


Volume 1: Research Component

Cannabis use amongst individuals with severe mental health problems: Reasons for use and motivational based interventions.

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For the Doctorate in Clinical Psychology

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Overview

This thesis was submitted as part of the Doctorate in Clinical Psychology at the School of Psychology, University of Birmingham. It comprises two volumes. The first volume is the research component and includes a review of the literature and an empirical study. The second volume is the clinical component and includes five clinical practice reports.

Volume I: Research Component

Motivational based approaches have been shown to be effective in reducing problematic behaviours such as alcohol and substance use in the general population. The present study reviewed 31 studies that aimed to reduce a number of problematic behaviours amongst individuals with severe mental health problems (that is, diagnoses of a psychotic illness or major affective / anxiety disorder). These studies were categorised as those that aimed to increase ‘healthy’ behaviours, either adherence to prescribed anti-psychotic medication or treatment attendance, and studies that aimed to decrease ‘unhealthy’ behaviours, specifically alcohol and substance use.

It was concluded that the evidence supporting the efficacy of motivational based approaches in increasing adherence to medication was inconsistent. In the minority of studies where an increase in medication was reported, the duration of effect appeared to decline over time. Yet a number of studies tended to use lengthy outcome periods which were unlikely to have captured this short term increase in medication. The outcomes for the studies that aimed to increase treatment retention were more encouraging with the majority of studies reporting an increase in treatment attendance. Duration of outcome was typically brief, rarely measuring attendance beyond the first appointment. The evidence from the studies that aimed to reduce ‘unhealthy’ behaviours was much more consistent, with a greater proportion of studies that indicated a reduction in poly-drug use as well as reductions in specific substance such as alcohol, tobacco and amphetamine use, whereas the evidence for cannabis was less certain. There was evidence that when baseline levels of motivation were initially high, that other more directive interventions may be equally effective.

A number of other positive outcomes from the motivational based approaches were reported, notably reductions in levels of dependence, general functioning and mental health

symptomatology. The majority of studies that measured the duration of effect beyond the end of treatment reported that the effect appeared to decline over time. A number of methodological limitations require these results to be treated with caution, notably, small sample sizes and a lack of control for the additional therapist attention that resulted from the motivational based approach. It is the opinion that the evidence indicates that motivational based approaches are effective in reducing substance use and increasing treatment retention where baseline levels of motivation are low. It is likely that interventions would have to be ongoing in order to maintain effect. Where baseline levels of motivation are not low, other more directive interventions such as psycho-education may be equally effective.

The empirical paper presents a quantitative study that aimed to look at the reasons for cannabis use amongst individuals with and without severe mental health problems. Participants were either cannabis users with a severe mental health illness or cannabis users without a severe mental illness. Participants were interviewed about their motivations for using cannabis and their expectations related to the effects of using cannabis. It was found that the motivations for using cannabis did not differ between the two groups; with individuals with severe mental health problems, and those without, both using cannabis to cope with negative affect, for pleasure and for social reasons. However, individuals with severe mental health problems differed in that they expected cannabis to be more 'socially and sexually facilitative'. The finding from the qualitative component of the study indicated that only a small minority of individuals with severe mental health problems used cannabis to manage the symptoms of their illness or the side effects of medication. Irrespective of mental health status, participants who used cannabis more problematically endorsed more coping and pleasure motives. A number of recommendations are suggested for interventions to reduce the enhancement and coping related motivations amongst more problematic cannabis users with severe mental health problems. I suggest that interventions aimed at reducing sources of distress, supporting the development of more adaptive ways of coping, as well as treatments aimed at facilitating more adaptive ways of obtaining pleasure other than through cannabis use may be helpful.

Volume II: Clinical Component

The second volume of the thesis presents five clinical practice reports. Firstly, a case formulation from a schema focused and psychodynamic perspective are presented for a female with relationship difficulties and feelings of depression, referred to a community mental health team. Secondly, a single case experimental design that measured the efficacy of a cognitive behavioural therapy intervention in helping a woman with post-traumatic stress disorder access the community is reported. Thirdly, a case formulation and intervention from a cognitive behavioural perspective is presented for a boy with separation anxiety referred to a child and adolescent mental health service. Fourthly, an evaluation of a consent form designed to facilitate the consent process for users of a learning disability dementia assessment service is presented. Lastly an abstract is presented for a case study where psychodynamic psychotherapy was used with a man who presented with relationship difficulties and feelings of depression and anxiety within a tertiary care service.

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**Motivational approaches and behaviour change amongst
individuals with severe mental health problems.
A review of the literature.**

Word count: 8769

Abstract

Motivational based approaches have shown efficacy in reducing problematic behaviours amongst the general population. There are several difficulties frequently faced by people with severe mental health problems for which a change in behaviour is likely to lead to improved prognosis. Empirical studies (n=31) that explored the impact of motivational based approaches upon behaviour change amongst individuals with severe mental health problems were reviewed. The literature was categorised into interventions designed to reduce unhealthy behaviour (alcohol, substance use and smoking n= 18) and interventions aimed at increasing healthy behaviour (adherence to medication and treatment retention n= 13). This review examined the clinical effectiveness of these motivational based approaches. A greater proportion of studies indicated a positive treatment effect for motivational based approaches. The evidence was more consistent for the studies that aimed to reduce substance use reporting efficacy amongst a range of substances, although the effect for cannabis was less certain. The few studies that aimed to increase treatment retention were positive. The evidence was less consistent for the studies that aimed to increase adherence to medication. Behavioural change is reported amongst a wide range of severe mental health diagnoses, delivered in either groups or individual settings. Many of the studies measuring longer term outcomes reported a decline in effect over time. More directive interventions (e.g. advice or psycho-education), may be at least as effective when baseline levels of motivation are high, suggesting the use of a stepped care approach to intervention. Recommendations are provided for future research.

Introduction

The Psychology of Change

National Health Service (NHS) users are frequently given advice or support in changing what are considered 'unhealthy behaviours', yet this advice has limited impact upon behaviour change, even when the negative consequences of such behaviour are apparent to the clinicians offering the advice (Tyrer & Weaver, 2004). Behavioural change is central to the field of Clinical Psychology and Clinical Psychologists are suitably equipped to examine the processes of change through the development of explanatory theories and models and the testing of these models via well designed and robust empirical research (Hall & Llewelyn, 2007). Tyrer and Weaver, (2004) suggest these empirically proven theories can be then applied within the context of the NHS in order to overcome unhealthy, problematic and sometimes destructive behaviour amongst the users of the service.

One model that been developed to understand why people change, or more importantly, do not change, and has received widespread empirical support is the Transtheoretical Model of Change (Prochaska & Norcross, 2001). This model suggests that the lack of behaviour change is not a sign of resistance or characterological problems, but represents an early stage of a behaviour change process. Change is conceptualized as a process that unfolds over time and involves progression through a series of six stages: pre-contemplation, contemplation, preparation, action, maintenance, and termination (Prochaska & DiClemente, 1992). In this model, effective collaboration best occurs when a therapist selects interventions that match the individual's particular stage of change (Prochaska & Norcross, 2001).

Motivational interviewing and its evidence base

Motivational interviewing (Miller & Rollnick, 1991) is a method that utilises the concept of stages in the behavioural change process. It first gained empirical support when used to motivate substance users to change addictive substance use behaviours (Miller & Rollnick, 2002) and has since gained empirical support amongst a wide range of problematic behaviours. See Hettema, Steele & Miller (2005) for a review.

Difficulties faced by individuals with Severe Mental Health problems

The symptoms of schizophrenia can sometimes be treated by adherence to antipsychotic medication. Non-compliance to antipsychotic medication can be a cause of relapse (Gray, Wykes & Gournay, 2002). Despite this, medication non-adherence is estimated to be about 50% (Nose, Barbui & Tansella, 2003). This can be understood in the context that medication is, by and large, unpleasant in its immediate effects but beneficial in the long term (Tyrer & Weaver, 2004).

The adverse outcomes associated with schizophrenia and substance misuse are well documented (Johnson, Thornicroft, Afuwape, Leese, White, Hughes, Wanigaratne, Miles, & Craig, 2007). Approximately 50 percent of individuals with severe mental health problems will develop a substance use disorder at some point during their lives (Bellack, Bennett, Gearon, Brown & Yang, 2006) and approximately 25 percent will display current substance dependence or abuse (Rachbiesel, Scott and Dixon, 1999). This can be understood in the context that substance use is frequently perceived as pleasant in its immediate effects but may actually be damaging in the long term (Tyrer & Weaver, 2004). According to the transtheoretical model of change, poor adherence to such treatments represents an early stage of a behaviour change effort. The question that arises for psychological researchers is therefore 'Can motivational based approaches, which have demonstrated efficacy in behaviour change amongst individuals without severe mental health problems, be applied to individuals with severe mental health problems, so that the factors associated with poor prognosis amongst this group can be better treated?' This question forms the basis of the current review.

