al. (2004) found there was a significant change in substance related harm at 6 months for the BI group compared to the TAU group. However when intention to treat analysis was undertaken including those participants who did not receive part of the intervention this outcome lost significance.

5. Socio-demographic factors

One study looked at socio demographic differences in impact of a BI amongst dually diagnosed patients. The study by Martino et al. (2006) found demographic differences by sub groups were not found in class A drug using subgroups but were found for cannabis users who were found to be more likely to be younger, male and less motivated to change (illustrated in lower URICA scores).

6. Medication adherence

Only one of the five studies in this setting explored medication adherence as an outcome measure. Martino et al. (2006) examined any changes in medication adherence for the BI group and found a significant increase in medication adherence by 18.8 % across the sample ($p=<0.01$) but no significant difference between groups. When they further examined this outcome by drug of choice they found the effect remained for cocaine users but not cannabis users in the BI group.

7. Quality of life/functioning

Again the study by Martino et al's (2006) was the only study to report on quality of life for participants undertaking their research. The study found no difference in quality of life and

functioning for the BI group over TAU. An increase in general function across all groups (p=0.01) was found.

8. Psychiatric symptoms

Mental health symptoms were measured and reported on by one of the five studies. When evaluating psychiatric symptom and psychosocial severity Martino et al. (2006) found these outcomes significantly reduced across time amongst both groups (all p=<0.01). Negative symptoms were additionally significantly slower decline across time for the DDMI group (p=0.03). Due to the short follow-up period and small sample size of this pilot study the results are read with caution.

9. Participant experience

Martino et al's (2006) pilot was the only study to report on participants' satisfaction with the BI and found therapeutic alliance and patient satisfaction to be high. This was found for both groups in the study however.

Comparison of settings: Summary and quality of evidence

The following section will compare the findings and methodological issues of the studies in both areas. As already discussed although they are many quality frameworks for both quantitative and qualitative studies the need to explore the quality of all identified studies unrestricted it was decided to utilise guidance on quality reviewing from the Cochrane Handbook to assess the methodological quality of the selected studies. The research studies reported in the previous section show that there is diversity in the findings of the effectiveness of brief interventions in both of the acute inpatient settings reviewed.

Outcomes for brief interventions in the ED setting appear to focus on two main areas;

1. Modifying drug use and reducing associated risk behaviours.
2. Engagement with substance misuse treatment in the community.

In comparison outcomes for brief interventions for drug use in the inpatient psychiatric settings appear to focus on one of three main areas;

1. Modifying drug use and its impact on mental health.
2. Engagement with integrated treatment for substance misuse and mental health difficulties.
3. Modifying intention/readiness. (psychological change)

This review is generally consistent with the findings of other literature reviews on the efficacy of brief intervention with patients with a health difficulty and co-existing substance misuse. Physical health as a co-morbidity (studies in the ED) resulted in slightly larger changes than mental health as a co-morbidity as found previously by Kaner et al. (2011).

Results in terms of positive change in outcome varied for both the psychiatric inpatient setting and the ED. Levels of drug use were modified in slightly more of the ED studies for the BI group compared with the TAU groups. In comparison many of the in-patient studies showed either no significant change or no change over and above treatment as usual. In relation to the most commonly measured outcome, levels of use, non-significant trends were sometime found in the psychiatric inpatient studies. This difference may be explained by the difference in sample sizes for the two settings. Sample sizes in the inpatient setting tended to be much smaller and many of the studies were pilots. This type of intervention study with patients with DUDs (not just alcohol use) is fewer and less established in the inpatient setting compared with the ED.

Many of the psychiatric inpatient studies had considerably smaller sample sizes than the ED studies. For example the study by Martino et al. (2006) has quite a small sample size of 44 (25 cocaine users, 13 cannabis users, 2 Heroin users and 4 Ecstasy users) thus results must be interpreted with caution. In addition unfortunately the paper does not report the percentage of participants from each setting (in and out patients) resulting in the reader being unable to distinguish any differences by patient setting. However the study does not provide favourable findings to support the efficacy of brief motivational interventions for patients with mental health difficulties and co-existing drug use over and above treatment as usual. When undertaken for specific drugs, such as the differences for cocaine users there is some merit for the motivational brief intervention used in the study. With few studies evaluating brief interventions in acute inpatient settings and specifically focusing primarily on illicit drug use it would be difficult to provide a consensus on their usefulness. The picture remains unclear due to diverse methods and small sample sizes. Martino et al. (2006) make a valid point regarding the idea that generic brief interventions may not work equally well with research samples that, to date, have consisted of participants taking a variety of different illicit drugs. They advocate the need for brief interventions that target by drug type. This is not to say studies where drug type varies are redundant. Larger sample sizes where researchers are able to stratify analysis by drug type would

prove just as beneficial in the goal of evidencing efficacy in all types of inpatient health settings. Some of the inpatient studies in both settings lacked specificity when it comes to the content/definition of the brief intervention and confirmation that the intervention was manualised.

From analysis of the research papers there is a need to clarify treatment as usual (TAU) from 'manipulated' TAU. Some of the studies (e.g. Martino et al., 2006) were clear in what their control groups received but others were not (e.g. Swanson et al., 1999) and on closer inspection there was some elevated element to true treatment as usual (e.g. an educational information leaflet). It is argued that this would then impact upon achieving true clarity on the potential impact of the intervention and differences in outcome by group. Goti et al., 2010, for example, were one of the few studies to acknowledge the potential influential effects of their 'TAU' group. Research has shown that TAU can vary widely with implication for the outcomes of efficacy studies such as RCT's when TAU groups are used as comparators and/or controls (Lofholm et al 2013). This in turn has implications for the 'evidence' utilised in evidence based practice.

Although not explicitly discussed in each paper, profession and training length and quality may have impacted the intervention delivery and thus the results. Additionally follow-up length varied widely for studies in both settings. The ED studies had marginally longer mean follow-up times than inpatient studies. In terms of acceptability of such interventions to staff and patients, a study by Sise et al. (2005) found both staff attitudes positive and patient satisfaction high for the ED based brief intervention they tested.

Methodology varied by setting. Protocols for RCTs for example generally gave more detail in the ED papers compared with the psychiatric inpatient papers. Bogenschutz et al. (2009) reported on the design protocol for a randomised control trial of brief intervention in the ED setting. They note the challenges in constructing suitable research design and issues to consider such as the appropriate selection of inclusion criteria, research outcomes and analysis as well as appropriately defining treatment conditions, settings and study population. Also attrition rates varied by setting

in both the ED and psychiatric setting. For example in Baker et al. (2002) inpatient study 26% of the M.I group and 29 % of the control group (55%t of the total sample) were followed up at all time points. For BIs over multiple time points it was noted that less of the psychiatric samples completed the full intervention in comparison to the ED, which were mostly one off BIs. For example in Kavanagh et al. (2004) study in a psychiatric unit only 8 out of the 13 BI participants completed the intervention. The authors do not however discuss the effects on their findings in relation to this.

Treatment reactivity was considered as part explanation for some of the study outcomes (in both settings) been similar for condition and control groups. Although studies continue to show the insignificant effects of treatment reactivity in brief interventions for substance use (Marsden et al 2009) this was not found by the one study evaluating it in an ED setting (Berstein et al., 2009). In comparison no studies in the psychiatric setting assessed assessment reactivity or reported on the potentially confounding impact.

The difference in results by setting maybe explained by the type of patient participating in the research studies. It would be thought that people presenting to the ED would be more varied in terms of severity of symptoms of mental health and wellbeing. In comparison those admitted to the inpatient psychiatric setting present by the stage of admission with more severe or chronic mental health presentations, hence substance misuse and maintaining beliefs about drug use may be more entrenched and harder to shift. It could be argued that this would then impact on readiness to change and the impact of any BI undertaken. Reduced insight may be another reason for differential outcomes in the two settings, with those in the psychiatric inpatient setting being most impacted (i.e. poorer insight). The window of opportunity is much smaller in the ED setting in comparison with the psychiatric in-patient setting and the lack of insight in the latter setting may also explain varied results. The theorised sealing over recovery style (McGlashen and Levy, 1977) was conceptualised for severe mental health. It is questioned at precisely which stage psychiatric

patients begin to utilise this style during the inpatient stay and how the BI aligned to this process. Only one paper measured readiness to change and none measured recovery styles, help seeking behaviour or insight. In future studies measuring these factors as potential predictors may be beneficial to appropriate and targeted brief interventions.

Strengths and Limitations of this review

This review limited the exclusion of research studies based on quality due to the limited number of papers in the area. The author is therefore aware of the limitations of the varied methodology and quality of the studies used to draw conclusions on the benefits of brief intervention in the examined area. However research is limited in this area and all methodological studies which fit the review criteria were included the review was as inclusive as possible given the limited number of studies and the sole reporting of RCTs would have resulted in a number of informative studies being excluded.

Despite this a limitation of this study may be that by combining poorer quality studies with better quality ones this may have led to some obscurity of true effectiveness of such interventions. However and counter to this suggestion, if only the highest quality studies such as RCT'S were included they too have their own limitations (such as the overuse of heterogeneous samples, single morbidity samples etc.) which are argued to impact upon the ecological validity of findings (Slade and Priebe, 2001; Cartwright, 2007). It has been argued that even the most rigorous RCTs cannot give a comprehensive evidence base and other established methodologies must also be considered (Slade and Priebe, 2001).

As already discussed due to the small number of studies within this area and setting it was decided all studies were included that evaluated empirical efficacy. It may be that this led to little selection bias of the experimental studies. This review was about reporting research available on

intervention effectiveness rather than attempting to give a definitive view on their merit in such settings for drug use.

This review, as with many others, faces the bias in reporting due to selective publication. Despite the value of null hypothesis it is widely acknowledged that it is still the case that many journals more readily publish studies where, an often significant, change has been found. It is unknown how many studies that have been conducted yet found no significant difference lie unpublished and unreported. Similarly the bias of reporting only on a subsection of data within a larger dataset remains unknown as this review could only report on the available published results.

Conclusion

Summary of the evidence.

Findings of this review on the efficacy of brief interventions in inpatient settings for drug misuse reflects similar findings from other recent reviews on the effectiveness of brief interventions for substance misuse (e.g. Kaner et al., 2011). Brief interventions undertaken in the ED were generally found to effectively impact upon outcomes (predominantly level of use) more consistently than brief intervention undertaken in the inpatient psychiatric wards. Similarly Kaner et al date found generally positive outcomes for BI's for physical health and substance misuse and ambiguous outcomes for mental health and substance misuse.

Type and length of brief interventions in both settings were found to vary widely along with methodology such as sample criteria and outcome measures. Is there a need to redefine what constitutes a brief intervention? If researchers were to evaluate the efficacy of a more streamlined definition of BIs with more comparable methodology and sample inclusion criteria perhaps more homogenous results may be found. Perhaps the lack of such specificity as to what type of brief intervention is used in research amongst this population would inevitably only yield such heterogeneous results until researchers consistently evidence specific types of brief intervention (feedback or MI). There is a need for future studies to look at the validity of the constituent parts of B.Is.

Limited findings for drug misuse in these settings, as Higgins and Green (Cochrane Manual, 2006) caution, should not be taken as ' no evidence' of efficacy. Further research is needed for consensus.

Recommendations and considerations for clinical practice and future research.

It is clear from SAMSHA's SBIRT initiative in primary care and emergency medical settings that the United States of America are somewhat ahead of the United Kingdom in terms of having a comprehensive and, to some extent, consistent approach to substance misuse interventions in physical health settings. It is suggested that there is now a need for a move towards a similar approach here in the UK, in both mental and physical health. Although there are inpatient settings in the UK (mainly EDs) utilising brief interventions in the UK, to date, this is far from standardised. In order for this to take place staff must be more uniformly trained in brief interventions as a model integral to the work they already do. Whilst potentially seen as an 'extra' burden on workload an additional requirement of knowledge and skills clinical application will remain limited. According to NICE clinical guidance (Clinical Guidance 51, 2007) interventions offered in the community should also be available to patients in inpatient settings.

All countries would also benefit from firstly, focusing BIs equally on drugs as well as alcohol misuse in inpatient settings (not just outpatients) and secondly applying more focus to mental health settings as well as physical health settings. Much of the current research is still alcohol focused. Further in-patient research specifically focusing on brief interventions for illicit drug use is needed. However the need for measurement of the right outcome is the key in order for the brief interventions to be deemed to be of benefit in acute inpatient settings.

There is a need for larger sample size RCT's in psychiatric inpatient settings in particular. Both small sample sizes and small effect sizes within BI research (Kypros, 2007) will continue to impact studies unless this is done. Both settings may also benefit from more qualitative studies regarding the internal (psychological) and external (practical) factors that impact on motivation to modify substance use and engagement with clinical services both in hospital and in the community.

As brief interventions can in fact result in very varied interventions it is important for comparisons to be made of studies that have similar methodologies and interventions (i.e. content, length, outcome objectives) in order to be able to get a clearer picture of the efficacy of brief interventions in acute in patient settings and the components of the intervention that lead to significant change. Longer follow-up times are also needed in order to achieve more valid and reliable findings.

None of the research explored help seeking behaviour, recovery styles, insight or beliefs about coping amongst research samples. This may be a helpful move towards greater understanding of what personal factors aid change when brief intervention are offered in inpatient settings. BIs are not the panacea for all change in substance misuse in inpatient setting but the brief nature and cost effective benefits of such intervention could surely be utilised more should future clearer evidence indicate its worth.

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Testing a brief psychological intervention for in-patients with co-existing mental health and substance use disorder: A case series study

Abstract

Aims: This study sought to test the feasibility and impact of a brief intervention for clients with coexisting mental health and substance misuse difficulties in an in-patient psychiatric setting.

Methods: 11 participants were recruited to the study from three in-patient psychiatric ward. A case series design encompassing a pre-intervention baseline assessment period, a brief integrated motivational intervention and post intervention assessment (immediately following the intervention and approximately one month after). Analysis was undertaken using the reliable change index (RCI) (Jacobson and Traux, 1991) and analysis of themes from a brief post intervention semi-structured interview.

Results*:* Analysis of the eight of the 11 cases followed up (4 intervention and 4 non-intervention cases) showed no significant difference between the groups who reported little change in process or outcome variables following the intervention. In contrast, a number of cases from both groups reported reduced substance use.

Discussion*:* The brief integrated motivational intervention appeared to be feasible for those patients whose length of stay spanned the intervention. Difficulties in implementation such as attrition due to discharge and follow-up in the community were identified along with the need for more sensitive measures for this population. Issues for implementation and future research are discussed.

Keywords: Brief Intervention, Substance use disorder (SUD), Substance misuse, Severe mental Illness (SMI), Cognitive behavioural integrated treatment (C-BIT), In-patient, Motivational interviewing (MI).

Introduction

Severe Mental Illness and Substance Use disorders

The prevalence of substance use disorders (SUDs) amongst people experiencing severe mental illness is a common occurrence (Reiger et al., 1990; Kavanagh et al., 2004; Public Health England, 2012) and has been increasingly investigated over the past ten years. Severe mental illness (SMI) and co-existing SUDs has long presented a challenge for clinicians. This type of co-morbidity has been found to impact on treatment outcomes (Laker, 2007). Many UK and worldwide studies have found those with mental illness at increased risk of misusing substances and this substance misuse, in turn, affecting symptoms and recovery, increasing chance of relapse, increasing rates of in-patient admission (Bartels et al., 1993) and reducing treatment compliance, amongst other adverse effects (Cleary et al., 2008).

Epidemiological studies such as Kavanagh et al (2004) have found that being male and young was most significantly associated with SUDs in people with co-existing severe mental illness. Substance misuse profiles have been found to differ by gender (Norberg et al., 2012). The COSMIC study (Weaver et al., 2002) found as many as 44% of Community Mental Health Team (CMHT) patients reported SUDs difficulties. Additionally 75% of drug service users and 85% of Alcohol services users were identified as having a 'psychiatric disorder'. Even small amounts of illicit drugs have been found to be detrimental to metal health of those with existing illness (Kavanagh et al., 2004). Despite historical difficulties with cohesive care from mental health and substance misuse services (Drake et al., 2003) a model of integrated care is now evidenced (Drake et al.,1998; Ho et al., 1999; Barrowclough et al., 2001) and advocated as best practice (Department of Health, 2002; Nice 2011).

Sealing over and windows of opportunity

It is thought that in-patient settings are the opportune environment to attempt engagement and fostering of motivation to change substance use amongst individuals with SUDs (Department of Health 2006). McGlashan et al (1977) identified the concept of sealing over, in which individuals may minimise the significance and reality of a recent episode of psychosis as a method of coping with the distress and impact of their psychosis. This recovery style following the onset of an episode of psychosis has been found to predict poor treatment engagement (Tait, Birchwood and Trower, 2003; McGlashan, 1987). Between the periods of first admission and sealing over it is theorised that as patients psychiatric symptoms become more stable they become more reflective on their mental health and reasons for admission. This is thought to provide a possible window of opportunity for psychological work.

A model of change

Individual behaviour change is the overarching aim when attempting to change the impact of SUDs on health. One of the most commonly utilised models of change within SUDs is Prochaska and Di Clemente's trans-theoretical model (1992). The model suggests that individuals can experience a variety of difficulties at different levels (e.g. symptom/situational, maladaptive cognitions, interpersonal conflicts, family/systems problems and interpersonal conflicts.) This can aid in the understanding of both why difficulties occur and areas for intervention.