There are reasons to believe that motivational based approaches may be applied successfully to individuals with severe mental health problems. Motivational based approaches adopt a non-confrontational approach. Individuals with severe mental health problems are less able to benefit from more confrontational approaches as direct challenges to delusional thinking are usually ineffective (Martino, Carroll, Kostas, Perkins & Rounsaville, 2002). Service users with severe mental health problems are often reluctant to engage with services and therefore only short intervention periods may be available. Due to their potential for brevity, motivational based approaches are considered well suited to working within a limited time frame (Van Horn & Bux, 2001). However, there are also

factors that would suggest that motivational based approaches may not be applied successfully to individuals with severe mental health (SMH) problems. Bellack and DiClemente (1999) indentified three areas in which individuals with schizophrenia may experience specific difficulties that inhibit the change process. These areas are cognitive impairment, social impairment, and obstacles to motivation. Cognitive deficits are thought to be the most significant obstacle and include memory problems, attention deficits, difficulties in abstract thought, executive functioning difficulties as well as active positive symptoms. Consequently more simple and clear approaches may be required (Corrigan, McCracken and Holmes, 2001).

Present Review

The purpose of the present study was to systematically review available published interventions that incorporate motivational based approaches into an active intervention amongst samples from the SMH population in order to establish whether empirical studies reported a significant intervention effect. For the purpose of the present review, behaviours where motivational approaches have been applied will be categorised into either: i) motivational based interventions aimed at increasing positive behaviours, which include interventions to improve adherence to psychotropic medication and interventions to improve retention and engagement to treatment; and ii) motivational based interventions aimed at decreasing negative behaviours, which include alcohol use, non -prescribed drug misuse and tobacco use.

Barkhof, Haan, Meijer, Fouwels, Keet, Hulstijn, Schippers and Linszen, (2006) adopted a narrative review of studies using motivational based approaches up to 2006, amongst individuals with schizophrenia and recommended that further research of these preliminary findings was required. The present study extends the work of Barkhof et al., (2006) by systematically reviewing studies utilising motivational approaches amongst all severe mental health problems, published up to February 2010.

Method

Search Strategy

Terminology

For the purpose of this review, “severe mental health” (SMH) problems refers to major mental illnesses such as those on the schizophrenia spectrum (schizophrenia, schizophreniform and schizoaffective disorder), bipolar disorder and major depression, when they are associated with prolonged disability. “Substance use disorders” refers to abuse, misuse or dependence on alcohol or other controlled drugs as well as nicotine. Dual diagnosis refers to co-occurring severe mental health problems and substance use disorders.

Inclusion Criteria

- Interventions containing a component of motivational interviewing
- Samples consisting of participants with a diagnosis of SMH problems only
- Studies published from 1991 to February 2010
- In English language

Procedure

The following databases: CINAHL, PsycINFO, Ovid Medline and PubMed were searched for articles or books using the following search phrases:

SMI or severe mental illness or SMH or severe mental health or schizo\$ or bipolar or major depression or dual diagnosis or co-morbidity; AND motivational interviewing or MI or compliance therapy or CT or adherence therapy or AT or treatment adherence or treatment retention or engagement or stages of change or transtheoretical model of change.

This search identified 48 journal articles, 28 were excluded as they did not fit the inclusion criteria. Further searching was undertaken by means a reference list/citation search of these studies which resulted in an additional 11 articles. The search was considered complete when no additional publications could be found.

Search Results

31 studies met the inclusion criteria, and were further analysed and classified in descending order of robustness. Randomised Controlled Trials (RCTs) are considered a superior methodology in the hierarchy of evidence, because they limit the potential for bias by randomly assigning one patient pool to an intervention and another patient pool to non-intervention (or placebo) which minimises the occurrence of confounding variables between the two groups (Aveyard, 2007). RCTs were therefore the main focus for critical appraisal whilst the inclusion of pilot, cohort and case study designs were also considered in order to provide a more comprehensive review.

The information contained within the studies and relevant to this review was extracted and is included in two tables. Table 1 (below) includes relevant information from the studies that aim at increasing positive behaviours; Table 2 (below) includes relevant information from the studies that aim at decreasing negative behaviour.

The next section reports the outcomes from a number of studies that have incorporated motivational interviewing into their intervention with the aim of increasing positive behaviours. Positive behaviours include increasing adherence to medication and increasing treatment retention. Both of these behaviours are evaluated separately. Subsequently, this review evaluated the outcomes from a number of studies that have incorporated motivational interviewing into their intervention with the aim of reducing negative behaviours. Negative behaviours include decreasing use of more than once substance and decreasing use of a single substance. Both of these behaviours are evaluated separately. Finally the review considers the evidence overall and the degree to which motivational based approaches are effective in increasing positive behaviours and decreasing negative behaviours amongst individuals with severe mental health problems, suggesting areas for future research.

Motivational based approaches aimed at increasing ‘healthy’ behaviours amongst individuals with severe mental health problems

Thirteen studies were identified that utilised motivational based approaches to increase healthy behaviours amongst individuals with severe mental health (SMH) problems. These can be categorised into two types, namely: (i) increasing adherence to antipsychotic medication (Table 1, below) and (ii) increasing treatment retention (Table 2, below). The next section of this review evaluates the efficacy of these motivational based approaches in increasing behavioural change amongst individuals with SMH problems.

Section 1.0 Increasing adherence to medication amongst individuals with severe mental health problems

This section reports on the outcomes from motivational based interventions that aimed to increase adherence to medication, first by offering a brief overview of the interventions and outcomes implemented in these studies and then discussing their findings. From Table 1 (below) it can be seen that eight studies aimed to increase medication adherence. Five of the eight studies used an intervention called Compliance Therapy (CT). Developed by Kemp, Hayward, Applewhaite, Everitt & David (1996), CT is an amalgamation of Cognitive Behavioural Therapy and Motivational Interviewing. CT is designed to be a more directive motivational based intervention adapted towards the cognitive difficulties faced by individuals with SMH problems. CT is delivered in a manualised form, over a period of approximately six sessions. Of the three remaining studies that did not use CT, one used a precursor to CT called ‘medication self management therapy’ (Hayward, Chan, Kemp, Youle & David, 1995), and two studies used a derivative of CT called Adherence Therapy (AT) (Gray, Leese, Bindman, Becker, Burti, David, Gournay, Kikkert, Koeter, Puschner, Schene, Thornicroft & Tansella, 2006). The eight interventions being reviewed varied in duration from four sessions to eight sessions.

Outcome from the CT interventions were measured via three methods. First, behavioural change or compliance to medication was measured using ratings based upon clinician observation. Second, cognitive changes towards compliance to medication were measured using a self report attitude to medication measures. Third, changes in SMH

symptomatology were measured by observer ratings of psychotic symptoms. Not all studies measured these three areas of change, and this review was primarily concerned with behavioural change, although other available outcomes were reported.

The findings of the motivational based approaches that aimed to increase adherence to medication are discussed below. Of the eight studies that used CT based approaches to increase medication adherence, four studies reported either a significant behavioural, symptomatic or an attitudinal change following the use of CT. A randomised controlled trial (RCT) by Kemp et al., (1996), a follow up at 18 months (Kemp, Kirov, Everitt, Hayward & David, 1998) and a cluster controlled RCT by Gray, Wykes, Edmonds, Leese and Gournay (2004) reported changes at a behavioural level (i.e. increased medication adherence) compared to control groups. In addition to this behavioural change, Kemp et al., (1998) reported that the group receiving CT improved significantly on measures of: insight, drug attitudes and global functioning at three months. With the contribution of booster sessions, these effects were maintained at 6, 12 and 18 months. Despite these cognitive and behavioural changes, this did not translate into reduced symptomatology. Kemp et al., (1996; 1998) observed that amongst their mixed sample, participants with a diagnosis of schizophrenia had a less favourable outcome compared to participants with a diagnosis of severe affective disorders. Gray et al., (2004) reported that service users of 52 Community Mental Health Nurses (CPNs) trained to deliver CT in a generalised routine setting, reported significant behavioural increases in compliance to medication. This outcome did translate to reduced symptomatology compared to the treatment as usual group at six months. The study by Gray et al., (2004) reported that it demonstrated strong generalisability to other clinical settings. However, I would question these claims of strong generalisability made by the author on the basis that the study excluded substance using participants. High rates of substance use are reported amongst individuals with SMH problems. Approximately 50 percent of individuals will develop a substance use disorder at some point during their lives and approximately 25 percent will display current substance dependence or abuse (Rachbiesel et al., 1999). Therefore excluding substance using participants may represent a selection bias. A lack of assessment of fidelity to treatment reduces the confidence that the treatment was delivered as intended, thereby reducing confidence in the finding. There is no additional cluster RCTs to corroborate these outcomes. Variations in pre-existing therapeutic relationship prior to the intervention may reduce confidence that the efficacy of the outcome is due to the CT component alone.

In the study by Gray et al. (2004) the CPNs trained to deliver the CT treatment were not blind when selecting service users and may have selected participants based upon positive pre-existing relationships. Similarly, the study by Kemp et al. (1998) was carried out in an inpatient setting which may have also offered the opportunity for informal contact with the therapist.

Evidence supporting changes at a symptomatic and/or cognitive level comes from two studies both using a CT intervention. A RCT by Maneesakorn et al. (2007) and an uncontrolled case study by Tay (2007) both reported clinically significant improvements in attitude towards medication. Change at a cognitive level did not translate into a behavioural change in the study by Tay (2007). Maneesakorn et al. (2007) did not measure behavioural change but did report significant improvements in symptomatology and satisfaction with medication changes compared to the control group at a two month follow up. Significant improvements were not reported for general functioning or side effects. A lack of a control group and lack of blinding limits the ability to draw firm conclusions from the study by Tay (2007) as other factors not controlled for (for example, the impact of the more structured inpatient environment or the impact of treatment as usual) may have been operating to serve change.

As can be seen from Table 1 (below), four of the eight studies did not report advantages over 'non-specific' therapy on measures of change which included: medication compliance, attitudes to treatment, insight, symptomatology, global functioning or quality of life. Four studies therefore did not demonstrate evidence of change either at a cognitive, behavioural or symptomatic level following the use of either CT or AT. From Table 1 (below) it can be seen that with the exception of one study (Gray et al., 2006), these studies recruited relatively small sample sizes which ranged from 10 participants (Hayward et al., 1995) in the study group to 30 participants (Byerly, Fisher, Carmody & Rush, 2005). Limited statistical power to detect subtle changes in outcome measures means that the possibility the intervention had a desired effect cannot totally be excluded.

A number of other methodological differences exist between studies which may, in part, contribute to explaining why outcomes between studies varied. From Table 1 (below) it can be seen that a number of studies that did not report a significant behavioural, cognitive change towards medication adherence or change in psychotic symptoms, particularly the

RCTs, used follow up periods that were much longer in duration at 12 months (e.g. O'Donnell, Donohoe, Sharkey, Owens, Migone, Harries, Kinsella, Larkin & O'Callaghan, 2003; Gray et al., 2006) compared to studies that reported a significant behavioural increase in adherence to medication (for example, Kemp et al., 1996). Whilst, Kemp et al. (1998) later demonstrated efficacy over a lengthy period of 18 months, this was the only study to use booster sessions. One hypothesis may be that the effect from CT is relatively short lasting and therefore amongst those studies that did not report a significant behavioural increase in medication adherence outcome, an effect may have been initially present, but then later subsided but the follow up period was merely too long to capture this. However, the lack any significant behavioural, cognitive change towards medication adherence or change in psychotic symptoms change reported either immediately after intervention (Hayward et al., 1995) or at 1 month (Byerly et al., 2005) do not support this hypothesis.

Kemp et al. (1998) reported that participants diagnosed with schizophrenia demonstrated a reduced positive behavioural change compared to the participants diagnosed with severe affective disorders. There was a pattern where studies that did not report an increase in adherence to medication (O'Donnell et al., 2003; Gray et al., 2006), recruited schizophrenia only samples which contrasted to studies that did report an increase in adherence to medication (Kemp et al., 1998) where fewer participants (66%) were diagnosed with schizophrenia. It is suggested by Kemp et al. (1998) that participants with schizophrenia may be less amenable to change compared to participants with other SMH diagnoses. Conclusions are limited by the issue that sub-analyses by diagnosis were not reported for the remaining studies where samples of mixed SMH diagnoses were used.

Two studies that did not report any significant cognitive, behavioural or symptomatic change from the motivational based intervention (Gray et al., 2006; Byerly et al., 2005) both report that their samples were already relatively treatment adherent at baseline, thus a treatment 'ceiling effect' may have been operating which acted to limit any achievable outcome. It is possible that studies where baseline motivation is low, then interventions that aim to increase this motivation, may have a greater room for effect, compared to those studies where motivation is already high at baseline and may contribute to some of the variation in outcome between studies. However, baseline motivation is not consistently stated in the studies and therefore comparisons cannot be drawn.

The location of the trial can influence how much additional non-formal contact time participants have with therapists or other staff. In-patient settings offer greater opportunity for informal contact should the therapist be a current member of staff. Two RCTs; that reported either significant behavioural and cognitive improvement (Kemp et al., 1998) or a significant cognitive and symptomatic improvement (Maneesakorn et al., 2007) as well as an uncontrolled case study by Tay (2007) which reported a significant positive cognitive improvement were all carried out in inpatient settings. In contrast the RCTs that did not report any significant positive behavioural, cognitive or symptomatic change in adherence to medication (O'Donnell et al., 2003 and Gray et al., 2006) were carried out in outpatient services. This offers a competing explanation for the variation in outcome reported in these studies.

The degree to which studies measured fidelity to the treatment condition varied. For example, Tay (2007) was not clear in describing the intervention, the procedure of administration or duration. Due to the large number of therapists employed in the study by Gray et al. (2006) fidelity to treatment was not assessed. In Gray et al. (2004) the duration and intensity of the CT intervention delivered by the CPNs was not assessed and is therefore unknown. In the study by Byerly et al. (2005) fidelity was assessed via verbal feedback to the principal investigator who was not experienced in CT. Variation in fidelity to treatment between studies may therefore offer a competing explanation for variance in outcomes.

All studies used outcome measures with reported validity and reliability, with the exception of measures of behavioural compliance to medication, which increases confidence in their findings. Behavioural adherence to medication was most frequently measured using seven point observer ratings scale (CRCS) developed by Kemp et al. (1996). In contrast, O'Donnell et al. (2003) used a four point scale which may be less sensitive in detecting small but significant changes. This may have contributed to the non-significant behavioural change reported. Only one study (Byerly et al, 2005) used an electronic measure of medication usage 'pill counting' which is arguably a more accurate measure of compliance. A lack of direct compliance measure is a limitation for all studies with the exception of Byerly et al. (2005). Natural variations in observations of behavioural adherence to medication may also account for variations in outcome between

studies, although the studies stated that observations were corroborated by additional external sources.

Summary

Other than the study by Kemp et al. (1998) there is no other randomised controlled trial which demonstrated that the effect of Compliance Therapy upon behavioural change will endure past three months, without the availability of booster sessions. In the absence of behavioural change, studies have reported change at a cognitive level (Tay 2007; Maneesakorn et al., 2007) and at a symptomatic level (Maneesakorn et al., 2007). Both these studies reported methodological limitations which reduces confidence in these findings. Four studies (O'Donnell et al., 2003; Gray et al., 2006; Byerly et al., 2005; Hayward et al., 1995) did not demonstrate a change either at a behavioural, cognitive or symptomatic level following a motivational based intervention. Of these four studies, two were considered to be the most methodologically rigorous (O'Donnell et al., 2003; Gray et al., 2006), which reduces confidence in the efficacy of motivational based approaches. However, these two studies also employed the longest follow up periods (12 months). Consequently there is no way to confirm whether these studies were effective in the short term or not. There is the suggestion by the authors of a ceiling effect in operation amongst studies not reporting a significant behavioural change (Gray et al., 2006; Byerly et al., 2005). Unfortunately none of the studies carried out sub analyses by levels of motivation and few reported baseline levels of motivation; therefore this cannot be explored further. In summary, the evidence supporting the efficacy of motivational based approaches in increasing compliance to medication suggests that it is time limited and that it may only be effective amongst participants with lower baseline levels of motivation.

The next section evaluates the outcome from studies that have aimed to increase retention to treatment. This is the only other area where motivational based approaches have been utilised to increase positive behaviours.

Table 1. *Medication adherence*

Study	Intervention Duration	Control	Sample Diagnosis	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
Kemp et al (1996) / (1998) Compliance therapy in psychotic patients: An RCT RCT	Compliance Therapy 4-6 x 10-60mins Booster session at 3,6,12 months	Supportive counselling 5 x 20-60mins	Inpatient Schizophrenia 66% Severe affective disorders 34% Study n=22 Control n=25	31% No significant differences between groups at baseline Blind at 6, 12, 18 month follow up only	Observer rated compliance (CRCS) BPRS- symptoms GAF- Functioning DAI – Drug attitudes SAI -Insight AMQ- Attitude 0, 3,6,12,18 months	Significant at 0, 3, 6, 12, 18 months Non sig Sig Sig Sig Sig
O'Donnell et al (2003) Compliance therapy: A RCT in schizophrenia RCT	Compliance Therapy 5x30-60mins	Non specific counselling 5x30-60mins	Inpatient Schizophrenia 100% Study n=27 Control n=26	36 % No significant differences between groups at baseline Yes	Observer rated compliance (4 item scale) PANSS –symptoms DAI –Drug attitudes GAF- Functioning QLS –quality of life SAI -Insight 12 months	Non-significant on all measures
Gray et al (2006) Adherence therapy for people with schizophrenia: European multicentre randomised controlled trial.	Adherence Therapy 8 x30-50mins	Didactic Health Information 7 x30-50mins	Outpatient Schizophrenia 100% Study n= 165 Control=184	20% No significant differences between groups at baseline Blind	Observer rated compliance BPRS- symptoms MAQ- med adherence SAI -Insight MCS – quality of life 6 months	Non-significant on all measures