The model asserts that change is a continuum of active processes. In order for individuals to achieve a change in behaviour they go through/experience a number of stages of change (Pre-contemplation, contemplation, preparation, action and maintenance. Underlying the stages of change are ten processes that assist an individual's movement between stages (e.g. consciousness raising, self re-evaluation, counter conditioning etc.). The model is extensively used in the

treatment of drug and alcohol use and is adopted in many other fields such as physical health treatment and psychological interventions for mental health treatment.

Readiness to change and motivational interviewing

Ambivalence is thought to be a pre-requisite to behaviour change in people with SUDs. Being motivated to make a change in one's drug and/or alcohol use, also known as readiness to change, can be encouraged by first highlighting the presence of ambivalence and then working on reducing it. Motivational interviewing is one method used aiming to achieve this.

Motivational interviewing is an approach originally developed to help problem drinkers (Miller 1983). The approach seeks, through a collaborative and allied discussion between client and worker, to identify and highlight a patient's ambivalent position regarding their substance misuse and to enhance readiness to change (Miller, 1991; Hettema, Steele and Miller, 2005). Motivational interviewing is often wrongly identified as a specific intervention or technique (Miller and Rollnick, 2009) when in fact its proponents William Miller and Stephen Rollnick identify it as a concept that can be utilised in SUDs treatment.

"Motivational interviewing is a directive, client-centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence."

(Rollnick and Miller, 1995, page 325)

MI is often used in brief interventions (BIs with the aforementioned group with the objective of increasing motivation or readiness to change and risk awareness (of the impact of SUDs on their mental health problems).

Brief Interventions

Brief Interventions (BIs) are varied in content and format. Research methodology used for evaluation and resulting findings on brief interventions have also been found to vary. A number of research papers in the last fifteen years have attempted to evaluate the usefulness of utilising brief interventions with this co-morbid population (Kaner, Brown and Jackson, 2011; Goti et al., 2010; Laker, 2007; Hulse and Tait, 2002; Baker et al., 2010; Kavanagh et al., 2004; Graeber et al., 2003; Daley et al., 1998). Some studies of brief interventions for severe mental illness and co-existing SUDs have found significant beneficial effects over time. For example Hulse and Tait (2002), evaluated a one off 45 minute motivational style brief intervention against an information only control group (who received an information only package on safer alcohol consumption patterns) on three in-patient wards. They found a significant difference in alcohol consumption in the intervention group compared with control groups at follow-up whilst other studies have found no significant benefit over treatment as usual (e.g. Martino et al., 2006).

Whilst recent research suggests some benefits of brief interventions there remain many unanswered questions. For example, which types of brief intervention are most effective, over what time period and which outcomes are most likely to be improved with brief interventions? What are the effects of short burst brief interventions for example, which range from 10-30 minutes at a time. This aforementioned type of brief intervention is more commonly used with clients experiencing physical health and SUDs. In one of the most recent UK systematic reviews of the effects of brief interventions for co-morbid populations Kaner, Brown and Jackson (2011) evaluated both methodological quality and research outcomes for 14 brief intervention trials for people experiencing co-morbid difficulties. The eight trials concerned with SUDs and SMI showed greater, yet non-significant, improvement in intervention groups compared with controls. However this effect was lost over longer follow-up times.

Key issues

Some authors have noted the need for more research examining the efficacy of such brief interventions (Kaner et al., 2011; Kavanagh et al., 2004). Carey et al's (2002) pilot study evaluating the viability of a four session brief motivational intervention as part of treatment for outpatients with mental illness and SUDs concluded that the efficacy of such interventions may lie in their use as an initial part of more extensive treatment. Many studies focus on community patients thus possibly under-utilising the window of opportunity towards the end of in-patient admission where clients may be more reflective and willing to engage. It is argued that, as in hospital emergency departments, brief interventions could be utilised both as preparatory work and as a motivating tool to engage patients in longer term integrated community care (Goti et al., 2010). The UK's National Institute for Health and Clinical Excellence (NICE) quality standards for drug use disorders (NICE, 2011) note that many people with SUDs have co-existing mental health difficulties and need simultaneous treatment of both disorders in order for the most effective outcome. They recommend BIs as a 'first line' method of treatment.

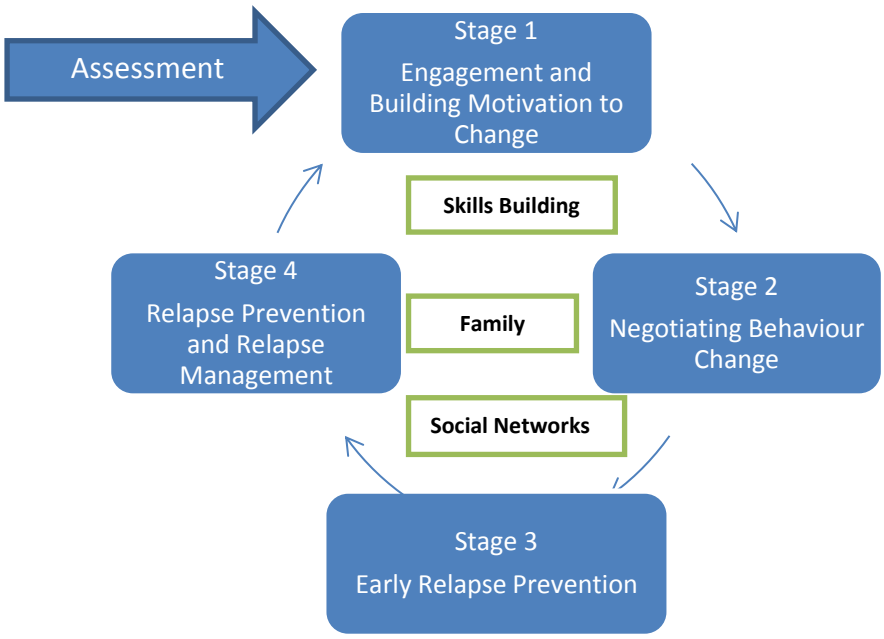
This current research examines whether difficulties with readiness to change and engagement may be exacerbated in patients with co-existing SUDs.

A model of Intervention for Dual diagnosis: Cognitive Behavioural Integrated Treatment (C-BIT)

Cognitive Behavioural Integrated Treatment (C-BIT) is a model of intervention developed specifically for patients with SMI and SUD (Graham et al., 2004). This model follows the mode of integrated treatment simultaneously for both an individual's SUD and the impact on their SMI (e.g. symptom severity and triggers for relapse). Following assessment C-BIT employs both motivational interviewing and cognitive behavioural therapy at four stages of treatment with the aims of firstly encouraging therapeutic engagement, secondly eliciting and negotiating change in

SUD behaviour change, Thirdly teaching initial relapse prevention and lastly solidifying relapse prevention and management work. C-BIT is used in both in-patient and community settings and utilises a consultation model for staff teams to undertake direct intervention work with clients.

Figure 1: Cognitive Behavioural Integrated Treatment (C-BIT) Model, Graham et al (2004)



Dr Graham and colleagues have designed a Brief Intervention adapted from the C-BIT model.

Aims of the Present Study

The present study was designed as a first step to test a Brief Intervention (BI) with clients with coexisting mental health and substance use difficulties, admitted for in-patient treatment. A series of case studies aimed to explore the viability of using the in-patient stay as a window of opportunity to engage clients in a BI before discharge. Based on the available evidence this pilot study intended to investigate the impact of the BI on key psychological processes and outcomes of change in an in-patient population. The study sought to test processes of insight, importance and confidence to change as well as monitoring for any change in important outcomes such as

readiness to change and engagement with treatment as usual.

Research questions

The following research questions were explored:

1) Is the Brief Intervention (BI) viable in an in-patient setting?

2) Can a BI utilise the window of opportunity in the in-patient stay to impact on the constructs that have been identified as helping people contemplate change and take action to change substance use? These processes included :
    a. Importance of change
    b. Confidence to change
    c. Insight

3) Will the brief intervention impact on outcome variables. Namely:
    a. Readiness to change
    b. Engagement

Method

Design

A case series design was undertaken. Measures of multiple variables (primarily subjective processes of confidence, importance and insight and outcome measures of readiness to change and engagement before and after intervention) were administered to eleven research participants. Each subject served as their own control. This design was chosen as an appropriate way of testing some of the identified psychological processes involved in motivation and specific outcomes of the intervention with the patient numbers available and time scale of this study.

Participants and setting

Eleven patients who were admitted to one of three acute in-patient psychiatric wards (all within one unit) located within Birmingham and Solihull Mental Health Foundation Trust (BSMHFT) were recruited to the study. Six began the intervention. Ethical approval for the current study was granted by South Birmingham Local Research Ethics Committee (Reference number 12/WM/0171). Further approval to undertake the research at these targeted sites was granted by BSMHFT research and development department.

All participants were diagnosed with severe mental illness (SMI) (namely psychosis or bipolar affective disorder) and co-existing substance use disorders (SUDs), namely abuse or dependence on illicit drugs or alcohol. All participants were recruited over a 7 month period.

Inclusion criteria included:

1. Individuals aged between 18 and 64 years old
2. Individuals with a diagnosis of psychosis related mental illness and with co-existing SUDs.
3. Harmful or hazardous substance use in the last 30 days prior to admission (alcohol and illicit drugs. Not cigarettes).

4. Individuals admitted to the target in-patient settings.
5. Individuals fluent in English.

Those who had participated in similar research in the last five months, were not fluent in English or lacked legal capacity were excluded from the study.

Procedure

Information and consent

Ward staff were briefed on the research and its inclusion and exclusion criteria. Patient screening and discussions between staff and the researcher then led to the identification of individuals who met inclusion criteria. Sometimes additional clarity was sought from patients regarding their substance use. Following confirmation that the potential participant was suitable and able to consent the researcher was introduced and began the process of offering participant information. Potential participants were given the opportunity to discuss the information and have any questions answered before consent was sought to participate. Confidentiality, research being separate to their clinical care and the right to withdraw at any time was emphasised.

Following consent, arrangements were made between the ward staff, the participant and the researcher for the researcher to attend the ward at agreed time points to undertake the intervention. Regular updates regarding capacity and risk were undertaken. All participants still received treatment as usual, as a minimum, for their primary diagnosis. Research contact was undertaken by the principal researcher over four weeks and consisted of:

Pre-Intervention Baseline Research Assessment

Before the intervention began the researcher sought good communication and facilitation with ward staff. This in turn assisted the researcher in building a positive and engaging relationship with participants undertaking the intervention.

Two pre intervention assessment sessions were completed in order to undertake baseline measurements of substance use and the constructs previously described. Socio-demographic information will also be sought. Each of these sessions lasted between 30 and 45 minutes approximately.

Intervention

A structured brief integrated motivational intervention based on the early stages of the Cognitive Behavioural Integrated Treatment (C- BIT) package (Graham et al 2004) was then administered over four sessions. The brief intervention (BI) had an integrated focus on mental health and substance use and aimed to map onto the client's stage of change and recovery. The beginning of the motivational style brief intervention focused on engaging the participant, and offering psycho-education and feedback. The intervention also aimed to create cognitive dissonance. The next stage of the intervention aimed to encourage contemplation to change problematic substance use and to engage with treatment services. Potentially, plans for change were also explored as well as the benefits of supportive social networks. Details of the intervention content can be found in appendix 11 (Additionaly the manual is available on request from the author). The intervention was delivered by the principal researcher. The researcher received training in delivering the intervention. Standards and fidelity to the model were monitored by research supervisors through regular discussion and feedback in supervision.

Post Intervention Research Assessment

One post intervention session was undertaken to re-administer all previous measures and conduct a brief 20minute semi-structured interview with the participant regarding their views about taking part in the intervention. Participants' perceptions of undertaking the brief intervention, any ambivalence and any motivational and/or change statements were explored. Total time was approximately one hour.

If patients gave consent to follow-up the researcher made contact one month post intervention in order to conduct the assessment. This session lasted between 30 and 45 minutes. Participants who were discharged before research could be completed were contacted in the community where follow-up assessment was undertaken.

Measures

Mental Health Diagnosis

The participant's mental health diagnosis was established through their record of existing clinical diagnosis at time point one.

Substance misuse information (Level and frequency of use and age of first use)

Maudsley Addiction Profile (MAP) Marsden et al., 1998

The MAP is a four domain outcome measure of substance misuse, health risk behaviour, physical and psychological health. The first domain only was used to screen for current frequency and quantity of substance use for the 30 days prior to admission and age of first use.

Outcome and Process measurement

The complete set of measures used in the study are described in detail within Table 1.

Table 1: Outcome and process variables

Outcome Measures Scale ***(Psychometric properties)***	**Subscale**	**Comment**
The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) Miller and Tonigan, 2006	**Ambivalence** ***Alpha=0.60-0.88*** ***Test-Retest reliability=0.83***	Scores range from 4-20. High scores indicate high levels of ambivalence and uncertainty about whether substance misuse is an issue, is causing harm or needs to change. This curiosity may be anticipated in the contemplation stage of change. Low scores indicate a lack of curiosity which may be either a high or low recognition that use is problematic (Miller and Tonigan, 1996). The hypothesis predicted an increase in ambivalence or lowering in relation to high recognition following the intervention.
	Recognition ***Alpha=0.85-0.95*** ***Test-Retest reliability=0.94***	Scores range from 7-35. High scores indicate recognition of the harms of substance use and the need to change use. Low scores indicate denial of these issues or the need to change. It was hypothesised that recognition would increase post intervention.
	Taking Steps ***Alpha=0.83-0.96*** ***Test-Retest reliability=0.93***	Scores range from 8-40. High scores indicate some positive change has already occurred and/or the need for help with changing has been acknowledged. Low scores indicate no action to change. The study posited that taking steps scores would increase after the intervention period.
Substance Abuse Treatment Scale (SATS) *McHugo, Burke and*	***Alpha=0.60*** ***Test-Retest reliability=0.90***	The treatment scale scores range from 1 to 8. A score of 1 indicates no engagement with SUDs treatment. Increasing scores indicate an increased

Ackerson, 1995		level of engagement with services and reduction in use. The highest score of 8 indicating that the client is in long term recovery and does not meet criteria for SUDs. Hypothesis was made that SATs scores would increase following the intervention.
Severity of Dependence Scale (SDS) *Gossop et al, 1995*	***Alpha=0.80-0.90*** ***Test-Retest reliability=0.89***	The measure indicates the severity of substance use. Scores range from 0-15. The cut off for problematic substance use is 3. The higher the score the greater the severity of dependence. Hypothesis did not focus on severity of dependence but results are reported.
Alcohol Use Disorders Identification Test (AUDIT) *(Babor et al 1989)*	***Alpha=0.80-0.98*** ***Test-Retest reliability=0.84***	The Audit gives an indication of frequency, intensity and severity of alcohol use. Scores range from 0-40. The cut off for problematic alcohol use is 8. The higher the score the greater the severity. Hypothesis was not made regarding severity of use.

Process Measures		
Scale	**Subscale**	**Comment**
Importance to change ruler	***Subjective ratings***	Both rulers are scored on a scale of 0-10. The higher the score the greater the subjective confidence or importance to change depending on which of the two measures is being considered. The study hypothesis predicted that confidence and importance would increase over and after the intervention period.
Confidence to change ruler	***Subjective ratings***	
Insight Scale (IS) Birchwood et al, 1994	***Alpha=0.75*** ***Test-Retest reliability=0.90***	The insight scale total scores range from 0-12. The higher the score the greater the insight into mental health.
	Awareness of	Scores range from 0-4. Higher scores

symptoms	are indicative of a patient's better awareness of their mental health symptoms.
Awareness of illness	Scores range from 0-4. Higher scores indicate a greater cognizance on the patients' part that they are unwell.
Need for treatment	Scores range from 0-4. Higher scores are suggestive that the patient is more conscious of the need for treatment than a lower score which would indicate a lack of awareness.

Data analysis

The variables were analysed by comparing baseline performance scores with scores following the intervention.

Analysis of reliable change

The reliability and magnitude of change was analysed using the Reliable Change Index (Jacobson and Truax, 1991). The Reliable Change Index (RCI) is a measurement used to indicate the degree and direction of change for clients following therapy. Statistically reliable and clinical meaningful change has been defined as the movement of a client from the range of the dysfunctional population towards or within the range of the functional population on a given outcome measure (Jacobson and Traux, 1991; Wise, 2001). The RCI was additionally used to evaluate change during the baseline period (i.e., to establish that the baseline period was stable with respect to the measure in question. Table 2 on page 72 describes the interpretation of reliable change scores.

Table 2: Terms and interpretations for Reliable Change Index (RCI) scores. (*Jacobson and Truax, 1991)*

RCI Scores	Label	Interpretation
<-1.96	**Statistically reliable decline**	**Significant deterioration for measures designed where a downward trend/reduction indicates worsening of condition. Score lies within the dysfunctional population.** **OR** **Significant improvement for measures designed where an upward trend/increase indicates recovery. Score lies within the functional population.**
-1.66 to -1.95	**Clinically meaningful decline**	**Some reduction in scores indicating positive or negative change dependant on the measurement trajectory. Move towards the functional or dysfunctional population.**
-1.65 to +1.65	**No change**	**No variation or modification sufficient to indicate deterioration or improvement.**
+1.66 to +1.95	**Clinically meaningful increase**	**Some increase indicating positive or negative change or move towards the functional or dysfunctional population according to measure trajectory.**
>+1.96	**Statistically reliable increase**	**Recovered or greatly improved for measures designed where an upward trend/increase indicates improvement of the condition. Score lies within the functional population.** **OR** **Significant deterioration for measures designed where a down trend/ reduction indicates worsening of condition. Score lies within the dysfunctional population.**

Qualitative analysis

Thematic analysis of the qualitative data was used. Common themes in the semi structured-interviews were identified, explored and later the qualitative findings were integrated to those from the quantitative data.

Results

Screened Patients and Participants

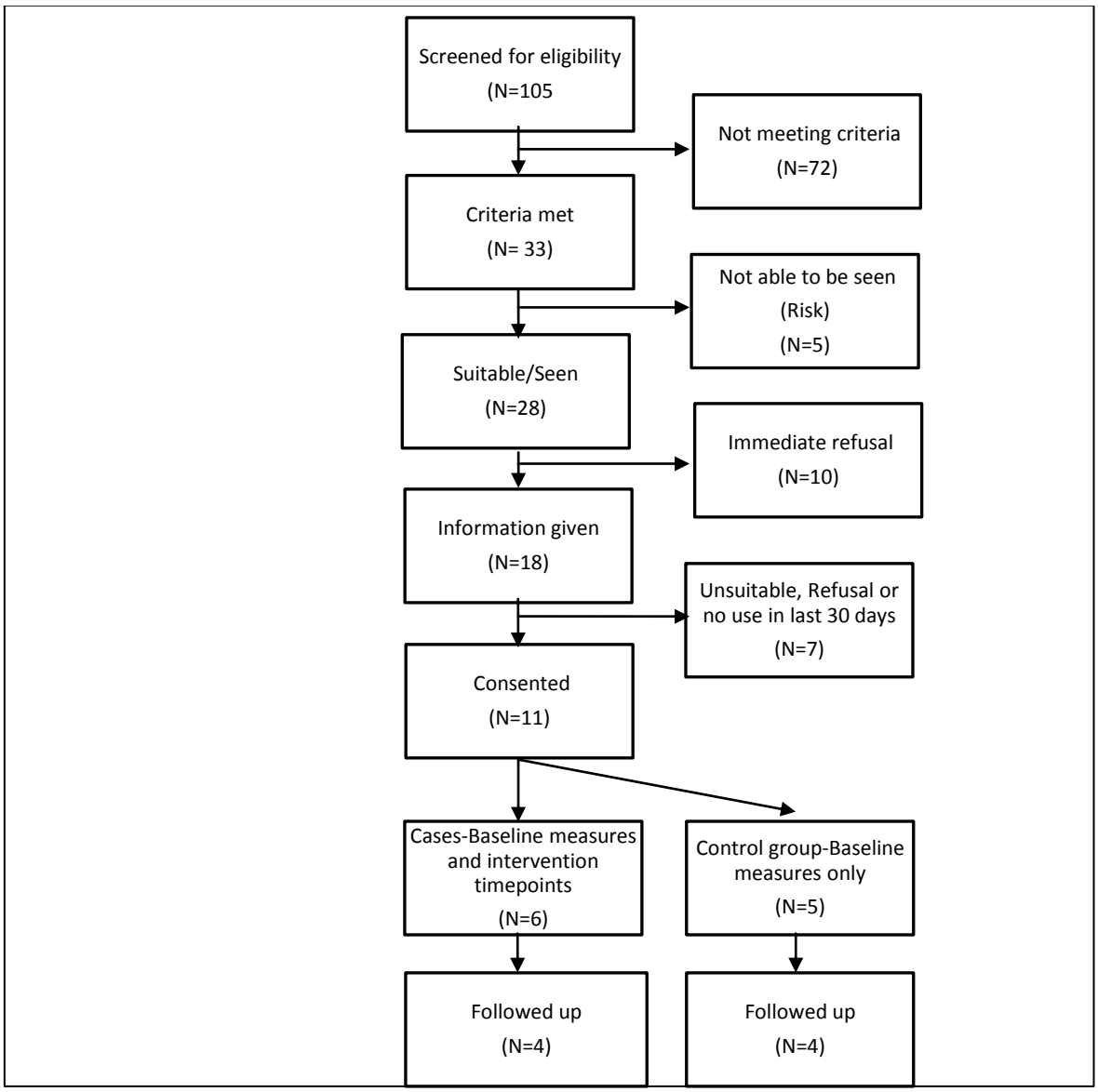
105 patients across 3 in-patient wards were screened as part of the current study. The three wards consisted of a male acute ward, a female acute and a male acute psychiatric intensive care unit. Sixty percent of patients were male and 32% were diagnosed with schizophrenia. Thirty three (31%) of participants screened met the inclusion criteria for study participation. Figure two provides details of the screening and recruitment process.

Of the 22 patients who were eligible but did not consent 81% were male and a large proportion had a diagnosis of schizophrenia (73%). Similarly a large percentage (73%) used cannabis as their main drug of choice. This illustrates that those who consented were fairly representative of the total number of eligible patients.

Eight of the 11 participants were successfully followed up; four intervention cases and four non-intervention cases. The non-intervention group consisted of individuals who were considered suitable for the intervention but were discharged from the ward before the intervention could begin. Outcomes from this group were used as a non-treatment comparison with the intervention cases.

Figure 2 shows that 85% of the eligible patients (N = 33) were seen. The other 5 eligible patients (15%) were not approached for information provision and consent as it was the opinion of their responsible medical officer that a high level of psychotic symptoms and/or present aggressive and violent behaviour made them unsuitable for this study. Fifty-five percent of eligible patients were provided with the research information and 61% (11/18) of those given information consented to participate in the study.

Figure 2: Flow chart of the resulting screening process across the three wards



Demographic and clinical characteristics of the participants

A summary of the demographic, clinical characteristics and substance use characteristics of all eleven consenting patients is given in tables 3 and 4.

Table 5 on page 78 illustrates the number of participants who completed each time point (assessment and intervention). As already illustrated in the flow chart, 5 of the 11 participants only undertook baseline measures before being discharged. The remainder of the sample undertook the baseline assessment and also began the intervention.

Table 3: Demographic, clinical and substance use characteristics of in-patients who met the study criteria and consented to participate (N=11)

Demographics	**Frequency**		
	Total participants (N=11)	Participants followed up (N=8)	
		Intervention cases N=4	Non-intervention cases (N=4)
Sex			
Male	9 *(82%)*	3	3
Female	2 *(18%)*	1	1
Age range (mean years)	21-59 (36)	26-59 (41)	21-50 (38)
Ethnicity			
White/ White British	7 *(64%)*	2	3
Black/ Black British	2 *(18%)*	1	0
Indian/Pakistani	2 *(18%)*	1	1
Employment status			
Employed	2 *(18%)*	0	2
Unemployed	8 *(73%)*	3	1
Housewife	1 *(9%)*	1	0
Living			
Rent	7 *(64%)*	3	3
Own	2 *(18%)*	1	0
Staying with family	2 *(18%)*	0	1
Highest Qualification			
GCSE/O-level	9 *(82%)*	4	3
A-Level	2 *(18%)*	0	1

	Frequency		
Diagnosis			
Schizophrenia	7 *(64%)*	1	2
Schizoaffective Disorder	1 (*9%)*	1	0
Bipolar Affective Disorder	3 *(%)*	2	2
Main Substance in last 30 days			
Cannabis	8 *(73%)*	4	1
Alcohol	2 *(18%)*	0	2
Cocaine Powder or Crack Cocaine	1* *(9%)*	0	1
Heroin	*Poly use		

Table 4: Substance use characteristics of in-patients who met the study criteria and consented to participate (N=11)

	Main Substance in last 30 days	**Age of first use**	**Money spent/amount a day**	**Frequency**
Case 1: MD	Cannabis	16	1/8 oz.	Daily use
Case 2: HL	Cannabis	15	£10	5 days a week
Case 3: EB	Alcohol	13	5 pints strong lager	3 days a week
Case 4: XF	Cannabis	14	1 gram/7 'joints'	Daily use
Case 5: NJ	Poly use- Crack cocaine/Heroin	18	£20/£25	Daily use
Case 6: LH	Cannabis	11	1 'joint'	Daily use
Case 7: GC	Cannabis	16	½ 'joint'	4 days a week
Case 8: KB	Cannabis	15	£80/1/2oz	Daily use
Case 9: MR	Alcohol	10	1 bottle of wine	Daily use
Case 10:SH	Cannabis	23	7-8 'joints'daily	Daily use
Case 11: CA	Cannabis	21	£20/1/8 oz.	Daily use

Table 5: Number of participants who completed each time point (assessment and intervention)

Key Variables Measured	**Time points N (%)**							
P=Process, O=Outcome	**BL1**	**BL2**	**I1**	**I2**	**I3**	**I4**	**Post**	**Follow-up**
Motivation								
P) Importance	11 (100)	10 (91)	6 (55)	5 (45)	3 (27)	3 (27)	3 (27)	8 (72)
P) Confidence	11 (100)	10 (91)	6 (55)	5 (45)	3 (27)	3 (27)	3 (27)	8 (72)
O) Readiness to change	11 (100)	10 (91)	5 (45)	5 (45)	3 (27)	3 (27)	3 (27)	8 (72)
Engagement SATs	11 (100)	10 (91)	5 (45)	5 (45)	3 (27)	3 (27)	3 (27)	8 (72)
O) Insight into Mental Health								
P) Insight Scale	11 (100)	10 (91)	5 (45)	5 (45)	3 (27)	3 (27)	3 (27)	8 (72)

Note: BL1 = first baseline assessment; BL2 = second baseline assessment; I1-I4 = Intervention time points.

The study aimed to explore if a brief intervention could affect positive change in the psychological processes of insight, subjective importance to change substance use and subjective confidence to change substance use. The study also aimed to monitor change in outcomes such as readiness to change and engagement with treatment and assess the feasibility of undertaking a brief intervention during the in-patient stay. The following section describes results for the intervention cases.

Case 1: MD 'Bipolar Affective Disorder and regular cannabis use'

Pre-Intervention characteristics

Personal detail

MD was a 59 year old single white British male. He reported being educated up to GCSE level. At the time of admission he was retired, living alone and renting his own home. Before retirement he had worked as a long distance lorry driver. MD reported a close and caring relationship with his mother and elder brother.

Substance use history

MD reported past use of illicit drugs but no problematic alcohol use. At the time of assessment he had been abstinent from alcohol for many years. MD's main drug of choice was cannabis that he was using on a daily basis (typically 1/8 oz. per day).

Mental health history

MD had a diagnosis of Bipolar Affective Disorder (BPAD) and had the diagnosis for approximately the last fifteen years. He had experienced multiple in-patient admissions and his current admission was the second in the last 12 months. At the time of assessment he was being held on an acute ward under section three of the mental health act (Mental Health Act, 2007). Prior to his admission MD had been regularly engaged with his community mental health team (CMHT).

Routine Care

As part of his routine treatment MD received psychotropic medication for Bipolar Affective Disorder He was generally compliant with medication and routinely attended and actively contributed to psychiatric reviews. He also received time limited occupational therapy

involvement aimed at improving his activities of daily living and his involvement in leisure activities.

Orientation toward change

MD reported neither seeking nor being offered SUDs treatment in the six months prior to admission. MD reported that he had no thoughts about changing his substance use in that time and was "happy" with the way things were. Case note review, information from the in-patient clinical team, his SATS score (1, pre-engagement) and disclosure at interview was consistent with a pre-contemplation stage of change (Prochaska and DiClemente, 1992).

Stability during non-intervention period

MD evidenced stable RTC scores over the baseline period ($Ambivalence^{B1}$ = 8, $Ambivalence^{B2}$=7, RCI = -0.34, p = 0.74; $Recognition^{B1}$ = 9, $Recognition^{B2}$=7, RCI = 0.59, p = 0.55; $Taking\ Steps^{B1}$ = 13, $Taking\ Steps^{B2}$=14, RCI = 0.25, p =0.80). With respect to insight into mental health, MD demonstrated stable scores over the baseline period ($Insight^{B1}$ = 2, $Insight^{B2}$=1, RCI = -0.53, p = 0.59). MD's engagement with drug treatment (as measured by the SATS) showed stable scores over the baseline period ($SATs^{B1}$ = 1, $Sats^{B2}$=1, RCI = 0, p>0.99). Finally, the severity of substance use evidenced stable scores over the baseline period (SDS^{B1} = 3, SDS^{B2}=2, RCI = -0.51, p = 0.61)

Therefore all of the outcome and process variables measured over MD's baseline assessment period were stable.

Delivery and Content of Intervention

Participation and Focus of Intervention

MD attended all four of the intervention sessions (20-25 minutes each over a 13 day period) and engaged with the therapeutic sessions. The intervention focused on providing information and eliciting any contemplation or self-motivational statements from MD. This was done through personalised feedback of the results of his assessment, discussion with MD about his views about his substance use and the impact on his mental health, the provision of psycho educational information on the subject and exploration of the costs and benefits of MD's cannabis use through the use of a decisional balance. During the intervention it became clear that MD had questioned his cannabis use some years ago ("I did wonder...stopped it for a bit but it made no difference") but did not currently find it an issue. He had positive beliefs about cannabis that reinforced his use like it being "the one enjoyable thing I have in my life" and "It helps me relax". Other maintaining thoughts such as "some people can't take it....shouldn't take it.....it messes them up but not me" indicated that although MD could identify that cannabis could be harmful to some it was not to him (as he had 'tested it' before). The intervention did not elicit any self-motivational statements of concern or intent to change his cannabis use. He made the decision he would not stop doing something he liked.

Outcome of Intervention

Readiness to change scores

Prior to the intervention MD presented at B2 with "Readiness to change" scores for recognition, ambivalence and taking steps of 7, 7 and 14 respectively. All sub-scores showed stability over the baseline period. By the completion of the intervention MD's RTC scores increased by 4 points to 11 for recognition, (RCI = 1.19; p = 0.23), 2 points to 9 for ambivalence, (RCI = 0.67; p =0.50) and 9 points to 23 for taking steps, (RCI = 2.28; p =0.02). With respect to change over the intervention period, when recalculating the RCI to control for trend in baseline period the change over the intervention period was not reliable for

recognition (RCI =1.78; p=0.07) but was for ambivalence (RCI =1.01; p=0.31) and taking steps (RCI =2.02; p=0.04).

Insight

MD's pre-intervention score for Insight into mental health was 1 and remained stable across the baseline period. After the therapeutic intervention MD's score had only increased by 1 point to a score of 2 (RCI =0.53; p=0.59). This remained the same after variation in the baseline was controlled for (RCI =1.06; p=0.29), indicating that the lack of change over the intervention period was reliable.

Engagement

Engagement with drug treatment did not change over the baseline period, which remained stable following the therapeutic intervention (RCI=0, p=>0.99).

Severity of substance use.

Before the intervention began MD's SDS remained stable. Following the end of the intervention MD's SDS score was unchanged with a score of 2, (RCI=0, p=>0.99). When the slight variation over the baseline period was controlled for (RCI=-0.51, p=0.61) there was no discernible intervention effect.

Frequency and intensity of substance use

MD remained in hospital throughout the intervention and follow-up period. He reported intent to continue his pattern of use once discharged. Whilst on the ward he reported using cannabis opportunistically on approximately three occasions. He reported this occurring once during the intervention period but not between intervention and follow-up.

Summary

MD showed no change with respect to the outcomes of ambivalence in RTC, insight, engagement or severity of substance use. A statistically significant increase for taking steps and recognition (RTC) was found. Although ambivalence remained low, as recognition increased, this would indicate a significant improvement in RTC. This is contradicted by subjective reports of low importance and intent to continue use.

Case 2: GC 'Schizophrenia and regular cannabis and alcohol use'

Pre-Intervention characteristics

Personal detail

GC was a 26 year old single white British male. He reported being educated up to GCSE level. Prior to admission GC was unemployed and living alone in rented accommodation.

Substance use history

GC main drug of choice was cannabis and he reported using a small amount 4 times a week (1/4 to ½ a cannabis joint). Alcohol use was thrice weekly and typically half a bottle of vodka or two cans of super strength lager. GC reported past use of cocaine, crack, heroin, ecstasy and magic mushrooms between the ages of 16-21. He also reported occasions of alcohol and cannabis use whilst on the ward.

Mental health history

Three years prior to his current admission GC was diagnosed with Schizophrenia. GC had experienced previous admissions to his current section three of the mental health act (Mental Health Act, 2007). The current admission was the first this year. Prior to admission GC had been engaged with his community mental health nurse (CPN) within the community. He was compliant with medication when seen but his contact had become sporadic in the two months preceding his admission.

Routine Care

As part of treatment as usual GC received psychotropic mediation for Schizophrenia. He became compliant with psychotropic medication whilst on the ward and attended weekly psychiatric reviews. He also received time limited weekly occupational therapy involvement

on the ward aimed at increasing his involvement in meaningful activities such as cookery and leisure groups.

Orientation toward change

In the six months before the current admission GC reported he had not personally sought or received treatment for his substance use. He did report his care coordinator telling him to stop smoking but thought they were "trying to rule me". Case note review, feedback from the clinical team, SATS score (1. Pre-engagement) and disclosure at interview was consistent with a pre-contemplation stage of change (Prochaska and DiClemente, 1992).