Study	Intervention Duration	Control	Sample Diagnosis	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
RCT						
Byerly et al (2005) A Trial of Compliance is Therapy in Outpatients With Schizophrenia or Schizoaffective Disorder Uncontrolled Case study	Compliance Therapy 4-6 sessions x 30-60mins.	No control	Study = 30 Schizophrenia 70% Schizoaffective 30%	30% Yes	Compliance MEMS;CRCS;MARS PANSS –symptoms DAI –Drug attitudes SAI -Insight 1 & 5 months	Non-significant on all measures
Gray et al (2004) Effect of a medication management training for nurses on outcomes for patients with schizophrenia Pragmatic RCT	Compliance Therapy training amongst CMHN 80hr teaching Unspecified duration of interventions			26% No	PANSS –symptoms Observer rated compliance DAI – drug attitude 6 months	Significant reduction in compliance and symptoms (PANSS)
Maneesakorn et al (2007) An RCT of adherence therapy for people with	Adherence therapy	Standard Care (Therapist time not controlled for)	Inpatient Schizophrenia 100% Study n= 16	12.5% Yes No significant differences between	PANSS Symptoms GAF – Functioning DAI- Drug attitudes SWAM – satisfaction with medication	Significant Non-significant Significant Significant

Study	Intervention Duration	Control	Sample Diagnosis	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
schizophrenia in Chiang Mai, Thailand RCT			Control= 16	groups at baseline	LUNTERS – side effects 2 months	Non-significant
Hayward (1995) Medication self management: A preliminary report on an intervention to improve medication compliance	Medication self management therapy 2-3 x 30mins	Non directive discussion (Therapist time controlled for)	Schizophrenia 70% Affective disorder (30%) Study = 10 Control=11	25% Yes No significant differences between groups at baseline	AMQ – Medication attitudes InQ – Insight BPRS - symptoms Observer rated compliance Immediately after intervention	Non-significant on all measures
Tay, Sim-Eng Clara et al (2007) Compliance therapy: An intervention to improve inpatients' attitudes toward treatment. Case study	Compliance therapy Group session (unspecified length)	N/A	Study= 69 Not specified	15% Not blind	DAI – drug attitude CRCS – compliance 9 months	Significant increase in attitudes towards treatment

Section 1:1 Increasing treatment retention amongst individuals with severe mental health problems.

This section evaluates four studies that have been published which aim to increase retention to treatment amongst samples with severe mental health (SMH) problems see Table 2 (below). The four studies are considered broadly comparable in their use of a brief intervention consisting of a single motivational based interview and also their use of an appropriate control group. Of these four studies, three studies reported a significant increase in treatment retention, however only one reported an increase in retention beyond one month.

The study with the longest duration of outcome was a pilot by Martino, Carroll, O'Malley and Rounsaville, (2000) which reported a significant increase in attendance over three months. The outcomes from the remaining two studies that reported a significant increase in attendance were much more brief and required the participant to contact the treatment provider (Swanson, Pantaloni & Cohen, 1999) or required the participant to attend their first appointment with the treatment provider (Steinberg, Ziedonis, Krejci & Brandon, 2004). However, a number of methodological issues concern the studies by Martino et al. (2000) and Swanson et al. (1999). Neither study reported that they had implemented trained mental health professionals to administer the intervention, neither did they report having used a manualised approach that was assessed for fidelity to treatment. Therefore it is uncertain that the intervention was delivered as intended, and replication to general service settings is impeded. Neither study controlled for therapists' time in the control group. Consequently the outcome may have resulted from therapist attention rather than the intervention per se. Less than half the participants reported SMH problems and the sample size in the Martino et al. (2000) study consisted of just 13 participants. In addition, Martino et al. (2000) and Steinberg et al. (2004) did not report blinding which offers a competing explanation for their outcomes. Consequently these limitations require these results to be treated with caution.

Only one study did not report significantly increased attendance (Baker, Lewin, Reichler, Clancy, Carr, Garrett, Sly, Devir & Terry, 2002). Unlike those studies that did report

efficacy (Martino et al., 2000; Swanson et al., 1999; Steinberg et al., 1999), outcomes were measured over a lengthier three month period. The study reported that high levels of substance dependence amongst the participants at the start of the intervention may have contributed to their non-significant increase in attendance and that a single hour of intervention was insufficient to contribute to any positive change. The number of participants with SMH problems was relatively small (37%), therefore the contribution of these outcomes to the debate is somewhat limited. In addition, a number of methodological limitations reduce confidence further, notably a lack of: blinding, independent assessment of treatment fidelity and control for therapists' attention.

Summary

Three of four studies (Martino et al., 2000; Swanson et al., 1999; Steinberg et al., 1999), reported a significant increase in treatment attendance from a motivational based approach in increasing treatment attendance, but these outcomes were limited in duration, concerning either initial contact with services or attendance at the initial appointment. It should be noted that longer duration measures were not taken and therefore longer durations of effect may have been present but could not be measured. Although, where longer duration outcomes were measured, efficacy was not reported (Baker et al., 2002). Out of the four studies, the study by Steinberg et al. (2004) appears to be the most methodologically rigorous and suggest motivational based approaches are effective in increasing treatment retention amongst individuals with diagnoses on the SMH spectrum. The remaining three studies all have a number of methodological limitations which reduces confidence in their findings. Where motivational based approaches have demonstrated efficacy, it stems from minimal intervention (that is, a single motivational interview, which indicates an efficient use of resources). However, follow up periods are very brief, often consisting of attendance to one appointment only and there is a paucity of studies measuring longer term outcomes. Despite this, the outcomes reported were considered valuable because unless a service user accesses services, then regardless how effective the service is, the individual cannot be supported.

The next section evaluates interventions that have incorporated motivational interviewing in aiming to decrease negative or unhelpful behaviours amongst individuals with severe

mental health problems, before finally a conclusion is drawn on the overall efficacy of motivational approaches amongst this population.

Table 2: Studies aimed at increasing treatment retention

Author / Title	Intervention Duration	Sample Diagnosis Context	Control Control for therapist time	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
Swanson et al 1999 MI and treatment adherence among psychiatric and dually diagnosed patients	MI 1x 60min + 1x15 min feedback	Psychosis 45% Affective 40% Other 15% Study =57 Control = 64 Outpatient	Treatment as usual Therapist time not controlled for	Not stated Single blind	Attendance data For 1 st appointment	Significant
Baker et al (2002) MI among psychiatric inpatients with substance use disorders RCT	MI + CBT interview 1 x 1hr	Affective 53% Schizophrenia 37% Study n= 79 Control n= 81 Inpatient	Advice 1 x 1hr Therapist time not controlled for	Not stated Not stated	Attendance over 3 months to programme	Non significant
Steinberg et al (2004) MI with personalised feedback: A brief intervention for motivating smokers with schizophrenia to seek treatment for tobacco dependence	MI interview 1 x 40 min	Schizophrenia / schizoaffective disorder 100% Study n = 32 Control Psycho-education n= 34	Psycho Education/Advice 1 x 40 min Therapist time controlled for	Not stated Not stated	Contact treatment provider.	Significant treatment contact within 1 month for study group

RCT		Advice n=12 Outpatient				
Author / Title	Intervention Duration	Sample Diagnosis Context	Control Control for therapist time	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
Martino et al (2000) Motivational Interviewing with Psychiatrically Ill Substance Abusing Patients Pilot	MI 1 x 1hr	Psychosis 52% Affective 48% Study n= 13 Control n= 10 Outpatient	Standard preadmission interview Therapist time not controlled for	Not stated Unclear blinding	Attendance data Over 3 months	Significant increase in days of attendance for study group.

Part 2: Decreasing negative behaviours amongst individuals with severe mental health problems

This section evaluates the studies that have implemented motivational based approaches amongst individuals with severe mental health (SMH) problems with the aim of decreasing problematic behaviours. Table 3 (below) reports information from 18 studies that have used motivational based approaches including: type and length of intervention, sample sizes, controls used, participant diagnoses and finally outcome data. The 18 different studies can be divided into those studies (n=9) that did not report substance specific outcomes, rather they grouped and reported the outcomes from different substances together (poly-drug reduction) and studies (n=9) that did report substance specific outcomes (substance specific reduction). The outcomes from nine studies that aimed to reduce poly-drug use are discussed first, followed by the outcomes from the nine studies that measured substance specific change.

Section 2:0 Decreasing poly-drug use amongst individuals with severe mental health problems.

Nine studies intervened using motivational based approaches with the aim of reducing usage of a variety of different substances and when they reported the outcomes the results from changes in use from various different substances were reported together. From Table 3 (below) it can be seen that the most common substances reported as being used by participants were alcohol and cannabis. A number of studies also reported cocaine and amphetamine use, and a minority of studies reported the use of heroin. The nine studies were relatively consistent on the severe mental health diagnoses amongst the samples used. The majority of participants used within each study were diagnosed with schizophrenia, with rates ranging from 62.5% to 100%. Only one study (Bellack, Bennett, Gearon, Brown & Yang, 2006) reported that schizophrenia was a minority diagnosis amongst participants (40%), whereas two studies (Kemp, Harris, Vurel & Sitharthan, 2007; Johnson, Thornicroft, Afuwape, Leese, White, Hughes, Wanigaratne, Miles, & Craig, 2007) did not report this information. All nine studies measured substance use as their primary outcome.