Stability during non-intervention period

GC's RTC scores over the baseline period proved to be variable for some of the RTC subscales ($Ambivalence^{B1}$ = 10, $Ambivalence^{B2}$=16, RCI = 2.01, p = 0.04; $Recognition^{B1}$ = 18, $Recognition^{B2}$=22; RCI = 1.19, p = 0.23; $Taking\ Steps^{B1}$ = 31, $Taking\ Steps^{B2}$=39, RCI = 2.02, p = 0.04). Baseline scores for Insight into mental health demonstrated stability ($Insight^{B1}$ = 8, $Insight^{B2}$=7, RCI = -0.53, p = 0.59). GC's engagement with drug treatment (as measured by the SATS) showed stable scores over the baseline period ($SATs^{B1}$ = 1, $Sats^{B2}$=1, RCI = 0, p>0.99). With regards to severity of substance use GC evidenced stable scores over the baseline period ($Audit^{B1}$ = 10, $Audit^{B2}$=13, RCI = 0.81, p = 0.42; SDS^{B1} = 9, SDS^{B2}=8, RCI = -0.51, p = 0.61)

In summary most of the constructs measured over GC's did not show significant or clinically meaningful change over the baseline period with the exception of the RTC subscales of ambivalence and taking steps

Delivery and Content of Intervention

Participation and Focus of Intervention

GC attended all four of the intervention sessions (20 minutes each over 12 days) and engaged with the therapeutic sessions. The intervention focus included feedback and provision of information, identifying any contemplation and eliciting self-motivational change statements. Intervention with GC included personalised feedback of his assessment, the provision of psycho-educational information and exploration of any maintaining beliefs GC may have about cannabis. He reported that 'being stressed' made him want to smoke cannabis which in turn helped him relax and it was also used by those he associated with when in the community. GC held beliefs about cannabis, such as 'herbal' cannabis being harmless and healthy in comparison to 'Skunk' which "can change your thinking and personality". However he did correctly identify 'Skunk' as being a stronger, more harmful type of cannabis. Despite GC holding some positive beliefs about cannabis' having beneficial effects on him he also made some statements of concern about the impact on his mental and physical health (e.g. "cannabis can make me paranoid.....make you hallucinate"). After eliciting some motivational statements about modifying his cannabis use (e.g. "I'm not sure I want to smoke no more" and "I don't want to drink too much" this led to the next phase of intervention. This was development of a change plan, which was anchored by two personal goals (going to the gym and refusing cannabis from friends) and exploring social networks that may support or hinder these personal goals was also discussed.

Outcome of Intervention

Readiness to change scores

Prior to the intervention GC presented with "Readiness to change" scores at B2 for recognition, ambivalence and taking steps of 22, 16 and 39 respectively. All sub-scores

showed variability over the baseline period. By the completion of the intervention GC's "Readiness to change" scores decreased by 6 points to 16 for recognition, (RCI = -1.78; p =0.07), decreased 7 points to 9 for ambivalence, (RCI = -2.35; p =0.02) and decreased 7 points to 32 for taking steps, (RCI = -1.77; p = 0.08).

Once repeat RCI calculations were undertaken, controlling for variation in baseline measures, the original indication of a significant decrease after the intervention period proved to be reliable for ambivalence (RCI =-4.36; p=0.00)., recognition (RCI =-2.97; p=0.00), and taking steps (RCI =-3.79; p=0.00). Statistical significance of these results was found for all three subscales.

Insight

GC's pre-intervention score for Insight into mental health was 7 and remained stable across the baseline period. After the therapeutic intervention GC's score had decreased by 1 point to a score of 6 (RCI =-0.53; p=0.59). RCI increased slightly after variation in the baseline was controlled for (RCI =0; p>0.99), indicating that the lack of change over the intervention period was reliable in the unadjusted scores.

Engagement

Engagement with drug treatment did not change between the beginning of the baseline period and follow-up after the intervention period (RCI=0, p=>0.99).

Severity of substance use.

Before the intervention began GC's severity of substance use remained stable. Following the end of the intervention GC's SDS score remained unchanged with a score of 8, (RCI=0, p=>0.99). When the slight variation over the baseline period was controlled for the initial result was found to be consistent (RCI=-0.51, p=0.61), still indicating no change. GC's

AUDIT score showed stability across the baseline period and his pre-intervention score of 13 decreased by 5 points to 8 following the end of the intervention (RCI = -1.35, p = 0.18) indicating a clinically meaningful decrease. The adjusted RCI score for the AUDIT supported this trend and indicated that the decrease was significant (RCI=-2.15, p=0.03).

Frequency and intensity of substance use

Following the intervention assessment GC reported abstinence from cannabis use. At follow-up GC reported not using cannabis in the past 30 days but had replaced this with once weekly use of a legal high called 'spell weaver' (Methiopropamine – a stimulant 'legal high') because it made him "feel happy". He did not see this as a drug "because it's legal".

Summary

GC's scores indicated a statistically significant decrease in all three subscales of readiness to change and the AUDIT. GC showed no clinically meaningful or significant change with respect to the other variables measured. However subjective ratings of importance and confidence increased following the intervention and abstinence of GC's drug of choice was reported.

Case 3: KB 'Bipolar Affective Disorder and regular cannabis use'

Pre-Intervention characteristics

Personal detail

KB was a 29 year old Asian British female with a diagnosis of Bipolar Affective Disorder (BPAD). KB was a mother of two young children and at the time of assessment pregnant with her third child. Before admission KB was living with her children in rented accommodation.

Substance use history

KB stated that she smoked 'one spliff' after another before coming into hospital'. Her main drug of choice was cannabis which she smoked heavily on a daily basis (£80/1/2oz). She reported past use of cocaine (once at 25 years old) and alcohol but she reported not drinking in the last two years. On enquiry, she reported her previous alcohol use as 'something that used to get out of control' and she stopped because of this.

Mental health history

KB had a diagnosis of Bipolar Affective Disorder (BPAD). KB was diagnosed approximately 6 years prior to her engagement in the present study and had experienced previous in-patient admissions. The last admission was 4 years before her current admission. KB was held on an acute ward under section two of the mental health act (Mental Health Act, 2007) and was admitted whilst 8 months pregnant. Prior to her compulsory admission KB's local assertive outreach team (AOT) had made increasing attempts to engage her in treatment unsuccessfully. This lack of engagement, her lack of medication adherence and the risk associated with being pregnant led to her admission.

Routine Care

Because KB was in the final stages of pregnancy TAU included a modified medication regime for BPAD and prenatal care in regards to her pregnancy. She was generally compliant with psychotropic medication whilst on the ward. She attended and contributed to psychiatric reviews. Once KB's baby was born she was transferred to the mother and baby unit with her child where treatment with parenting facilities and clinicians specialising in the care of post natal patients was available.

Orientation toward change

KB had engaged in no treatment with SUDs services for her cannabis use despite reportedly being offered an integrated mental health and SUDs intervention by her CPN. Because she was pregnant and using substance social services were involved in her care as well as mental health services. Case note review, clinician feedback, SATS scores and disclosure at interview are consistent with a contemplation stage of change (Prochaska and DiClemente, 1992) post admission.

Stability during non-intervention period

KB evidenced stable RTC scores over the baseline period for the subscales of ($Ambivalence^{B1}$ = 16, $Ambivalence^{B2}$=19, RCI = 1.01, p = 0.31 and $Taking\ Steps^{B1}$ = 40, $Taking\ Steps^{B2}$=39, RCI = -0.25, p = 0.80) but variable scores for recognition in RTC (Recognition1 = 35, $Recognition^{B2}$=24, RCI = -3.27, p = 0.00). With respect to insight into mental health, KB demonstrated stable scores over the baseline period ($Insight^{B1}$ = 11, $Insight^{B2}$=8, RCI = -1.60, p = 0.11). KB's scores for engagement with drug treatment (as measured by the SATS) showed stability over the baseline period ($SATs^{B1}$ = 1, $Sats^{B2}$=1, RCI = 0, p>0.99). Severity of substance use scores over the baseline period proved to be stable (SDS^{B1} = 10, SDS^{B2}=12, RCI = 1.02, p = 0.31)

Most of KB's outcome and process variable that were measured over the baseline assessment period were stable except the recognition subscale of RTC. These two measures indicated significant decrease over the baseline period.

Delivery and Content of Intervention

Participation and Focus of Intervention

KB attended 50% of intervention sessions. Once she had given birth, following the baseline phase, her childcare commitment took precedence over participation. However KB reported that she still wished to continue and engaged in two of the four therapeutic sessions. The two sessions over eight days each lasted 15-20 minutes. The intervention focused on feedback, information and eliciting self-motivational statements of change. KB was offered personalised feedback of the results of her assessment. This then led to discussions about KB's use and the impact on her mental health. KB seemed to acknowledge the impact cannabis had on her mental wellbeing and her children's welfare. She asked questions about cannabis use in pregnancy. Psycho-educational information was provided and her decisional balance tipped towards change. KB made self-motivational statements about the need to stop cannabis use on discharge "for my children". Costs and benefits were explored but KB stated many more negatives of cannabis use and reaffirmed her strong desire to be abstinent from cannabis. Before the intervention could continue to the next stage for the decision making stage of change (change plan and exploration of social support) completing subsequent sessions became difficult. KB was unable to commit to further sessions and then was discharged from the unit.

Outcome of Intervention

Readiness to change scores

At baseline (B2) KB's RTC scores for recognition, ambivalence and taking steps were 24, 19 and 39 respectively. All sub-scores showed stability over the baseline period. By the completion of the intervention KB's "Readiness to change" scores decreased by 5 points to 19 for recognition, (RCI = -1.49; p = 0.14), decreased 7 points to 12 for ambivalence, (RCI = -2.35; p = 0.02) and increased 1 point to 40 for taking steps, (RCI = 0.25; p =0.80). Readjustment of the RCI calculation with respect to the trend in baseline measurement indicated that the suggested change over the intervention period was reliable for taking steps (RCI =0.51; p=0.61) where the indication of no change remained and ambivalence which still indicated a significant decrease (RCI =-3.36; p=0.00). Once adjusted, RCI scores for recognition remained non-significant but reversed from a non significant decrease to a clinically meaningful increase (RCI =1.78; p=0.07).

Insight

KB's pre-intervention score for Insight into mental health was 8 and remained stable across the baseline period. After the therapeutic intervention KB's score had increased by 4 points to a score of 12 (RCI =2.13; p=0.03). Controlling for variation in the baseline indicated this indication of statistically significant increase was reliable (RCI =3.73; p=0.00).

Engagement

KB's scores for engagement with drug treatment remained stable across the baseline period. By the end of the intervention KB's score significantly increased by 4 points to a

post intervention score of 5, (RCI=10.78, p=0.00). As scores were exactly the same over the baseline period no adjustment for variance was needed.

Severity of substance use.

Before the intervention began KB's severity of drug use remained stable. Following the end of the intervention KB's score decreased by 3 points from 12 in the baseline period to 9 after the intervention, (RCI=-1.52 p=0.13). When the variation over the baseline period was controlled for, the clinically meaningful decrease remained and was statistically significant (RCI=-2.54 p=0.01).

Summary

KB showed no change for taking steps in regards to RTC but did have a statistically significant decrease in severity of substance use. With respect to putative factors affecting the efficacy of the intervention, KB's scores for insight and engagement significantly increased, indicating a statistically significant improvement in these constructs. The indicated meaningful increase in recognition (RTC) must be viewed with caution due to the large baseline variation. Despite an increase in recognition the post intervention score remained low. In contrast to this KB reported abstinence at follow-up and high confidence and importance to change over the intervention period.

Case 4: SH 'Schizoaffective Disorder and regular cannabis and alcohol use'

Pre-Intervention characteristics

Personal detail

SH was a 50 year old divorced black British male. He reported being unemployed prior to admission but was previously self-employed. SH reported being educated to GCSE level and lived alone in his own home.

Substance use history

SH's typically smoked cannabis, his drug of choice at home and reported smoking up to eight cannabis joints on a typical day. *S*H reported using cannabis as a stress reliever. It began as occasional use when he was younger and increased over time. He reported also using alcohol twice weekly (typically half a bottle of brandy). SH did not see his drinking as a problem. On further inquiry SH reported spending a lot of money on drink and always having it in the house in 'case I need it'. He also reflected upon his family history of alcohol use, reporting 'my father's side were said to be drunkards'.

Mental health history

SH had a diagnosis of schizoaffective disorder and had been diagnosed approximately 22 years previously. SH was held on a psychiatric intensive care unit (PICU) under section three of the mental health act (Mental Health Act, 2007). He had experienced multiple in-patient admissions since his early 20's. KB had previously been treated for depression. KB's engagement with his local AOT prior to admission had been very erratic and in the weeks leading up to his admission KB was no longer compliant with medication.

Routine Care

As part of TAU, SH received psychotropic mediation for schizoaffective disorder. Whilst admitted he became more compliant with psychotropic medication but did not readily engage with psychiatric reviews. Towards the end of admission SH undertook time limited occupational therapy aimed at improving his engagement with others via leisure activities. During the intervention SH was moved from the PICU to an acute ward. At the point of follow-up he had moved to another acute ward. TAU continued throughout and was only halted when SH absconded for one week. Treatment resumed on his return.

Orientation toward change

SH reported that he was unsure if his cannabis use was a problem but resented others telling him it was. Case note review, SATS score, disclosure at interview was consistent with a pre-contemplation stage of change (Prochaska and Diclemente). SH's CPN did ask about his drug use and offered him SUDs intervention with a drugs worker 'once or twice' in the last six months but SH felt that he didn't see there was a problem as others did at that time

Stability during non-intervention period

SH scores for RTC over the baseline period indicated stability for ambivalence ($Ambivalence^{B1}$ = 18, $Ambivalence^{2}$=18, RCI = 0, p = 1.00) but not the remaining subscales of RTC ($Recognition^{B1}$ = 23, $Recognition^{2}$=16, RCI = -2.08, p = 0.04; $Taking\ Steps^{B1}$ = 26 $Taking\ Steps^{B2}$=34, RCI = 2.02, p =0.04). Insight into mental health scores demonstrated stable scores over the baseline period ($Insight^{B1}$ = 7.5, $Insight^{B2}$=6, RCI = -0.80, p = 0.42). With respect to SH's engagement with drug treatment his scores evidenced stability over the baseline period ($SATs^{B1}$ = 1, $Sats^{B2}$=1, RCI = 0, p>0.99). Finally, the severity of substance use evidenced stable scores over the baseline period for severity of drug use (SDS^{B1} = 5, SDS^{2}=4,

RCI = -0.51, p = 0.61) but highly variable scores for Alcohol use (Audit ^{B1} = 23, Audit^{B2}=14, RCI = -2.42, p = 0.02)

In summary insight and engagement scores were stable for SH. With regards to RTC ambivalence was a stable subscale but recognition and taking steps were variable. For severity of substance use, drug use scores were stable but alcohol use scores were highly variable.

Delivery and Content of Intervention

Participation and Focus of Intervention

SH attend all four of the intervention sessions (approximately 20 minutes each over 15 days) and engaged with the therapeutic process. The intervention focused on offering personalised feedback of the results of SH's assessment, psycho-educational information about cannabis and the potential impact on mental health and elicit SH's beliefs about his use and changing his cannabis use. In exploring SH's reflections on the information shared some maintaining belief and cycles of use were elicited. SH had beliefs about cannabis relieving his distress and reported use as a way to self-medicate. Although he reported most of his family did not like him smoking he engaged in cannabis use with one of his older siblings. He mentioned his mother, as well as those involved in his clinical care being concerned about his cannabis use. He admitted that his perspective on the situation 'changes by the day and my mood'. A decisional balance was undertaken and although produced many positive beliefs about his cannabis and alcohol use he also produced many negatives such as feeling like his physical health was being affected, getting into near miss serious accidents when under the influence and "maybe it escalates my symptoms when I am thinking negatively". Half way through the intervention time points SH reported self-motivational statements about changing his drug use such as reducing his cannabis use being important to his physical and mental health. He also

noted that he was increasingly aware of how his use affected others (i.e. his mother and some of his siblings). The last focus of the intervention included beginning a change plan and the facilitative nature of positive social networks in the change process.

Outcome of Intervention

Readiness to change scores

At baseline (B2) SH presented with "Readiness to change" scores for recognition, ambivalence and taking steps of 16, 18 and 34 respectively. The ambivalent sub-score showed stability over the baseline period but other subscales did not. By the completion of the intervention SH's "Readiness to change" scores decreased by 2 points to 14 for recognition, (RCI = -0.59; p = 0.55), decreased by 10 points to 8 for ambivalence, (RCI = -3.36; p =0.00) and 3 points to 31 for taking steps, (RCI = -0.76; p= 0.45). Adjusted secondary RCI scores suggested the indication of no meaningful or significant change remained for recognition (RCI =1.49; p=0.14) but not for taking steps (RCI = -2.78; p= 0.01). As there was no baseline variation in SH's ambivalence sub-score there was no adjustment to be made.

Insight

SH's pre-intervention score for Insight into mental health was 6 and remained stable across the baseline period. After the therapeutic intervention SH's score had decreased by 1 point to a score of 5 (RCI =-0.53; p=0.59). This indication of no change was reliable and remained once the RCI was calculated to allow for the trend in the baseline score (RCI= 0.27; p=0.79).

Engagement

Engagement with drug treatment did not change and remained stable over the intervention period. SH's score remained unchanged after the intervention ended.

Severity of substance use

Before the intervention began SH's severity of drug use remained stable. Following the end of the intervention SH's SDS score decreased slightly by 1 point from a score of 4 to 3, (RCI=-0.51, p=0.61). When the slight variation over the baseline period was controlled for the finding of no change was found to be reliable (RCI=0, p=>0.99). For Alcohol, SH's scores over the baseline period were highly variable. SH's pre-intervention score of 14 decreased by 4 points to 10 following the end of the intervention (RCI=-1.08, p=0.28). Adjustment, taking the high variation in the baseline period into account, indicated the original RCI for the Audit, despite changing direction, continued to show no change (RCI=1.35, p=0.179).

Summary

SH showed no statistically significant or clinically meaningful change for insight, engagement or severity of drug use. With respect to changes after the intervention for alcohol use SH's decreased AUDIT score did not infer a clinically meaningful or statistically significant improvement in severity and intensity of alcohol use. With regards to RTC ambivalence scores indicated a significant decrease in this subscale. Although adjusted scores indicated a statistically significant reduction in taking steps the baseline variation was large enough to treat scores with caution.