There was variation in whether change in substance use was measured by participant self-report, clinician ratings or analysis of urine. A number of secondary outcomes measured varying combinations of: symptomatology, substance dependence and general functioning. Two studies (McCoy, Devitt, Clay, Davis, Dincin, Pavick, & O'Neill, 2003; Carey, Carey, Maisto & Purnine, 2002) also measured participants' stage of change using the 'Substance Abuse Treatment Scale' (McHugo, Drake, Burton, & Ackerson, 1995) and the 'Stages of Change Readiness and Treatment Eagerness Scale' (Miller & Tonigan, 1996) respectively. (Stage of change refers to the stage in the motivational cycle that an individual is at, for example, pre-contemplation, contemplation or action stage etc (Prochaska & Norcross, 2001).

From Table 3 (below) it can be seen that four of the nine studies adopted a one to one intervention approach, four studies adopted a group intervention approach and one study trained clinicians to deliver a motivational based approach in a routine clinical setting. In contrast to the studies which used a very similar manualised intervention (Compliance Therapy), to increase adherence to medication (Section 1.0), there was much greater variation in the interventions adopted by the studies that aimed to decrease poly-substance use. The studies that intervened on a one to one basis combined motivational interviewing with a variety of cognitive behavioural, harm reduction and psycho-educational approaches of varying proportions, but were generally brief in their duration, consisting of three to six hours. The exception was Barrowclough, Haddock, Tarrier, Lewis, Moring, O'Brien, Schofield, and McGovern, (2001) who included a 16 hour family intervention in addition to the 29 hour individual intervention. The group based interventions were more varied both in type and duration. Bellack et al. (2006) integrated six different interventions into a comprehensive package; McCoy et al. (2003) involved multifaceted residential treatments programme and duration of intervention was generally longer, ranging from nine hours to eighteen months.

The outcomes from the nine studies that used a motivational based intervention indicated that a majority of studies (eight out of nine) reported a significant reduction in poly-drug use at the end of treatment. Kavanagh, Young, White, Saunders, Wallis, Shockley, Jenner and Clair (2004) reported the longest duration of effect: poly-drug use reduction was

maintained at 12 months post treatment. However, the study reported a significant confounder: living with a carer or partner predicted positive outcome and more participants in the intervention group lived with a carer or partner. Barrowclough et al. (2001) reported that abstinence was maintained at three months, but subsequently diminished at nine month follow up. Carey et al. (2002) also reported a diminishing effect at a three month follow up, suggesting the effect for the motivational based approach is time limited. Kemp, Harris, Vurel and Sitharthan (2007) was the only study to carry out an individual intervention and to not report a reduction in quantity of poly-drug use; however the study did report a reduction in frequency of poly-drug use. This outcome may be considered clinically significant on the basis that changes in frequency of drug use have been shown to be a more reliable predictor of outcome compared to changes in quantities of drug use (Project MATCH Research Group, 1997).

Amongst the group interventions, all four studies reported a significant reduction in poly-drug use at the end of treatment with the longest duration of effect reported by James, Preston, Koh, Spencer, Kisley and Castle (2004) at three months post treatment. The remaining three studies did not measure change beyond end of treatment so duration of effect remained unknown. Only one study (Johnson et al., 2007) did not report any change in poly-drug use at end of 18 months treatment. However, with no assessment of fidelity to treatment and little information provided on variability of clinician experience, it is conceivable the outcome may have resulted from a sub-optimal intervention. A number of other methodological limitations may have contributed to variation in findings. Measures of substance use varied between studies, with the majority relying on self report measures (timeline follow back and the opiate treatment index) or ratings by assessors (case manager rating scale). These measures report good psychometric properties and yield reliable retrospective data on addictive behaviours (Sobell & Sobell, 1992). However, self report measures are still susceptible to recall difficulties and response bias (Miller, 1987). With the exception of two studies (Bellack et al., 2006; Johnson et al., 2007), the size of the samples (which ranged from 6 to 39) were relatively small / modest. Small sample sizes may have yielded results that were down to chance, which requires these results to be treated with caution (Burns & Grove, 2005).

A number of other significant outcomes were reported following the motivational based approaches, these included improvements on measures of motivation, symptomatology, substance dependence and general functioning. From Table 3 (below), it can be seen that two studies (McCoy et al., 2003; Carey et al., 2002) measured the impact upon motivation and both reported significant increase in motivation at end of treatment. Carey et al. (2002) was the only study to measure effect beyond end of treatment and reported that motivation declined to non-significant levels at three months, indicating the effect of the motivational based intervention is time limited. Neither of these studies used a control group to control for the effect of the intervention, therefore other factors (for example, 'treatment as usual' may have contributed to the change). This issue reduces confidence that the reported increase in motivation was due to the intervention alone. Of four studies that measured changes in symptomatology, three studies reported a significant reduction on outcome. The longest duration of effect was a reduction in negative symptoms at nine months (Barrowclough et al., 2001). Both James et al. (2004) and Bradley, Baker & Lewin, (2007) reported a significant reduction in positive and negative symptoms at three months and at end of treatment respectively. One study (Kemp et al., 2007) did not report a significant change in symptomatology. Of the three studies that measured the impact of the motivational based approach on substance dependence, two reported a significant reduction, James et al. (2004) at three months and Bellack et al. (2006) at end of treatment. Kemp et al., (2007) did not report any significant reduction in dependence at six months. Of the three studies that measured the impact upon general functioning, two studies (Barrowclough et al., 2001; Bellack et al., 2006) reported a significant increase in general functioning at nine months and end of treatment respectively, whereas Kemp et al. (2007) did not report a significant increase in general functioning at six months.

Despite the positive changes reported for symptomatology, substance dependence general functioning and motivation, a number of methodological limitations reduce confidence in these findings. It can be seen from Table 3 (below) that of the studies that used a control group, only one study (Bellack et al., 2006) controlled for the effect of the additional therapist attention resulting from the motivational based approach (reporting a significant reduction in substance use and increase in general functioning at end of treatment). Consequently, the reduction in substance use reported by the remaining five studies that

did not control for additional therapist attention may have been due to the additional therapist attention and not just the manualised treatment. The majority of studies reported that whilst raters were blind to the treatment condition, it was not possible for the facilitators to be. Lack of facilitator blinding may be a problem when researchers are the originators of the package and may offer a competing explanation for the effects reported. Lastly, studies did not consistently report levels of baseline motivation and substance dependence, and given that brief interventions are effective among people with lower levels of dependence (Mattick and Jarvis, 1993), it is uncertain how effective these interventions are likely to be for the varying levels of dependency and motivation that might be experienced in routine clinical settings. Despite these methodological limitations, the studies that were the more methodologically rigorous (Barrowclough et al., 2001; James et al., 2004; Bellack et al., 2006) tended to be those that reported the more enduring change and therefore I would argue that the motivational approach does demonstrate effective change in poly-drug use, symptomatology, motivation, substance dependence and general functioning. However these interventions also tended to be the studies that used more comprehensive approaches. It does not seem unlikely that interventions that involve a greater rather than a fewer number of interventions should demonstrate efficacy, and of course we are unable to ascertain the relative contribution of the motivational interview to the outcome as a whole.

Summary

The vast majority of studies (Barrowclough et al., 2001; Kavanagh et al., 2004; Carey et al., 2002; Kemp, et al., 2007; James et al., 2007; Bellack et al., 2006; McCoy et al., 2003; Bradley et al., 2007) reported a positive change in poly-drug use at the end of treatment. Additionally, change in either: symptomatology, motivation, substance dependence or general functioning was reported by these studies. A number of methodological issues reduce confidence in these findings, notably: small sample sizes, inconsistency in controlling for the additional therapists' time, and inconsistent measures of substance dependence at baseline. It is not possible to know the direct implications of these methodological issues upon individual outcomes; however the studies that were the more methodologically rigorous (Barrowclough et al., 2001; James et al., 2004; Bellack et al.,

2006) tended to be amongst those that reported the more enduring change. I would therefore argue that motivational approaches do demonstrate reductions in substances when the changes are reported together.

The general brevity of the follow up periods used does not allow for an assessment of duration of effect. The outcomes from the minority of studies that measured duration of effect over time (Carey et al., 2002; Barrowclough et al., 2001), indicated a decline suggesting that the effect of motivational based approaches is time limited. This is a pattern also reported amongst the general substance using population (Hettema, Steele & Miller, 2005). An additional finding was that group interventions appeared to be effective. Group interventions may also have two possible benefits over individual therapy. First, group interventions may establish social support away from substance using peers (Carey & Carey, 1995). Second, group interventions may be a more efficient use of resources compared to individual therapies.

It is not known which substance motivational based approaches are effective for because outcomes for all substances are grouped and reported together. The next section evaluates a number of studies that have measured the change in use upon specific substances following a motivational based approach.