Clients not receiving an intervention

The following section presents the results for baseline stability and any indications of reliable change for the four clients who did not receive the intervention. Further information on the pre-intervention characteristics of the non-intervention clients can be found in appendix 14.

Stability during non-intervention period

NJ was only assessed once over the baseline period due to early discharge. For the remaining three non-intervention cases all three subscales of the RTC were stable over the baseline period. Insight into mental health scores demonstrated variable scores over the baseline period for HL and MR. Engagement and severity of substance use scores were all stable. Please see appendix 15 for all baseline RCI scores for non-intervention cases.

Outcome of Intervention

Readiness to change

At follow-up all of the RCI scores (please see appendix 15 for all scores) for the non-intervention cases indicated no statistical or clinical significance (RCI's all under 1.96 and non-significant) for all of the RTC subscales with the exception of a statistically significant decrease in ambivalence (RCI=-3.02; p=0.00) for HL.

Insight

No meaningful change was indicated for insight scores for any of the non-intervention cases.

Engagement

Engagement scores remained at 1 (pre-engagement) throughout time points for all non-intervention cases except NJ. Her baseline score increased significantly (RCI= 2.69; p=0.007)

Severity of substance use

SDS scores decreased significantly between the baseline and follow-up period for HL's (RCI=-3.55; p=0.00) and EB's (RCI=3.05; p=0.00) SDS scores. NJ and MR's SDS score did not indicate any meaningful change. Audit scores remained unchanged for MR but decreased significantly for HL and EB (RCI=-7.80, p=0.00, RCI=-4.36, p=0.00). NJ was teetotal.

Importance and confidence to change substance misuse

A ceiling effect was observed for HL who rated 10/10 throughout. EB, NJ and MR all reported increased ratings of importance at follow-up. With respect to subjective ratings of confidence to change substance use ceiling effects were observed for HL again. The remaining 3 non-intervention cases all reported some increase in subjective confidence at follow-up.

Frequency and intensity of substance use

HL reported abstinence from his drug of choice, cannabis, at follow-up. MR reported drinking at the same levels as when measured at baseline. NJ reported a small reduction in her heroin use (£5) but was still using the same levels of crack and using both substances daily. Although he drank similar amounts on a drinking day EB reported a reduction in number of drinking days. He had drunk three times since his discharge from hospital.

Summary

Most RCI scores for non-intervention cases were not found to indicate any clinically meaningful or statistically significant change in regards to RTC, insight or engagement. . There were a few exceptions in regards to HL's decrease in ambivalence and NJ's improving engagement. However with respect to severity of substance use and levels of use, there was a marked reduction for three of the four non-intervention cases.

Comparison of intervention and non-intervention clients

The following figures (3-10) on pages 102 to 107 depict the pre assessment measure (B2) scores and post intervention measures of readiness to change, insight, engagement, severity of use, importance and confidence to change substance misuse for both intervention and non-intervention cases in order to compare similarities or differences between the two groups of clients. The red circles represent cases that undertook the intervention and the black crosses represent the non-intervention cases. The solid black line represents the line of no change. The dashed line represents the line of clinically meaningful change and the dotted line represents the line of significant change. Hence any cases on the following graphs lying outside of the dashed or dotted lines represent the described change.

Figure 3: Scatter plots showing pre and post intervention scores for the outcome measure Stages of change and treatment eagerness (SOCRATES)

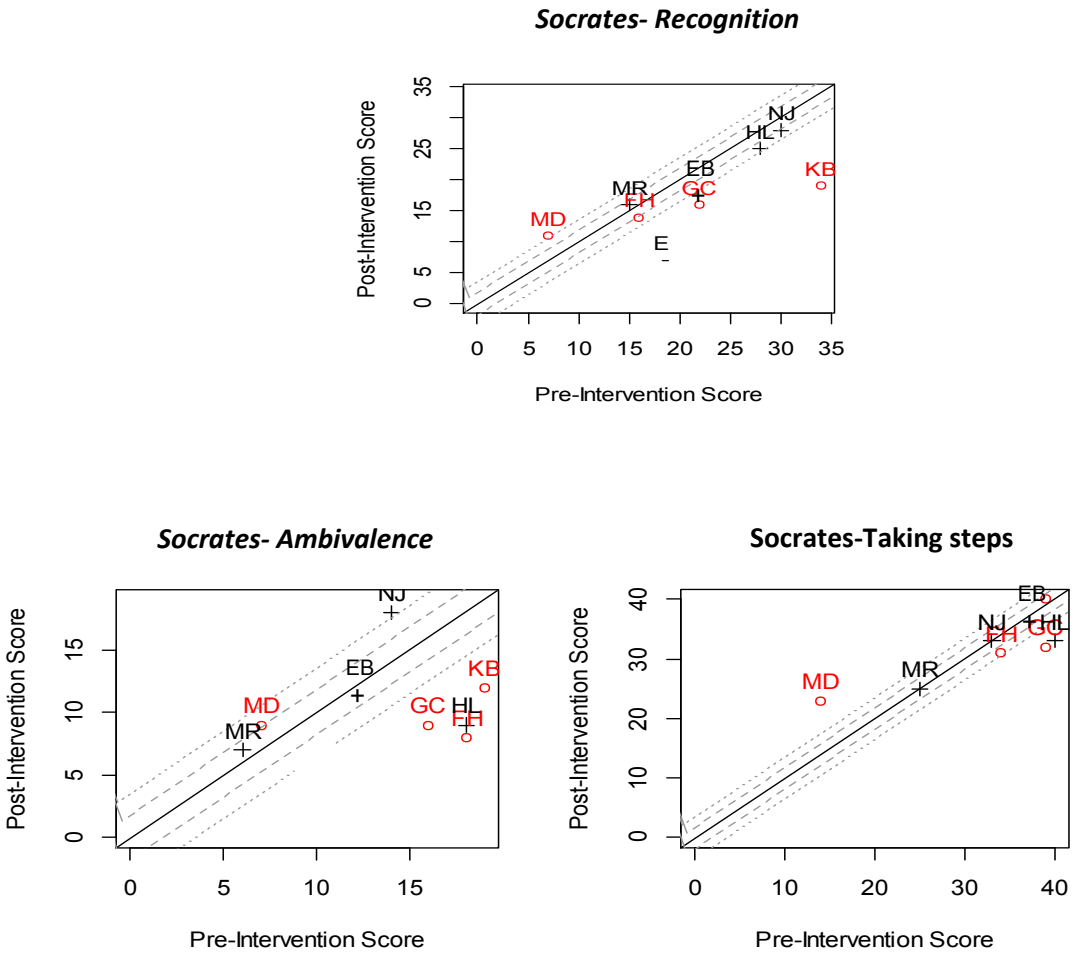
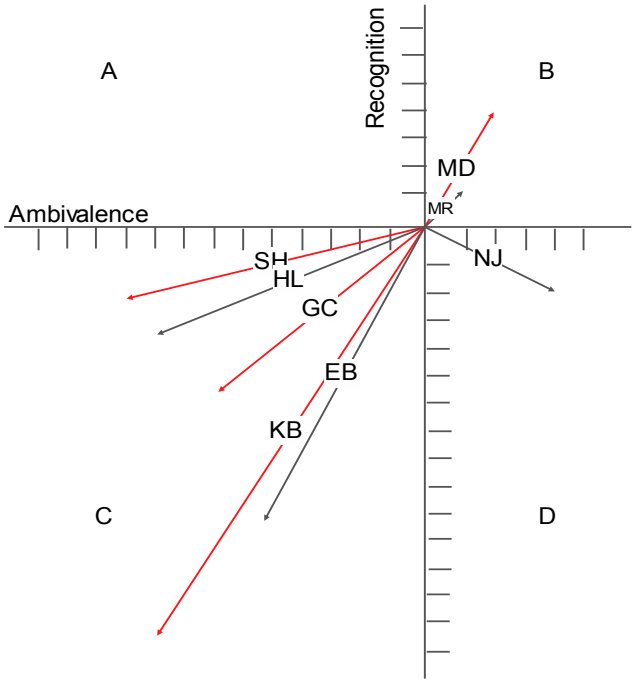


Figure 3 shows that more intervention cases have a statistically significant change in scores for recognition scores after intervention compared to non-intervention cases. More of the non-intervention cases lie within the clinically meaningful area. The figure shows all but one of the intervention cases has significantly reduced ambivalence compared with the non-intervention cases whose results vary. For the taking steps subscale no difference is observed in the spread between the two groups.

Figure 4: Cartesian graph showing the relationship between ambivalence and recognition scores on the SOCRATES post intervention.



As highlighted in table 1 in the methods section the meaning of ambivalence scores for readiness to change is understood and interpreted in relation to recognition scores for readiness to change. The graph in figure 4 above displays the four relationships between ambivalence and recognition. Sector A represents low ambivalence and high recognition indicative of a readiness to change substance use. Sector B represents high ambivalence and high recognition, indicative of awareness that change is needed but an uncertainty about taking action. Sector C represents low ambivalence and low recognition and sector D represents high ambivalence and low recognition. Both sector C and Dare indicative of low readiness to change.

The graph shows the majority of intervention and non-intervention cases have low ambivalence and low recognition scores at follow-up. However as discussed earlier in the results section some

of the cases' (e.g. GC) scores, compared with their baseline scores, have improved overall readiness to change.

Figure 5: Scatter plots showing pre and post intervention scores for the process measure of Insight.[1]

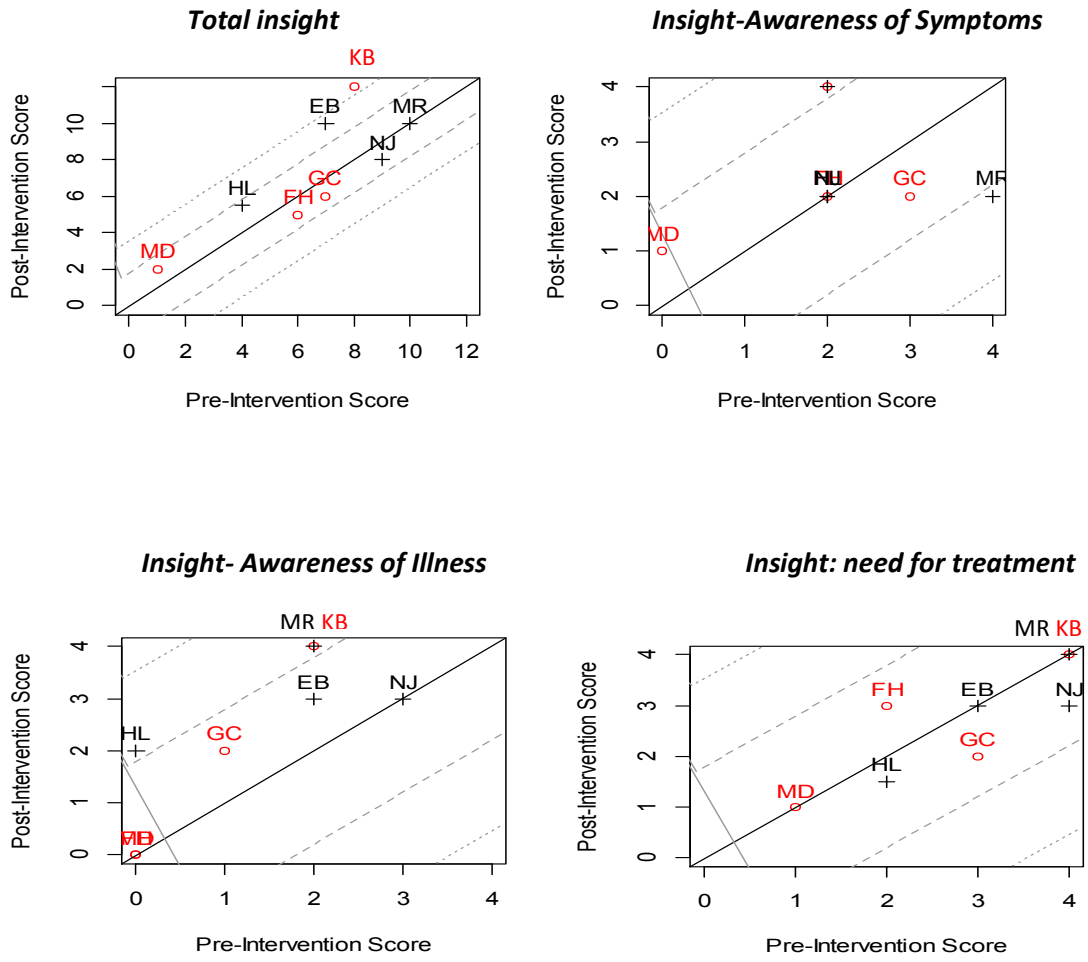


Figure 5 is indicative of a variance in scores across both groups with most cases lying within the area of no change.

[1] For cases with similar scores the data points in the graphs in figure 5 overlap.

Figure 6: Scatter plots showing pre and post intervention scores for the outcome measure substance abuse treatment (SATs).[2]

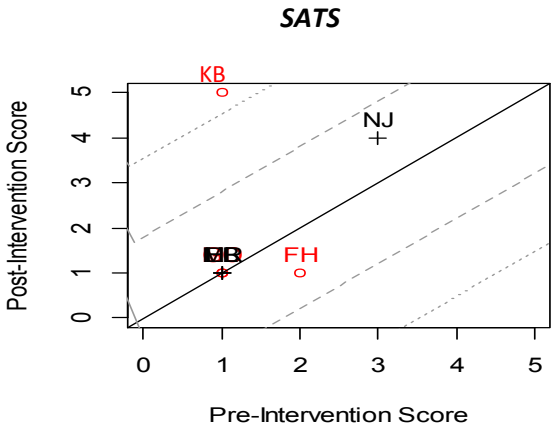
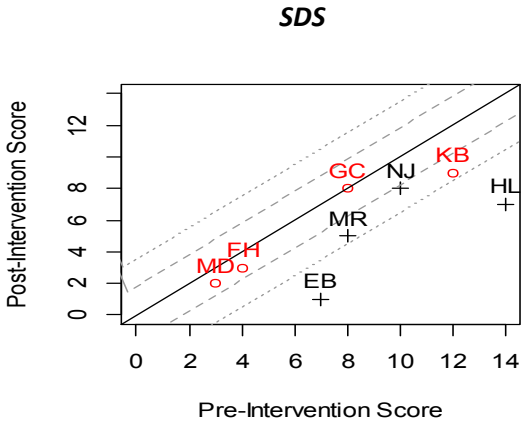


Figure 6 illustrates a cluster of intervention and non-intervention cases who remained, both pre and post intervention, at the initial stage (1, pre-engagement) of the SATS. A significant increase was found for one intervention (KB) and one none intervention case (NJ).

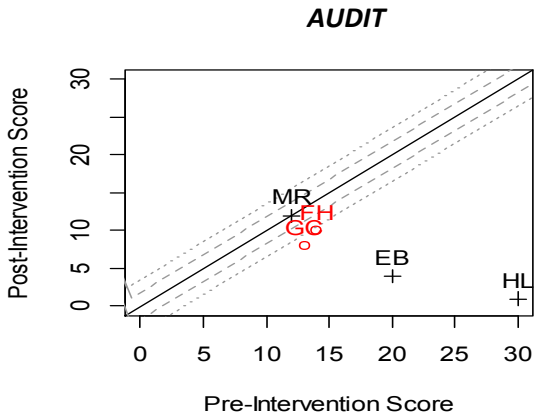
Figure 7: Scatter plots showing pre and post intervention scores for the outcome measure severity of dependence (SDS)



[2] In figure 6 a majority of the cases overlap due to similar pre and post intervention scores.

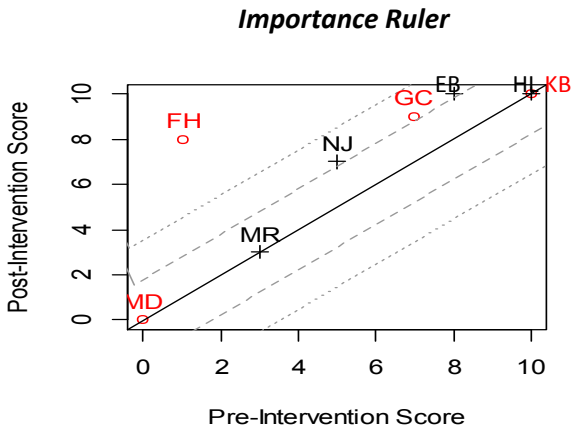
SDS scores (figure 7) show most of the cases lying within the range of no change with comparison to the non intervention cases. One of the cases (KB) and 2 of the non-intervention cases showed some meaningful reduction in SDS scores.

Figure 8: Scatter plots showing pre and post intervention scores for the outcome measure for the Alcohol use disorders identification test (AUDIT).



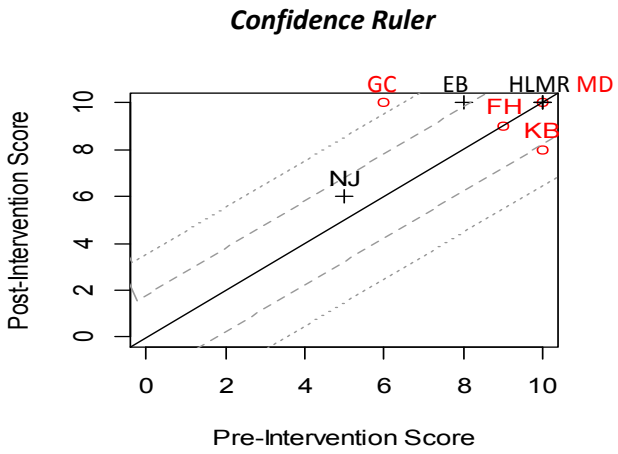
For those cases who reported drinking alcohol, bar one non-intervention case (MR), both non-intervention and intervention cases showed a clear improvement (reduction in AUDIT scores post intervention). No clear differences were found between the groups.

Figure 9: Scatter plots showing pre and post intervention scores for the process measure of importance to change substance use[3]



Subjective scores on the importance ruler (figure 9) displayed no clear differences between the two samples. Most cases lay within or on the border of no change.

Figure 10: Scatter plots showing pre and post intervention scores for the process measure of confidence to change substance misuse[4]



Ceiling and floor effects for some cases and controls were observed. No distinct patterns of meaningful change were found in the intervention compared to the non-intervention cases.

[3] In figure 9 HL and KB's high scores overlap.

[4] In figure 10 a majority of case data points overlap due to similarly high ratings.

Qualitative Analysis

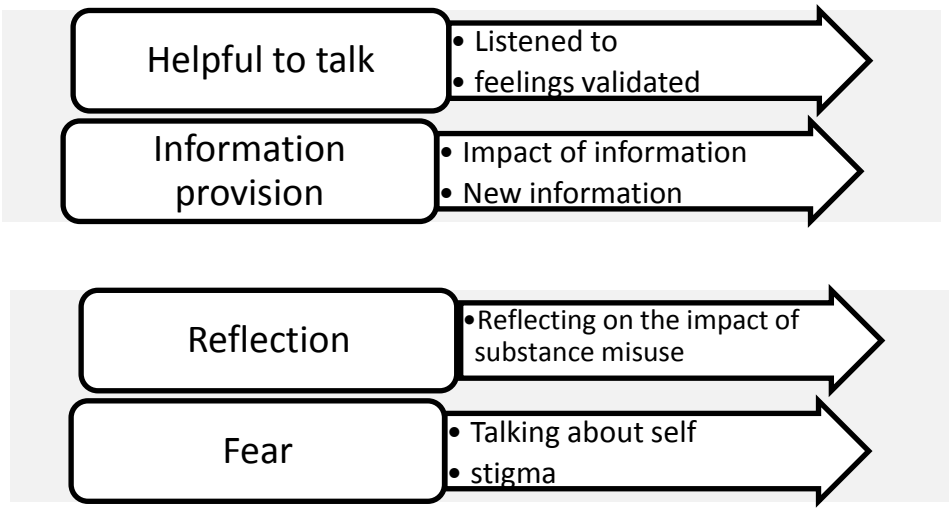
Post Intervention interviews

The three participants who completed the complete intervention (MD, GC and SH) undertook a brief semi structured interview when post intervention measures were collected at time point seven. The interview provided further insight into the agreeability of a brief intervention to in-patients and gathered their views on the experience of participating. MD enjoyed talking about his experiences of SUDs and SMI. He found it helpful to talk but not necessarily regarding wanting to make a change in his use. GC reported that taking part was 'good' and he found it helpful to 'get involved'. SH reported that he felt the intervention had been 'respectful' and it had been 'alright' taking part. None of the cases reported anything unhelpful or negative about the intervention. MD had no suggestions for improvement but GC and SH had a number of suggestions.

Themes

Although brief semi-structured interviews were only under taken with a small number of the sample the following emergent themes are tentatively discussed and presented below in figure 11.

Figure 11: Diagrammatical presentation of themes and sub-themes of post intervention interviews



Theme 1: Helpful to talk

All three participants reported that they had found it beneficial having someone talk to them about their SMI and co-existing SUDs.

Sub-theme A: Listened to

Two of the three completed cases spoke about being talked at rather than being listened to when admitted and valued the opportunity to talk and be listened to.

"Being listened to and getting advice and support" –GC

"You listened……it was respectful"-SH

Sub-theme B: Validated

Case one felt the intervention gave him the opportunity to talk about his use but he found it helpful as a way of confirming the information he already held about cannabis. He agreed it was harmful to some but still held the belief that this was not the case for him.

"More certain…sure of what I am thinking and what I'm doing".-MD

Theme 2: Information Provision

Sub-theme A: Impact of information provision

Two of the three cases found that the psycho education about the substances they were using and the potential impact on their mental health was surprising. Some discussion in the intervention session illustrated that they took some of this new information on board demonstrated by their comments.

"....Shocked when I saw what I was drinking" –GC

"It opened my eyes to the road I am going down that I don't really want to go down"-SH

"I'd like to say cannabis is good for everybody but it isn't. For some people… cannabis, forget it"-MD

Sub-theme B: New information

All three cases appeared interested and motivated to both receive information about their substance use and mental health. In sessions this led to further discussion and questions from all three. The following comments were made:

"Happy to learn something new"- MD

"The possibility that something will come up that I've not thought through…… but you haven't covered anything that I haven't already thought through in my head" MD

"Knowing more about the drugs that I was using and the units"-GC

"The info session was very helpful "-SH

Theme 3: Reflection on the impact of their SUDs

Cases reported that talking about their use made them think about how their use was affecting them and others around them (e.g. friends and family)

"It's made me reflect on my lifestyle….. how it might be affecting people....the people that might be hurting"-SH

Theme 4: Fear

Sub-theme A: Talking about self

The cases spoke about their reluctance to talk about their substance use and mental health symptoms with clinical staff. One case reflected on his general fear of talking about difficulties in life.

On talking about drugs and mental health- "It's kinda scary at first but good cuz (sic) I don't normally talk to people about my problems… but I let it out"-GC

"It's getting easier to talk about it…its hard"-SH

Sub-theme B: Stigma

"The chance to talk to someone who showed understanding and was non-judgemental so that helped"-MD

"It helped….talked to by a lady. I think men will be more judgemental"-SH

Suggestions

In regards to how the intervention could be improved GC suggested that refreshments be offered to build rapport and *"help users feel welcome*". He also suggested more concrete demonstrations of negative representations of substances in order to reinforce their harmful effects.

"Get a drink, make client smell it and tell them what it's doing to their gut-cuz it rots. ……With cannabis put it in jar and let them smell it when it's gone off to stop em from smoking it....."-GC

SH suggested the police be utilised to talk to people and *"educate patients on wards because drug workers don't always have time to spend on a ward like this".* He also suggested that the psycho education be something that is *repeated "because sometimes some people might not get it the first time"* and "*more people should do it".*

On enquiry about peer support and staff undertaking the intervention all of the cases thought peer support would be good. They thought staff would only be good facilitators if they were non-judgemental.

"They would have to be really open minded. It would be struggle if they weren't"- MD

Discussion

Findings

To date, there have been no detailed research pilot studies of a brief intervention for patients with SMI and co-existing SUDs in an in-patient setting. The present study used case series methodology to explore feasibility whilst examining in depth any impact on processes of insight into mental health and importance and confidence to change substance use. Additionally outcomes of engagement and readiness to change (RTC) were evaluated.

Overall there were few clinically meaningful or statistically significant changes in outcome or process variables for both the intervention and non-intervention cases. In contrast to scores on the outcome measures, many cases in both groups reported reduced levels of their substance of choice. (although not the studies focus). Similarly other studies evaluating BI's with mental health populations with SUDs have found changes in levels of use for both cases and controls (Kaner, Brown and Jackson, 2011). Some of these trials also in in-patient psychiatric settings have been replicated in this study (e.g Hulse and Tait, 2002; Martino et al., 2006). The potential threat to internal validity of assessment reactivity in SUDs outcome studies (Kamina, Burleson and Burke, 2012) and in BIs in particular (e.g Donovan et al., 2012) was contemplated as a possible explanation similar outcomes of reduced use between the groups. Also two of the intervention cases were still in-patients at follow-up. A potential complication when measuring substance use following an in-patient admission is the fact that it may become more difficult to access substances whilst in an in-patient unit, hence reducing opportunities to use.

Constructs of readiness to change and engagement perhaps did not show change not only due to the small sample size and short follow-up but also because the fluid nature of readiness to change. Carey et al (1999) point out that the complex mix of behavioural, cognitive and environmental factors make readiness to change a difficult construct to measure. Interestingly self-reports of

reduced levels of use and qualitative responses from participants were more indicative of potential shifts in readiness to change.

Some of the limitations of the study are discussed below. Overall, taking into account both quantitative and qualitative findings together, the picture appears to suggest some level of therapeutic engagement during the intervention and some exposure to the intervention components. Whilst some changes in the key variables measured, both as part of process and outcome were observed, the pattern of change did not consistently show movement in the predicted direction. The fact that some participants reflected upon the fact that the intervention made them reflect on their substance use whilst limited measurable change was found, may suggest that the brief nature of the intervention limits the possible impact and that longer exposure to the intervention components may be required in order to show change.

Strengths and methodological limitations

A strength of this study was the success in engaging clients to discuss their substance misuse and lending some support to the study rationale for utilising window of opportunity to engage in-patients during admission. The small sample size and problems engaging cases limit to some extent the robustness of the conclusions although also reflect issues of feasibility relevant to a potential larger study. Attrition in the baseline sample '(at the point of assessment) and the subsequent impact on the commencement or continuation of the brief intervention was mainly due to discharge from the in-patient unit. Only one of the eleven participants declined to continue once the research began. Given the time limitations and scope of this pilot study it is estimated that the some of the difficulties encountered regarding recruitment, sample retention and attrition to follow-up could be managed/minimised in a larger experimental design study.

Lessons have been learnt regarding the intervention model. Although the idea was to have a set number of multiple contacts in a brief period (two weeks) for this short burst style BI the reality of the variable and unpredictable length of patient stay calls for an even more flexible model of intervention than this study attempted. The in-patient length of stay needs to be taken more into account. Follow-up was planned to be approximately one month post intervention of the follow-up but in some cases this took longer. Follow-up in the community proved to be extremely difficult (e.g. contact in the community, appointment success etc.) despite the kind cooperation of community psychiatric teams. This is indicative of service difficulties with engagement. Along with larger numbers, a longer follow-up period (e.g 6-12 months) would offer a more stable interpretation of outcomes and clearer indication of the length that the impact of the BI remains for. This would be achievable in future studies with a larger sample and more resources.

Another possible limitation of the study was the sensitivity of some of the measures used. For example some clients took action that indicated they were in the action stage of change yet responses on the SOCRATES did not reflect this. Carey, Purnine, Maisto and Carey (1999) suggest psychometrics measuring stages of change are often incongruent with the stages of the model. Additionally the SATS may not have been the most suitable measure to use at such an early time point. A measure of both mental health and SUDs treatment engagement at one month follow-up and the SATS at a later interval may have been more useful. Other measures of engagement such as the service engagement scale (SES) (Tait, 2002) were considered but not utilised. The SES for example only measures community mental health engagement when, for this study, some participants may still be in-patients at follow-up. There may be a need for the development of more sensitive measures of engagement and readiness to change more suited this population that takes both the in and outpatient setting into account.

Clinical Implications and Issues for Implementation

The challenge of providing integrated treatment in the in-patient setting and brief intervention to be feasible and efficacious, for acutely unwell patients before discharge, cannot be underestimated. This study built on the efforts that clinical teams make in trying to encourage motivation and engagement along the treatment pathway from in-patient treatment to community care. Crucial to making such BI's more feasible and encouraging engagement in the impatient setting is a clearer understanding amongst the multidisciplinary team of client's substance misusing behaviour (Drake et al 2003) and the perpetuating impact of positive beliefs about use. Whilst screening, recruitment and patient participation were conducted it was observed that the nature and extent of a patient's substance use was often not identified or was known anecdotally but not incorporated into patients' care plans. The appropriateness of the treatment as usual offered to patients with non-identified SUDs (e.g cannabis use) would be in question.. As noted by Graham and Maslin (2002) in their study of cannabis use amongst those with co-existing SMI, the patients use of cannabis can often be over or under emphasised in the understanding of a person's difficulties and what may be exacerbating symptoms, engagement and recovery. Staff knowledge and training along with confidence in identifying and raising the issue of substance use with in-patients is absolutely crucial to the successful implementation of integrated care with this client group (Drake et al., 2003), whether this be a BI or another mode of intervention.

Focused interventions have implications for early intervention, medication, moving on, and length between admissions, they should be a core part of care planning. Staff could make (at least) one obligatory attempt to engage identified patients. The importance of consistently asking patients both in acute settings and the community about their desire to utilise support, is especially important as contemplation can wax and wane within the same patient. These few cases highlighted some clients at a stage of change appropriate to intervention were not asked, perhaps because of previous refusal, if they wanted SUDs intervention. It is also acknowledged that as

mental health symptoms can relapse and remit through illness course (Valliant, 1978); a similar pattern could be found in substance use with this population (explanation of change in use over short period). Brief interventions in particular have positive consequences in terms for improving cost effective care (Babor et al., 2007; Bien, Miller and Tonigan, 2003) and could contribute towards addressing use on in-patient wards.

Future Research

As well as acknowledging that more clinical work on fostering motivation is needed in in-patient settings, more research needs to be undertaken to underpin the evidence base for this. More research and analysis of socio-demographic variables as predictors of engagement in the studied population would assist with targeting the most treatment approach depending on any identified differences.

As previously intimated there is a need to research the impact and feasibility of BI's for those with SMI and Co-existing SUDs in in-patient settings with much larger sample sizes and rigorous methodology. The replication of such studies in order to gain reliable consensus on efficacy is needed.

In England the National Institute for Health Research's (NIHR) Research for Patient Benefit (RfPB) program was established in 2006 with the aim of improving the evidence base for and methods of intervention offered to patients. Following on from, and informed by lessons learnt regarding methodology and recruitment from this study, an NIHR RfPB pilot randomised controlled trial is being undertaken within the same mental health trust in in-patient mental health wards across the city. The study will recruit a larger sample size (90 participants) and incorporates the idea of ward staff facilitation of the intervention plus peer support. This is a positive step towards the necessity for an increase in research for this population in in-patient settings.

There is undoubtedly a need for further research on what works and the suitability of BIs with this population in the in-patient setting.

Conclusion

The present study found the undertaking of a short burst brief integrated motivational intervention in an in-patient psychiatric setting for people with SMI and SUDs is feasible but potentially complicated. BI's in such are setting are made more difficult if they are inflexible and fail to very carefully account for the unpredictability of the in-patient milieu and length of stay A flexible model of brief intervention and further research will help to clarify the efficaciousness of BIs in this instance.

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Appendix 1: Public Domain Briefing Document

This thesis was submitted as partial requirement for the Doctorate in Clinical Psychology at the University of Birmingham and consists of two volumes. This public domain briefing summarises the two parts that comprise Volume one: A literature review and an empirical paper.

Literature Review

Brief interventions for alcohol use both in the community have been widely research. However when it comes to research for in-patient settings which additionally focus on drug use only (specifically illicit drugs) only there is a dearth of research.

The literature review sought to appraise and compare the available research evidence for the efficacy of brief intervention for illicit drug use in two acute inpatient hospital settings. Studies were reviewed in these two settings in turn, by outcomes the available research studies have measured. Studies largely focused on reducing the levels of drug use and increasing engagement with substance treatment in both settings. Evidence of the efficacy of brief interventions in positively impacting upon these outcomes was variable. Studies in the emergency department reported change in outcomes to a larger degree than studies in inpatient psychiatric settings. When longer follow-ups were focused on findings indicated a lack of consensus for the evidence for the efficacy of brief interventions in these settings.

There is a need for further research incorporating more rigorous methodology and larger sample sizes testing homogenous brief interventions.

Empirical Paper

Background and Aims: The prevalence co-existing substance misuse (SM) in patients with severe mental illness (SMI) is a common occurrence in today's society (Reiger et a., 1990; Drake et al, 2003; Kavanagh et al., 2004; Public Health England 2012). This study sought to test the

feasibility of a brief intervention for clients with coexisting mental health and substance misuse difficulties in an in-patient psychiatric setting. The impact on key psychological processes such as importance to change, confidence to change and insight were explored as well as measuring any change in important outcomes such as readiness to change and engagement with treatment as usual.

Methods: 11 participants diagnosed with severe mental illness (SMI) and coexisting substance use disorder (SUD) were recruited to the study from three in-patient psychiatric wards. A case series design encompassing a pre-intervention baseline assessment period, a brief integrated motivational intervention (four 15-30 minute short-burst sessions) and post intervention assessment (immediately following the intervention and approximately one month after) was undertaken. Eight of the 11 participants were followed up. Four intervention cases and four control non-intervention cases were analysed for any clinical or significant change in process and outcome variables using the reliable change index (RCI) (Jacobson and Traux, 1991) and graphs for visual inspection. Qualitative themes from brief post intervention semi structured- interviews were identified and integrated with the quantitative data.

Results*:* Of the cases who undertook the complete intervention, all of them were patients whose hospital stay spanned the length of the intervention and beyond. This indicated a sufficient level of agreeableness to the intervention during the admission period and that the 'window of opportunity' can be utilised to effectively engage patients in intervention during the in-patient stay in preparation for discharge to continued community treatment. At follow-up the intervention cases showed no significant difference in process and outcome variables in comparison to the non-intervention cases. Both groups reported little change in process or outcome variables following the intervention. In contrast to this a number of cases from both groups reported reduced use of their main substance of choice. Themes from the post intervention semi-structured interview on their views of undertaking the intervention included the intervention being seen as helpful and

leading to reflection on the impact of substance use. Participants also spoke about fear and judgement being part of the reluctance to talk about their substance use with clinicians.