Table 3. Decreasing behaviours (Poly-substance use)

Author / Title	Intervention Duration Substance(s)	Manualised? Treatment fidelity? Experienced professionals ?	Diagnosis Sample Context	Control used Controlled for therapist time	Attrition Single blinding	Measures Follow up period(s)	Outcome Effect significance at p< 0.05
<p>Barrowclough et al 2001/ Haddock et al 2003</p> <p>RCT of MI, CBT and Family Intervention for patients with co-morbid schizophrenia and substance use disorders</p> <p>RCT – Individual</p>	<p>MI+CBT+ Family intervention + 29 hr individuals + 16 hr family</p> <p>Alcohol Cannabis Cocaine Amphetamines Heroin</p>	<p>Manualised</p> <p>Yes</p> <p>Yes</p>	<p>Schizophrenia spectrum 100%</p> <p>Study n=18 Control n=18</p> <p>Outpatient</p>	<p>Routine Care</p> <p>No control for therapist time</p>	<p>6%</p> <p>Blind</p>	<p>Functioning: GAF-SFS</p> <p>Symptoms PANSS</p> <p>Substance use: TLFB</p> <p>End of treatment, 3, 9 months</p>	<p>Significant improvement in functioning (GAF) and negative symptoms (PANSS) at 9 months.</p> <p>Increase in abstinent days from baseline to 3 month follow up, not maintained at 9 months</p>
<p>Kavanagh et al 2004</p> <p>A brief motivational intervention for substance misuse in recent onset psychosis.</p> <p>PILOT-Individual</p>	<p>MI + CBT</p> <p>3 x 1 hours</p> <p>Weekly follow up telephone calls</p> <p>Alcohol Cannabis Amphetamines</p>	<p>Manualised</p> <p>Yes</p> <p>Yes</p>	<p>First episode schizophrenia 100%</p> <p>Study n=13 Control n=12</p> <p>Outpatient</p>	<p>Standard care and advice.</p> <p>No control for therapist time</p>	<p>25%</p> <p>Blind</p>	<p>Substance use: OTI (drug check)</p> <p>3,6,12 months</p>	<p>Significant reduction in quantity of poly-drug use maintained at 12 months.</p>

Author / Title	Intervention Duration Substance(s)	Manualised? Treatment fidelity? Experienced professionals ?	Diagnosis Sample Context	Control used Controlled for therapist time	Attrition Single blinding	Measures Follow up period(s)	Outcome Effect significance at p< 0.05
	Cocaine						
Carey et al. 2002 The feasibility of enhancing psychiatric outpatients readiness to change their substance use Case study – Individual	MI 4 x 30-60 min Alcohol cocaine cannabis	Manualised Yes Not stated	Schizophrenia spectrum 73% Psychosis not specified 20% bipolar 7% Study =22 Outpatient	No control	20% Blind	Stages of change-SOCRATES Substance use-TLFB - (self report) AUS / OTI (clinician rating) 3 months	Significant increase in motivation at 0 months, dissipated at 3 month follow up Significant reduction in poly-drug use. Dissipated at 3 month follow up
Kemp et al 2007 Stop using stuff: trial of a drug and alcohol intervention for young people with co-morbid mental illness and	MI + CBT 4-6 hours Alcohol Cannabis	Manualised No independent treatment fidelity Yes	Schizophrenia spectrum Psychotic mood disorder Unspecified % Study n=10 Control n=6	Standard care No control for therapist time	N/A Rater not blind and provided treatment	Symptoms – PANSS, DASS Functioning-QoLS Dependence – DAST -10, AUDIT	Non significant reduction Non significant reduction Non significant reduction

Author / Title	Intervention Duration Substance(s)	Manualised? Treatment fidelity? Experienced professionals ?	Diagnosis Sample Context	Control used Controlled for therapist time	Attrition Single blinding	Measures Follow up period(s)	Outcome Effect significance at p< 0.05
drug and alcohol problems PILOT			Outpatient			Substance use-TLF 6 months	Significant reduction in poly-drug frequency only
James et al (2004) A group intervention which assists patients with dual diagnosis reduce their drug use: An RCT Group RCT	Group MI + CBT +HR 6 x 1.5 hrs Alcohol Cannabis Cocaine	Manualised Yes Yes	Schizophrenia 62.5% Other psychoses 37.5% Study n= 29 Control n=29 Outpatient	1 hr education + Standard Care (No control for therapist time)	12% Blind	Symptoms-BPRS/BSI Dependence-DAST, AUDIT Substance use – OTI 3 month	Significant reduction in symptoms Significant reduction in dependence. Significant reduction in poly-drug use
Bellack et al (2006) An RCT of a new behavioural treatment for drug abuse in people with severe and persistent mental illness Group RCT	Group MI/CBT/Social skills training/ HR/urinalysis contingency/relapse prevention 6 months Cocaine Heroin Cannabis	Manualised Yes Yes	Schizophrenia 40% 55% Affective 5% other Study n=61 Control n =49 Outpatient	6 month manualised control. Intervention (Controlled for therapist time)	27% Blind	Substance use – urinalysis Dependence –ASI, SESS Quality of life – BQLS, SFS. End of treatment	Significant reduction Non-significant Significant

Author / Title	Intervention Duration Substance(s)	Manualised? Treatment fidelity? Experienced professionals ?	Diagnosis Sample Context	Control used Controlled for therapist time	Attrition Single blinding	Measures Follow up period(s)	Outcome Effect significance at p< 0.05
						only	
McCoy et al (2003) Gaining Insight: Who benefits from residential integrated treatment for people with dual diagnoses? Group Case-study	Group MI + CBT + urine testing + residential treatment 18 months Alcohol Cannabis Cocaine	Not specific MH professional trained Not stated	Schizophrenia 74% 10% bipolar 16% affective. Study n=38 Long term residential	No control	29% N/A	Substance use: Urinanalysis CAUS CDUS Motivation- SATS 6,12,18 during treatment	Significant reductions on all measures Significant advance
Bradley et al 2007 Group intervention for coexisting psychosis and substance use disorders in rural Australia: Outcomes over 3 years	Group MI + CBT 60-90 mins x 28 (mean) sessions Alcohol cannabis	Not manualised No independent treatment fidelity Unknown if MH	Schizophrenia 79.5% schizoaffective 7.7% Bipolar 12.8% Study n=39 Outpatient	No control	N/A N/A	Symptomatology- LSP Substance use- CMRS End of treatment only	Significant reduction Significant reduction

Author / Title	Intervention Duration Substance(s)	Manualised? Treatment fidelity? Experienced professionals ?	Diagnosis Sample Context	Control used Controlled for therapist time	Attrition Single blinding	Measures Follow up period(s)	Outcome Effect significance at p< 0.05
Group Case study		professional					

Johnson et al (2007) Effects of training community staff in interventions for substance misuse in dual diagnosis patients with psychosis CLUSTER RCT	Training course for case managers 5 day training course MI+CBT Alcohol Unspecified drugs	Manualised No Yes	Schizophrenia Non affective psychosis Bipolar Unspecified % Study n=127 Control n=105 Outpatient	CMHT caseload Not controlled for therapists time	38% No	Substance use: MAP (self report) Relapse rates (inpatient bed use) 18 months	Non- significant reduction in drugs and alcohol Non significant bed use
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AUDIT- Alcohol Use Disorders Identification Test; AUS – Alcohol use scale; BQLS-Brief Quality of Life Scale; CAUS – Clinician Alcohol Use Scale; CDUS- Clinician Drug Use Scale CMRS- Case Manager Rating Scale; DASS- DAST-10- Drug Abuse Screening Test; ; GAF- Global Assessment of Functioning; PANSS- Positive and Negative symptom scale; LDQ- Leeds Dependency Questionnaire; LSP- Life Skills Profile; MAP- Maudsley Addiction Profile; Opiate Treatment Index- OTI; SATS – Substance Abuse Treatment Scale ; **SDS SES** - SFS- Short form survey; SOCRATES Stages of Change Readiness and Treatment Eagerness Scale; TLFB- Time Line Follow Back

Section 2:1 Substance specific interventions

Nine studies aimed to reduce substance use using motivational based approaches and reported change for individual substances. The studies contained in this section are reported by individual substance, this contrasts with the studies contained in section 2:0 where outcomes from various substances are grouped together. Five of the nine studies aimed to reduce usage of a single substance; it can be seen from Table 4 (below) that three studies aimed to reduce tobacco use, one study aimed to reduce alcohol use and one study aimed to reduce cannabis use. The remaining four studies aimed to reduce a combination of different substances including: alcohol, cannabis, amphetamines, cocaine and tobacco. The primary outcome for all of the studies was change in substance use. A number of secondary outcomes were measured and consisted of varying combinations of: symptomatology, motivation, substance dependence and general functioning. From Table 4 (below) it can be seen that the majority of interventions integrated motivational interviewing (MI) with cognitive behavioural therapy (CBT), three studies implemented a pharmacological intervention (nicotine replacement therapy), in addition to the MI and CBT intervention, and two studies used MI only. Rather than adopting an available standardised motivational based approach, the interventions were frequently developed by the individual authors. From Table 4 (below) it can be seen that the duration of the motivational based approaches were typically brief ranging from a brief single session to ten sessions. Participants recruited were mostly diagnosed on the schizophrenia spectrum (57% to 100%), the exception being two studies (Baker, Lewin, Reichler, Clancy, Carr, Garrett, Sly, Devir & Terry 2002; Kisely & Preston, 2006b) where diagnoses on the schizophrenia spectrum were in the minority.