Discussion: This small case series has provided insight into the processes and hurdles of evaluating the feasibility and efficacy of undertaking brief interventions in acute mental health in-patient settings for patents who also have co-existing substance use disorders. However there is a need to continue the attempt to find what works for fostering clients' readiness to change their substance use and engage in clinical care in the community. The brief integrated motivation intervention appeared to be feasible for those patients whose length of stay spanned the intervention. Difficulties in implementation such as attrition of the sample due to discharge and follow-up in the community were identified. Issues for implementation and future research include methods for managing sample attrition, training of clinical ward staff to increase clinician awareness, assessment skill and intervention planning and implementation. Additionally the need for more sensitive assessment measures for this population and a more flexible method of administering the brief integrated motivational intervention taking more account of length of stay to aid viability. Whilst the study results may lack support for the efficacy for using brief interventions in in-patient psychiatric settings it highlights issues to be addressed and the need for larger sample randomised studies to be conducted to aid the search for a more definitive picture of the value of brief interventions in impacting engagement and readiness to change during the window of opportunity. An on-going randomised controlled trial has taken the findings from this pilot into consideration in the design and execution of a city wide randomised controlled trial testing the efficacy of a brief integrated motivational intervention within this setting.

Conclusion: The window of opportunity with this client group is feasible but requires methodological modification and further testing. The efficacy of the use of brief interventions to affect change remains unclear and further research is needed to expound on this.

Appendix 2: Participant information Sheet

Dionne Harleston
School of Psychology
University of Birmingham,
Edgbaston,
Birmingham,
B15 2TT

Participant Information Sheet:
Testing a Brief intervention on a Mental Health In-Patient Unit.

We would like to invite you to take part in our research study. If you are interested please read this carefully before you decide. You may like to discuss it with your family, friend, nurse or mental health advocate. Your participation is entirely voluntary. Please ask if there is anything which is not clear or if you would like more information.

What is the purpose of this study?

We are trying out a new way of talking with service users on in patient units who misuse substances (drugs and alcohol). We want to explore what helps people if they want to change their substance use.

Why have I been invited?

We are inviting you and other people currently on the unit to ask if you would be interested in taking part in this research study.

Do I have to take part?

Participation is completely voluntary, and will not affect any treatment or care you are receiving, in any way. If you decide to participate you are still free to withdraw from the study at any time, without giving a reason.

What will happen to me if I take part?
You will be asked to sign a consent form and give contact details (your own address and telephone number). The research will last for one month (not including follow-up/or two months if follow-up is included?). You will be asked to take part in:

1. An initial session to complete questionnaires and ask some questions about your substance use and mental health.
2. Four brief intervention sessions on the unit lasting 15-30 minutes each. These will be spread over two weeks. These will be with a researcher discussing your beliefs with you about your substance use and mental health. We will discuss with you your views about treatment.
3. A session after the intervention sessions to repeat the questionnaires you did at the initial session and conduct an interview about your experiences of taking part in the intervention.

4. If you have consented for us to do so; we will contact you and arrange to see you one month after you have finished the research to repeat the same questionnaires again. If you are no longer on the unit we can arrange to see you at a time and place that is convenient for you. If you need to travel to us we will reimburse you for any travel expenses you may incur.

What are the possible disadvantages and risks of taking part?

Some of the questions you will be asked may be sensitive. If, at any time, you do not wish to answer a question or feel uncomfortable about doing so, that is absolutely fine. Just tell the researcher you do not want to answer and they will move on to another question. Please feel free to leave the room and take a break when you like, or ask the researcher for a break.

What are the possible benefits of taking part?

You may find that taking part in the study helps you to think about what affect your substance use and mental health have on each other but we don't know if taking part in the study will have any benefit to you personally. However we hope you will feel it is worthwhile, and that your contribution may help to improve the care offered to other people in the future.

Will my taking part in the study be kept confidential?

Anything you say during the interview will be treated as completely confidential. This includes discussions we may have about your personal substance use. The information you provide will not be shared with anyone else including staff on the ward, your clinical team and your family. The exceptions to this are:

- Where you reveal that you are currently intending to harm yourself or someone else. In this case researcher will have to pass just this specific information onto you professionals involved in your care following discussion with yourself.
- Where you give specific details such as names, dates, times and places leading to identification of a crime (other than personal drug use) the researcher would have to share this with study supervisors.

On any questionnaires or interview paperwork completed you will not be identified by name but by a code number and all information obtained from you will be held in this anonymous form.

You may wish to discuss your participation in this study and any issues that arise from the interview with your general practitioner (GP). If you agree then we will send a letter explaining that you have participated in this study and an outline of what the study is about to your GP. There is a place on the consent form for you to tell us whether or not you are happy for us to send this letter.

What will happen if I don't want to carry on with the study?

If you decide to participate you are still free to withdraw from the study at any time, without giving a reason. Withdrawal from the study will not affect any treatment or care you are receiving.

What if there is a problem?

If you decide to take part in the study and have a concern about any aspect of it, please call the University of Birmingham and ask to speak with either Alex Copello (0121 414 7414) or Hermine Graham (0121 414 7204). If they are unavailable a message will be given for them to call you back as soon as they can. If you remain unhappy and wish to complain formally, you can do this through the NHS Complaints Procedure. Details can be obtained from Patient Advice & Liaison Services (PALS) at (0121 255 0707).

What will happen to the results of the research study?

A summary report of the study findings will be made available to participants in September 2013 and we are happy to send you a copy if you would like one. It is hoped that the results of the study will be published in a mental health journal and inform the work of a larger study.

Who is organising and funding the research?

This study is organised and funded by the University of Birmingham.

Who has reviewed the study?

If approved this section will read:
The study has been independently reviewed and approved by (*specific area meeting)* Research Ethics Committee and Birmingham and Solihull Mental Health Foundation Trust Research and Development.

Further information about the study

If you would like to ask any questions about the study, please telephone Dionne Harleston on the contact details below. If she is not there when you call, please leave a message and she will call you back as soon as possible.

You will be given a copy of the consent form and information sheet signed by the researcher.

Thank you for considering taking part in this study.

Contact details

Dionne Harleston
School of Psychology
University of Birmingham,
Edgbaston,
Birmingham, B15 2TT

Appendix 3: Participant Consent Form

Dionne Harleston
School of Psychology
University of Birmingham,
Edgbaston,
Birmingham,
B15 2TT

UNIVERSITY OF BIRMINGHAM

Study number: 12/WM/0171
Participant number for this study:

CONSENT FORM

Title of Project: **Testing a Brief intervention on a Mental Health In-Patient Unit.**
Name of Researcher:

Please initial box

1.	**I confirm that I have read and understood the participant Information sheet dated 24/05/2012 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.**	☐
2.	**I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, and without my medical care or legal rights being affected.**	☐
3.	**I agree to the interview being audio-recorded. The audio recording Will be erased when the study is completed.**	☐
4.	**I consent to being contacted one month after my participation ends to arrange a follow-up meeting.**	☐
5.	**I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from the University of Birmingham, from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.**	☐
6.	**I agree to my GP being informed of my participation in the study.**	☐
7.	**I agree to take part in the above study.**	☐

_____	_____	_____
Name of Participant	**Date**	**Signature**

_____	_____	_____
Name of Person taking consent	**Date**	**Signature**

When completed: 1 copy for participant, 1 copy for researcher, 1 copy for clinical file.

Appendix 4: GP/HP Letter

Dionne Harleston
School of Psychology
University of Birmingham,
Edgbaston,
Birmingham,
B15 2TT

Date:

Dear (Name of GP or other health professional)

Re: Testing a Brief intervention on a Mental Health In-Patient Unit.

I am writing to inform you that your patient (**name; DOB**) has consented to take part in our study testing a brief intervention with service users on in-patient wards who misuse substances (drugs and alcohol). They have consented to me contacting you. The aim of this study is to; (i) test a "short burst" brief intervention with in-patients with co-occurring mental health diagnosis and substance misuse, via a series of case studies; (ii) explore occurring process variables (subjective measures of confidence and importance); and (iii) evaluate outcome variables (motivation to change, insight and engagement with services). The study may hopefully help in the long term to improve services for people with mental health difficulties and co-existing substance misuse.

Your patient has been asked to undertake:

1. A pre intervention assessment consisting of administered measures on engagement, motivation to change and substance use. Socio-demographic information will also be sought.
2. 4x brief motivational intervention sessions (with subjective measures of experiences) over two weeks. Each will take 15-30 minutes.
3. A post intervention assessment repeating measures on engagement, motivation to change and substance use.

Patients have also been asked to consent to the researcher contacting them to undertake a one hour follow-up one month after the intervention.

The research will be undertaken on the unit. At the point of discharge research may be completed in the community. Any travel expenses participants may have incurred will be reimbursed.

All information obtained will be treated in the strictest confidence and held anonymously in a secure office at the University of Birmingham.

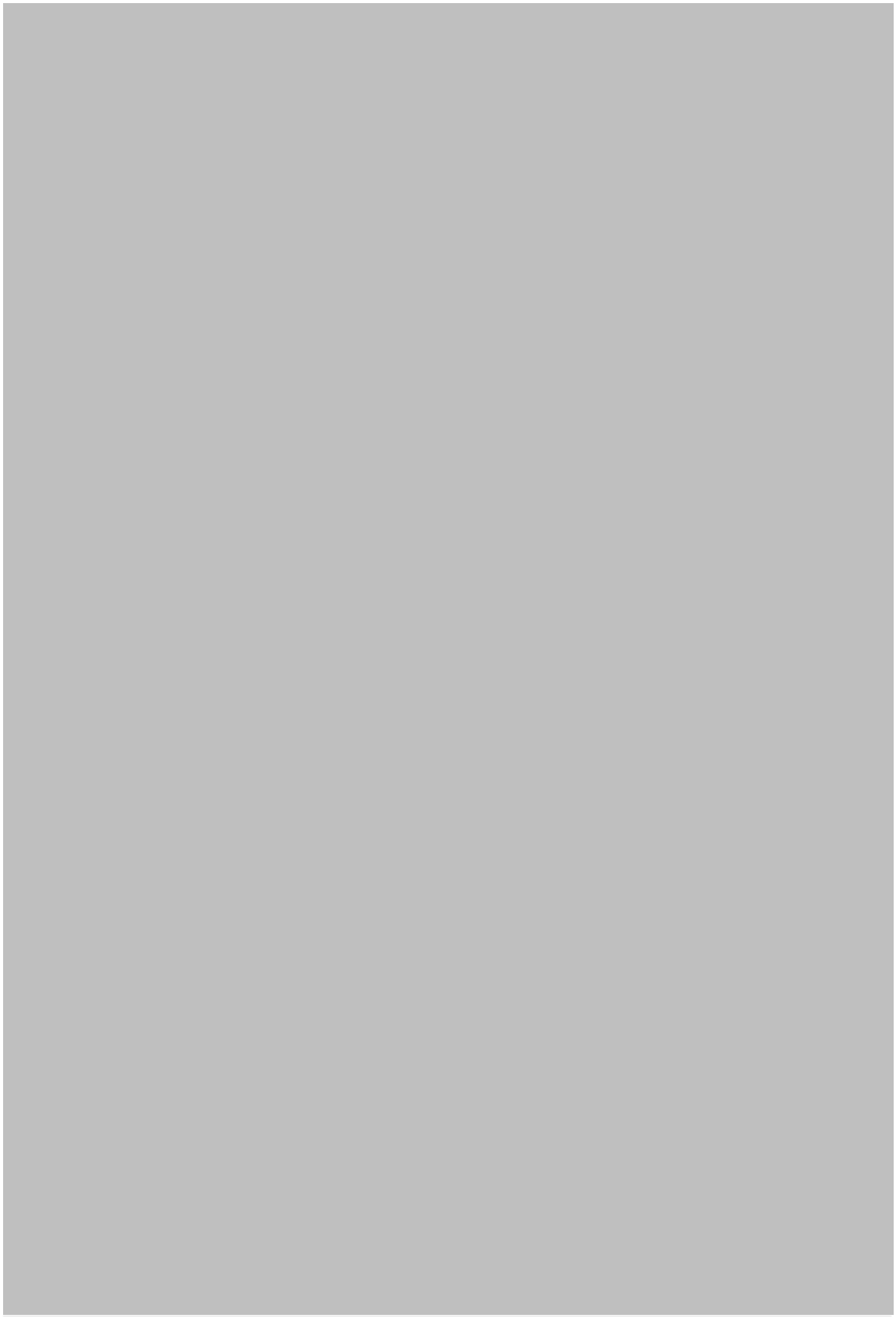
Participants will be reminded that they are free at any time not to answer questions they do not want to, or to withdraw from the study completely. If a patient becomes distressed during or after the intervention or interview they will be advised to discuss this with their nurse, consultant psychiatrist or other appropriate staff member. It is possible s/he may wish to discuss issues arising from their participation with you as well, which is why I felt it was important to write to you.

If you have any questions about the study please call me on 0121

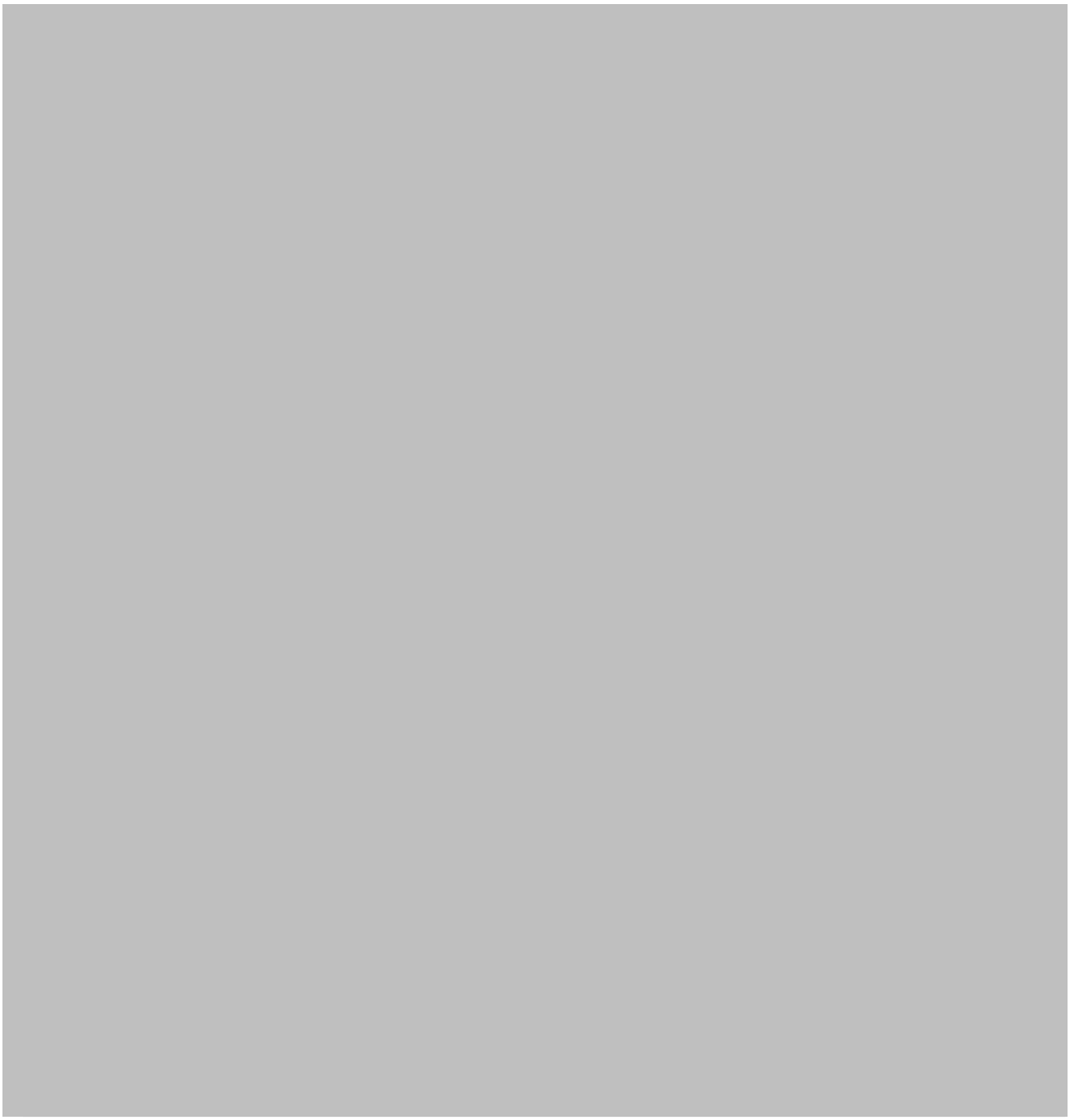
Yours sincerely,

Dionne Harleston
Trainee Clinical Psychologist
(Under the supervision of Consultant Clinical Psychologists, Alex Copello and Hermine Graham)

Appendix 5: Maudsley Addiction Profile (MAP) substance misuse section



Appendix 6: Stages of change, readiness and treatment eagerness scale (SOCRATES)