The outcomes indicate that all nine studies reported a significant reduction in either alcohol, tobacco or cocaine use by participants who received the motivational based approach. However, in only five of these studies were these reductions significantly greater than that observed in the control group. A significant reduction in days using alcohol was reported in a controlled pilot by Graeber, Moyers, Griffith, Guajardo, and Tonigan (2003). A number of methodological issues require this outcome to be treated with caution. There was no assessor blinding which offers a competing explanation to the finding. There was

no independent assessment of fidelity to treatment, therefore it is unknown whether the intervention was delivered as intended. The three studies that evaluated changes in tobacco use all reported a significant reduction in tobacco use. The longest duration of effect was reported by Baker, Richmond, Haile, Lewin, Carr, Taylor, Jansons, and Willhelm (2006a) where reduction in tobacco use was evident at twelve months after end of treatment. However, this reduction was only present in those participants who completed all of the treatment sessions. Ziedonis and George (1997) reported that nearly half of the participants reduced consumption of tobacco by 50% with 13% of this 50% reporting abstinence after six months post treatment. However, the study was vague in its description of the intervention used and did not employ a control group, so it is uncertain if the change was due to the intervention alone or whether other confounding variables may have contributed to change. Kisely and Preston (2006) also reported a significant abstinence from tobacco at three months post treatment. Finally, a pilot study by Martino, Carroll, Nich, and Rounsaville, (2006) reported a significant reduction in cocaine use at three months post treatment, but a non-significant reduction in cannabis use compared to the control condition. However, participants were reported to have high levels of motivation at baseline, suggesting a possible ceiling effect, which may have served to reduce any of the potential benefits from the motivational based approach. Two studies (Martino et al., 2006; Baker et al., 2006b) measured the impact of the motivational based approach on other outcomes, specifically mental health symptoms and general functioning, but neither reported a significant effect.

A number of methodological limitations are apparent. With the exception of one study (Baker et al., 2006a), all of the above studies used a small number of participants which increases the possibility that the results reported were due to chance. Neither Kisely et al. (2006) nor Baker et al. (2006a) controlled for the effect of therapists' time, therefore the outcome may be due to additional therapist time rather than the intervention per se. Significant rates of attrition of (50%) were reported by Ziedonis et al. (1997) and Kisely et al. (2006). This attrition highlights the general difficulty of engaging people with SMH problems in clinical interventions (Drake & Mueser, 2000) and may also over-estimate the efficacy of the intervention by not including the outcomes of those participants that are more difficult to engage. It is not possible to accurately predict the impact of these

methodological issues on the outcomes of these studies, although the evidence does appear consistent in that motivational based approaches are effective in reducing tobacco, alcohol, cocaine and that these effects are often maintained between three to six months after end of treatment.

Four studies reported an increase in substance use following the motivational based approach however this was not significantly greater than that observed in the control condition. The evidence indicates non-significant reduction for alcohol and amphetamines but the evidence for cannabis is less consistent. Two studies did not report a reduction in cannabis use (Baker et al., 2002; Teeson, 1999) but reported a non-significant reduction in alcohol and amphetamines which subsequently reduced at three months (Baker et al., 2002) and alcohol and tobacco (Teeson, 1999). Whereas two studies reported a reduction in cannabis that diminished after three months (although there was a significant reduction in amphetamines at twelve months) (Baker, Bucci, Lewin, Kay- Lambkin, Constable, & Carr, 2006b) and was also maintained at six months amongst participants with first episode psychosis (Edwards Elkins, Hinton, Harrigan, Donovan, Athanasopolous & McGorry, 2006). Only one study reported outcomes in addition to changes in substance use. Baker et al. (2006b) reported a significant increase in general functioning at twelve months and a reduction in rates of depression at end of treatment which subsequently declined at three months, but with no change in substance dependence. In contrast, four studies (Baker et al., 2002; Teeson, 1999; Edwards et al., 2006; Martino et al., 2006) did not report any significant change in general functioning, motivation or symptomatology.

There are a number of methodological differences between studies that did not report a significant change in substance use compared to the control group. Three studies (Baker et al., 2002; Edwards et al., 2006; Martino et al., 2006) all reported high levels of motivation at baseline, especially amongst cannabis users in their sample (Martino et al., 2006; Baker et al., 2006). There is evidence that motivational based approaches are more effective with individuals who have the lowest levels of motivation pre-treatment, but are less effective with those in a higher motivational state (Colby, Monti, Barnett, Rohsenow, Weissman, & Spirito, 1998). Therefore a 'ceiling effect' may have been operating, which may have limited the effect of the motivational based approach. Baker et al. (2002); Edwards et al.

(2006) and Martino et al. (2006) were the only studies to have used a more active intervention in the control condition (for example psycho-education) rather than treatment as usual. When motivational based approaches have been compared with other active treatments in the general substance using population, there is a trend for them to have not reported significant reduction in substance use (Hettema et al., 2005). A similar pattern could be operating in the studies by Baker et al. (2002); Edwards et al. (2006) and Martino et al. (2006). An alternative explanation may be that when baseline levels of motivation are already high at baseline and a ceiling effect is present, then other more directive interventions (for example psycho-education or advice) may be equally effective in bringing about change.

Summary

There is evidence that motivational based approaches were effective for alcohol, amphetamines and tobacco. There are a number of methodological limitations that require these outcomes to be treated with caution, for example: small sample sizes, high attrition and not controlling for the additional therapist time. When measured over time, the effect appears to decline. The evidence for the efficacy upon cannabis use is less consistent (Edwards et al., 2006; Baker et al., 2002; Martino et al., 2006), however, these studies also reported high levels of motivation at baseline. Individuals who present with initially lower levels of motivation to change typically respond better to motivational based approaches than those with higher levels of baseline motivation (Heather, Rollnick, Bell & Rischmond, 1996). This may have produced a 'ceiling effect'. These three studies also included more active interventions in their control condition (for example, psycho-education). More active interventions may therefore be more suitable for individuals who have higher levels of motivation, but less suitable for individuals with lower levels of motivation. It is therefore uncertain if the effect of the motivational based approach was less effective upon cannabis or whether the efficacy of the motivational approach was limited by the presence of a 'ceiling effect' and the more active control condition. The vast majority of studies did not report any significant change in mental health symptomatology, general functioning or substance dependence.

Table 4: Decreasing behaviours (substance specific)

Author / Title	Intervention Duration Substance(s)	Therapy fidelity Experienced MH professionals	Sample Diagnosis Context	Control Controlled for therapist time	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at $p < 0.05$
Graeber et al 2003 A pilot study comparing motivational interviewing and an educational intervention in patients with schizophrenia and alcohol use disorders Pilot	MI 3 x 1hr None Alcohol only	Manualised No fidelity to treatment MH professionals	Schizophrenia 100% Study n=15 Control n=15 Outpatient	Psycho-education (Therapist time not controlled for)	9% Not blind assessor	Abstinence Number of days drinking. (BDP) Drinking Intensity (BDP) Consumption (BDP) 1,2,6 months	A significant reduction for frequency of drinking days and days abstinence Non significant Non significant
Baker et al (2006a) A randomised controlled trial of a smoking cessation intervention among people with psychotic disorder RCT	MI + CBT + Nicotine replacement therapy 8 x 1 hr Tobacco	Manualised Fidelity to treatment Trained therapist	57% schizophrenia spectrum Study n= 147 Control n= 151	Routine care (not controlled for therapist time)	Not stated Single blind	Abstinence/Reduction (breathalyser test) Symptoms BPRS, BDI, STAI Functioning SFS 12	Significant reduction at all follow up points, non significant abstinence (but only for the 50% completing all 8 sessions) Non-significant Non significant

Author / Title	Intervention Duration Substance(s)	Therapy fidelity Experienced MH professionals	Sample Diagnosis Context	Control Controlled for therapist time	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
						3,6,12 months	
Kisely et al 2006 A group intervention which helps people with dual diagnosis reduce their tobacco use Pilot	MI + CBT + Nicotine replacement therapy 10 week Tobacco	Manualised Trained therapists	Schizophrenia 40% Affective disorder 40% Study n=19	Waiting list control Not controlled for therapist time	50% Single Blind	Tobacco use TLFB 3 months	Significant tobacco abstinence
Ziedonis et al (1997) Schizophrenia and Nicotine Use: Report of a pilot smoking cessation program Pilot	Nicotine replacement + Motivational enhancement + behavioural therapy 10 week Tobacco	Not stated Trained therapists	Schizophrenia spectrum 100% Study n=24	No control	50% N/A	Reduction Abstinence 6 months	40% decreased consumption by 50% 13% remained abstinent for at least 6 months