CASAA Research Division*
9/95

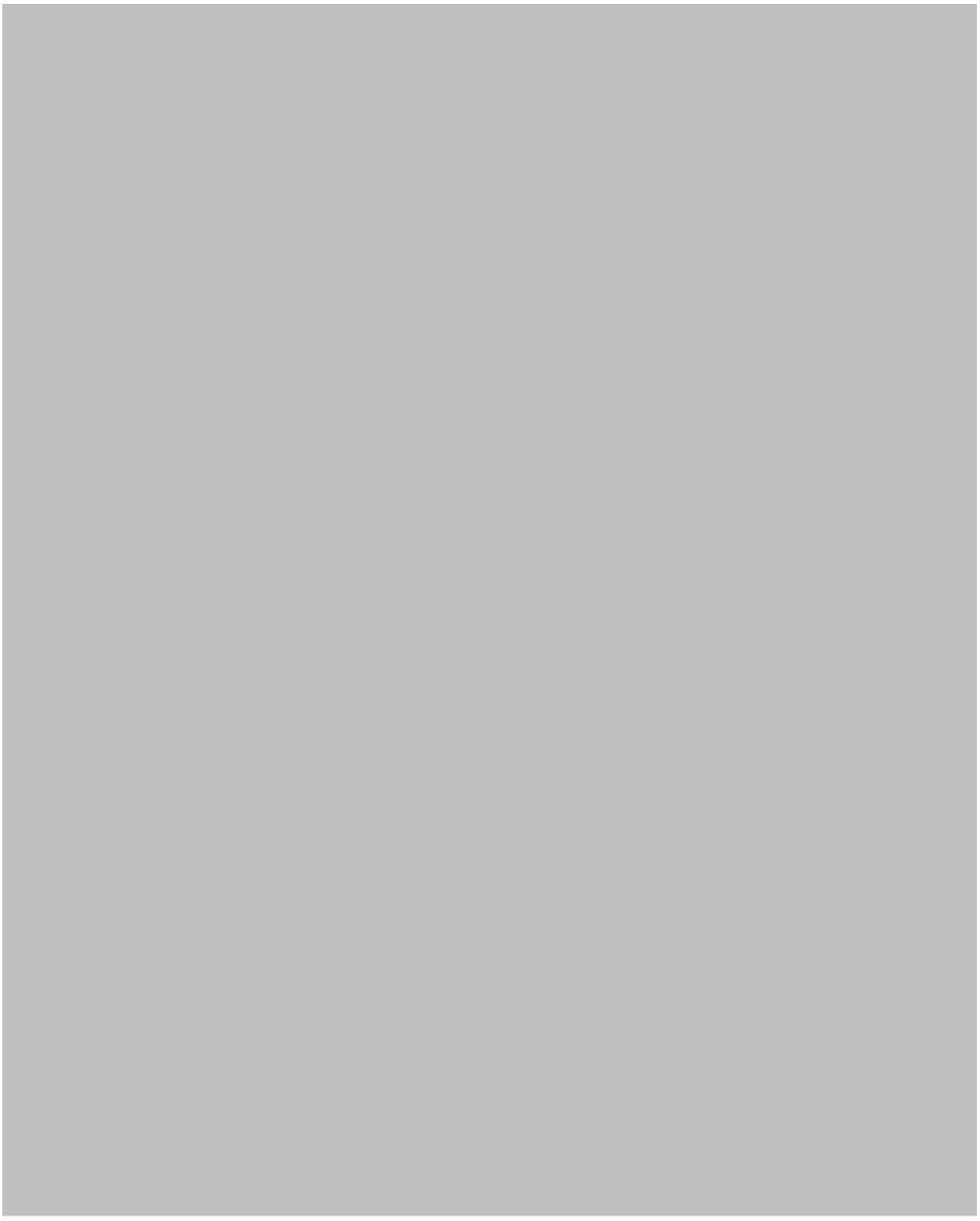
Appendix 7: Insight Scale

IS – (present)

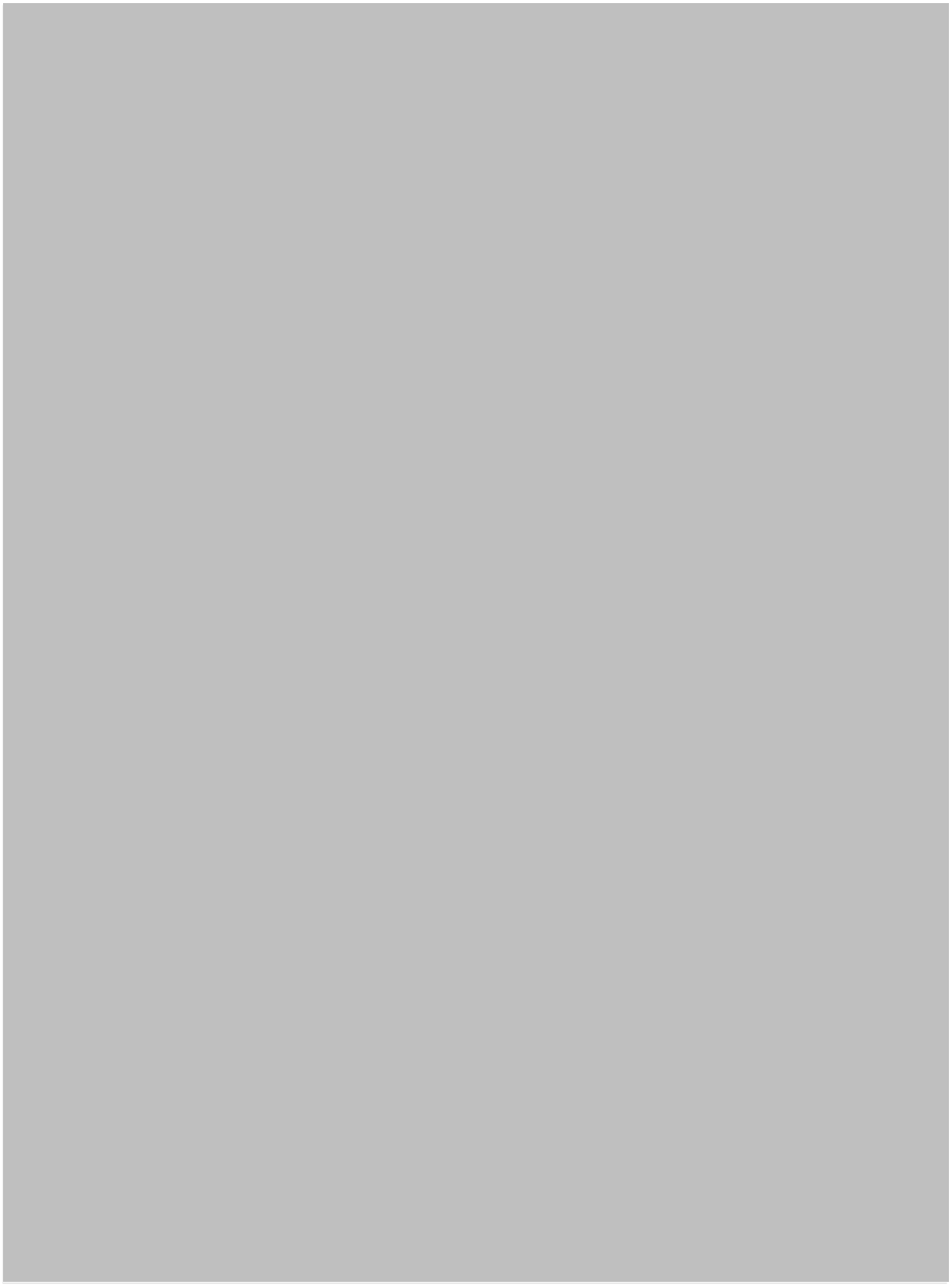
Please read the following statements carefully and then tick the box which best applies to you.

	Agree	Disagree	Unsure
1. Some of the symptoms were made by my mind			
2. I am mentally well			
3. I do not need medication			
4. My stay in hospital was necessary			
5. The doctor is right in prescribing medication for me			
6. I do not need to be seen by a doctor or psychiatrist			
7. If someone said I had a nervous or mental illness then they would be right			
8. None of the unusual things I experienced are due to an illness			

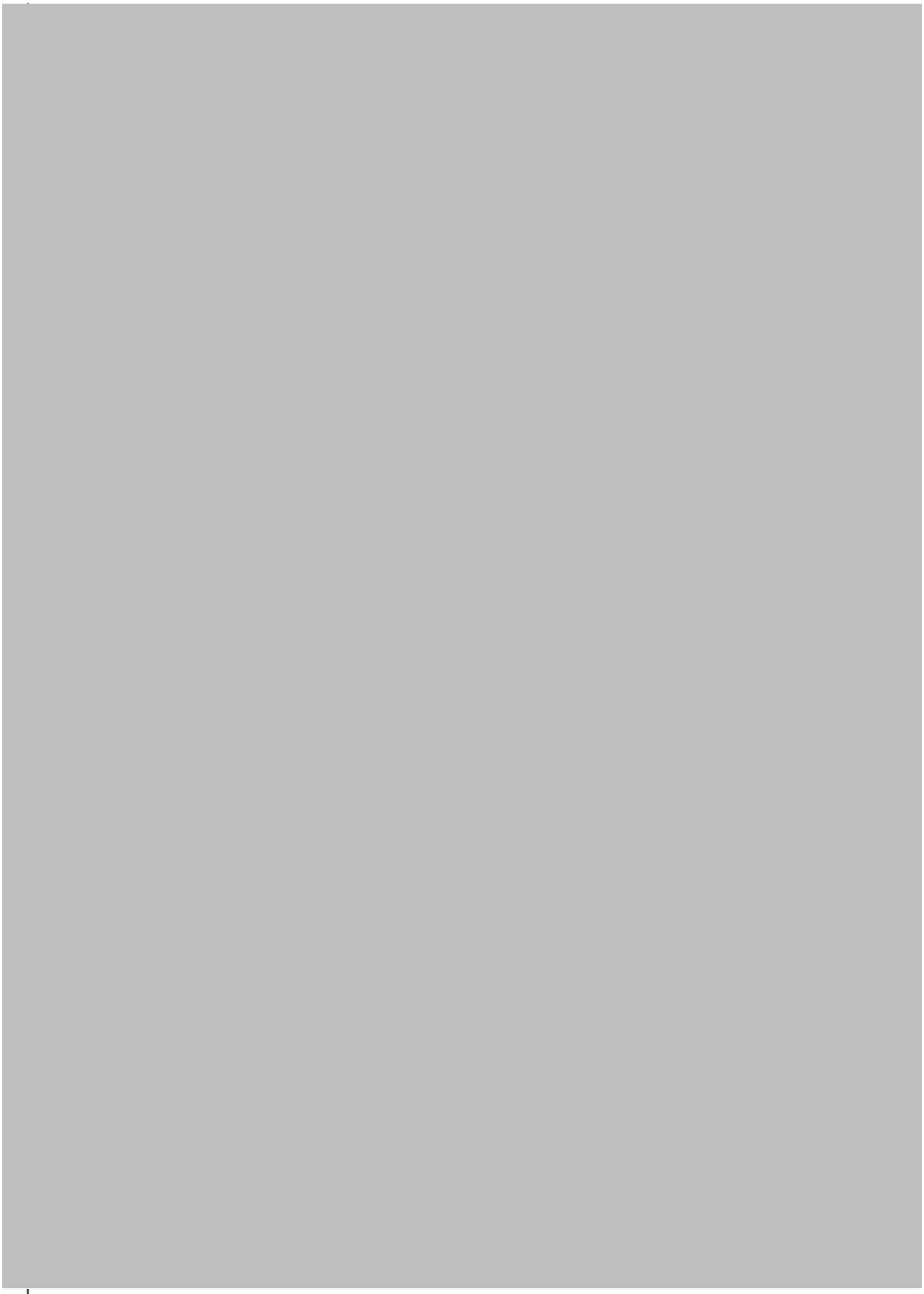
Appendix 8: Substance Abuse Treatment Scale (SATs)



Appendix 9: Severity of Dependence Scale (SDS)



Appendix 10: Alcohol Use Disorders Identification Test (AUDIT)



Appendix 11 : Intervention Summary

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Intervention Summary

Testing a Brief intervention on a Mental Health In-Patient Unit.

Motivational Brief Intervention

The motivational style brief intervention will be provided in the context of TAU and based on a treatment manual.

With the suport of ward staff researchers will aim to build good collaborative relationships with participants in order to aid the intervention.

The intervention will seek to encourage participants to engage in talking about their substance use and its impact on their mental health, the fundamental first step in the process of promoting a readiness and willingness to change problematic drug/alcohol use. The aim at this stage will be two-fold, first, increase awareness of the advantages of continued substance misuse and the disdvantages of continued substance misuse, and second, thereby create cognitive dissonance.

The next stage of the intervention will encourage participants to contemplate change and make a change plan.

The structure of the intervention will attempt to map itself onto the stage of recovery in acute psychosis in a targetted manner. It will target the initial window of contemplation during the admission and then be timed to coincide with just prior to when "sealing over" and disengagement is predicted to occur.

Session Content

- *Engagement/Rapport Building:* putting substance use on the agenda using advantages/disadvantages analysis.

- *Awareness of impact of substance use:* provision of psychoeducational material (nature of psychosis and role of substances and medication) & provide personalised feedback from assessment. Encouraged to access websites offering information about alcohol (‘Down your Drink’) and drugs (‘Talk to Frank’).

- *Encourage participants to contemplate change:* Elicit motivational statements. Explore engagement.

- *Make a change plan:* look at importance and confidence in changing, realistic substance-related goals & engaging with treatment.

Clients will receive four individual sessions (15-30 minutes max. each) delivered over a 2-week period.

Researchers will be trained and supervised in the delivery of the intervention by the supervisors (Hermine Graham and Alex Copello). The standard to which researchers deliver the intervention will be regularly monitored and assessed for fidelity and adherence based on recordings.

Appendix 12: Interview Guide

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Interview Guide for brief semi –structured interview

Testing a Brief intervention on a Mental Health In-Patient Unit.

Questions	*Possible Probes*
Q1. What was your experience of taking part in this intervention?	*How was talking to the researcher? Engaging with someone? Talking about your difficulties? (Mental health, Substance use, treatment etc.)*
Q2. What was helpful about taking part in this intervention?	*Any benefits? What was good? Why?*
Q3. What was unhelpful about taking part in the intervention?	*Negatives? Anything important to you that was missed? Parts that were not good? Why?*
Q4. Do you have any suggestions for how the intervention might be improved?	*How may it have been more helpful to you? Your idea of support for your difficulties? Could anything be done differently?*

Appendix 13: Demographic information

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Demographic front sheet

Testing a Brief intervention on a Mental Health In-Patient Unit.

Sex	Male_____ female_____
Ethnicity	White British_____ White other (Please Specify) _____ Black British_____ Black Caribbean_____ Black African_____ Black Other (Please specify) _____ Indian_____ Pakistani_____ Bangladeshi_____ Other Asian (Please specify) _____ Chinese_____ Other (Please Specify) _____
Relationship status	Single_____ Married_____ Divorced _____ Separated_____
Education	Secondary school (GCSE)_____ College (A-Levels)_____ University (Degree)_____ University (Post-Graduate)_____ None_____
Employment	Full time employed_____ Part time employed_____

	Self-employed_____ Housewife/husband_____ Unemployed_____ Retired_____
Accommodation	Rent _____ Own_____ Staying with family members_____ No Fixed Abode_____

Appendix 14: Clients not receiving intervention

Pre-Intervention characteristics

Personal details

HL, EB, NJ, MR were three white British males ranging in age from 21 to 49 years old and a 32 year black British female (NJ). All but one of the non-intervention cases were unemployed (HL was employed prior to admission) and all either rented or lived with family.

Substance use history

HL's main drug of choice was cannabis, EB and MR mainly used alcohol and NJ's was a poly drug user of crack cocaine and heroin. All non-intervention cases had first tried their drug of choice before the age of 16 except NJ who was 18 when she first tried crack cocaine.

Mental health history

HL, NJ and MR all had a diagnosis of Schizophrenia (HL additionally with 'mental and behavioural disorders due to use of cannabinoids; harmful use'). HL was experiencing his first inpatient admission. NJ and MR had experienced previous inpatient admissions. EB had a diagnosis of Bipolar Affective Disorder (BPAD).

Routine Care

All non-intervention cases were on the same wards as intervention cases and subject to the TAU already described for the intervention cases.

Orientation toward change

HL and MR had not been offered support for their substance misuse difficulties in the six months prior to baseline assessment. EB had no treatment either but had been engaged by his CPN and offered a leaflet but was "not interested". In contrast NJ had been engaged with a citywide drug service for the last eight years and up until the point of admission. Motivation to change varied by the non-intervention cases. In addition to self-report at interview, case notes, clinician reporting and SATs scores for HL and NJ were consistent with a contemplation stage of change. Information for EB and MR was consistent with a pre-contemplation stage of change.

Appendix 15: Table of reliable change Indexes by measure for outcomes

Non-Intervention Cases	**Socrates-Recognition**	**Socrates-Ambivalence**	**Socrates-Taking Steps**	**Insight**	**SDS**	**SATS**	**AUDIT**
HL	RCI=-0.89, p=0.372	RCI = -3.02; p = 0.003*	RCI = -1.77; p = 0.076	RCI= 0.80, p=0.424	RCI=-3.55, p=0.000*	RCI=0, p=>0.99	RCI=-7.80, p=0.000*
EB	RCI= -0.30, p=0.76	RCI = -0.67; p = 0.502	RCI = 1.01; p = 0.311	RCI=1.60, p=0.110	RCI=-3.05, p=0.002*	RCI=0, p=>0.99	RCI=-4.31, p=0.000*
NJ	RCI = -0.59; p = 0.552	RCI= 1.34, p=0.179	RCI=0, p=>0.99	RCI=-0.53, p=0.594	RCI=-1.02, p=0.309	RCI= 2.69, p=0.007*	n/a
MR	RCI= 0.30, p=0.766	RCI= 0.34, p=0.737	RCI=0, p=>0.99	RCI=0, p=>0.99	RCI=-1.52, p=0.128	RCI=0, p=>0.99	RCI=0, p=>0.99

*P<0.01 **P<0.05