Author / Title	Intervention Duration Substance(s)	Therapy fidelity Experienced MH professionals	Sample Diagnosis Context	Control Controlled for therapist time	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
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<p>Martino et al (2006)</p> <p>A randomised controlled pilot study of motivational interviewing for patients with psychotic and drug use disorders</p> <p>PILOT</p>	<p>MI</p> <p>2 x 1 hr</p> <p>Alcohol Cocaine Cannabis</p>	<p>Manualised</p> <p>Fidelity to treatment</p> <p>MH professionals</p>	<p>Schizophrenia spectrum 77% Psychosis 23%</p> <p>Study n=24 Control n=20</p> <p>Outpatient</p>	<p>Psychiatric interview 2 x 1 hr</p> <p>Controlled for therapist time</p>	<p>23%</p> <p>Yes</p>	<p>Functioning GAS, BDI</p> <p>Symptoms PANSS</p> <p>Substance use: TLFB, Urinalysis</p> <p>1,2,3 months</p>	<p>Non-significant Improvement</p> <p>Non-significant improvement</p> <p>Significant reduction for cocaine but non significant reduction for cannabis. Non significant poly-drug change.</p>
<p>Baker et al (2002)</p> <p>Evaluation of a motivational interview for substance use within psychiatric in-patient services</p>	<p>MI + CBT</p> <p>30-45 mins</p> <p>Alcohol cannabis amphetamines</p>	<p>Manualised,</p> <p>No fidelity check</p> <p>Undergraduates ,</p>	<p>Schizophrenia 38% Affective 29% Other 34%</p> <p>Study n=43 Control n=46</p> <p>Inpatient</p>	<p>Advice</p> <p>30-45 mins</p> <p>Controlled for therapist time</p>	<p>45%</p> <p>Blind</p>	<p>Substance use OTI</p> <p>Symptoms BSI</p> <p>3, 6,12 months</p>	<p>A non-significant improvement in alcohol and amphetamines but not for cannabis. Diminished after 3 months.</p>

Author / Title	Intervention Duration Substance(s)	Therapy fidelity Experienced MH professionals	Sample Diagnosis Context	Control Controlled for therapist time	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
RCT		trained and supervised					
Baker et al (2006b) Cognitive Behavioural Therapy for substance use disorders in people with psychotic disorders RCT	MI + CBT 10 x 30-60 min Alcohol cannabis amphetamines	Manualised, Yes fidelity check MH professionals	Schizophrenia 62.2 % Schizoaffective 12.2% Bipolar 9.2 % Other psychoses 16% Study n= 65 Control n=65 Outpatient	TAU + assessment + self help material (No control for therapist time)	27% Blind	Substance use OTI Symptoms: BPRS, BDI Motivation: RTCQ Dependence SCID Functioning GAF 3,6 12 months	Non-significant improvement for study group in cannabis use and depression at 3 months only. Non-significant improvement amphetamines Non significant improvement at 12 months
Edwards et al 2006 Randomised controlled trial of a cannabis-focused	CBT+ MI 10 x 30-60min Booster 3 months at	Manualised No fidelity treatment	Schizophrenia 72%; Affective psychosis 11% Other 17%	Psycho-education Controlled for therapists	Not stated Single blind	Cannabis use CASUAS Symptoms-BPRS	Reduction in cannabis for both groups and sustained at 6 months. Non-significant reduction for

Author / Title	Intervention Duration Substance(s)	Therapy fidelity Experienced MH professionals	Sample Diagnosis Context	Control Controlled for therapist time	Attrition Single blinding	Primary Measures Follow up period(s)	Outcome Effect significance at p< 0.05
intervention for young people with first episode psychosis RCT	end Cannabis only	MH professionals	Study = 23 Control n= 24 Outpatient	time		Functioning- SOFAS Motivation- RTCQ 0, 6 months	study group over control Non-significant Non-significant Non-significant motivational change
Teeson et al 1999 Evaluation of a treatment programme for serious mental illness and substance use in an inner city area Case study	MI + relapse prevention Duration not specified Alcohol Cannabis Tobacco	Not stated Not stated Not stated	Schizophrenia 67% Bipolar 11% Anxiety 11% Depression 8% PD 3% Study n=67 Outpatient	No control	45% N/A	Symptomatology- GHQ BPRS Substance use OTI 12 months	Non-significant Non-significant Non-significant

BDI- Beck Depression Inventory; BPRS- Brief Psychiatric Rating Scale; CASUAS- Cannabis and substance use assessment schedule; GAF- Global Assessment of Functioning; GAS- Global Assessment Scale; GHQ-General Health Questionnaire; PANSS –Positive and Negative Symptom Scale; RTCQ-Readiness to change questionnaire; SCID- Structured Clinical Interview for DSM-IV; SFS 12 – Short Form Survey 12 item; SOFAS- The social and occupational functioning scale; STAI- State trait anxiety inventory; TLFB-Time Line follow back.

Section 3: Considering the evidence, are motivational based approaches supported with this group?

The evidence supporting the efficacy of motivational based approaches in increasing adherence to medication was inconsistent. A minority of studies reported either an increase in adherence to medication (Kemp et al., 1998), or a cognitive change and/or a change in psychotic symptoms (Tay, 2007; Maneesakorn et al., 2007). However, the duration of effect declined over time. Two good quality randomised controlled trials (RCTs) (Gray et al., 2006; O'Donnell et al., 2003) implemented lengthy outcome periods. Therefore any short term effects present could not have been captured and could not corroborate the outcomes from the studies that reported an increase in medication adherence. Few studies aimed to increase treatment retention; however outcomes were more consistent, with the majority of studies reporting an increase in treatment attendance. Duration of outcome was also brief and rarely measured attendance beyond the first appointment.

The majority of studies that aimed to reduce 'unhealthy' behaviours reported a reduction in poly-drug use as well as studies reporting reductions in specific substances notably alcohol, tobacco and amphetamine use. The evidence for cannabis was less consistent. A number of other positive outcomes from the motivational based approaches were reported; reductions in levels of substance dependence, improvements in general functioning and reduced mental health symptomatology. However these outcomes were reported less consistently by the varying studies. A majority of studies that measured the duration of effect beyond the end of treatment reported a decline over time. This is an effect reported from motivational based approaches used in the general substance using population (Hettema et al., 2005). Duration of effect could not be reviewed consistently because studies were inconsistent in their use of follow up periods.

A number of methodological limitations require these results to be treated with caution, notably, small sample sizes and a lack of control for the additional therapist attention that resulted from the motivational based approach. When motivational based approaches have been compared with other more active treatments in the control condition as opposed to less active controls such as treatment as usual (e.g. Edwards et al., 2006; Baker et al., 2002;

Martino et al., 2006) there was a trend for them to have not reported significant reduction in substance use. This was a pattern observed in the general substance using population (Hettema et al., 2005). Therefore more directive interventions such as psycho-education may be equally effective. There is a trend for studies that do not report a significant change in behaviour following the motivational based approach to also report high levels of baseline motivation. This is apparent amongst the medication adherence studies (e.g. Gray et al., 2006; Byerly et al., 2005) and amongst the substance reduction studies (e.g. Edwards et al., 2006; Baker et al., 2002; Martino et al., 2006). When baseline levels of motivation were high, more directive interventions e.g. advice or psycho-education, may be as at least effective. This suggests the use of a stepped care approach to intervention. Studies did not report baseline motivational levels consistently; therefore this could not be explored further in the present review.

Despite these limitations it is my opinion that motivational based approaches were effective with individuals with severe mental health problems. This was most evident in reducing substance use quantity and frequency behaviours and increasing treatment retention. Given there was a pattern of the effect from the motivational approach to diminish over time, it is recommended that when motivational based approaches are used, there is ongoing repetition through the use of booster sessions, with the intention of maintaining that effect.

Section 4: The way forward

Replication of research findings is considered to be at the heart of science. With the exception of compliance therapy (Kemp et al., 1998), no other motivational based approach has been repeatedly tested for efficacy. Replication of treatment effects is a priority for future research.

I suggest that future research aims to control for the effect of the motivational intervention by comparing one intervention consisting of an integrated psychosocial intervention which includes motivational interviewing with the same integrated intervention which does not include motivational interviewing, thereby controlling for the presence of the motivational intervention. Motivational interviewing is considered as most helpful in the early stages of working with dually diagnosed clients (Barrowclough, Haddock, Fitzsimmons & Johnson, 2006), therefore in such a comparative study the motivational intervention should be administered first. Booster sessions should be regularly incorporated and to measure whether the effect is maintained.

I suggest that future designs recruit a sufficiently large sample of participants with a variety of severe mental health diagnoses so that sub-analyses by diagnosis, and by baseline levels of motivation and substances used, can be performed. Behavioural measures should be the primary outcome, measuring frequency, intensity and quantity of change. Additional measures should include changes in stages of change symptoms, symptomatology, substance dependence and global measures of functioning. This research should seek to explore how varying baseline levels of substance use and type, dependence, and motivation all interact to mediate the efficacy of motivational based approaches upon increasing 'helpful' behaviour and decreasing 'unhelpful' behaviours. Outcomes should be measured immediately after intervention and then at monthly intervals to plot duration of the treatment effect.

The suggestions for future research designs outlined above should aim to contribute to a number of issues. Rather than asking whether motivational based approaches are effective for individuals with SMH problems, I suggest that the question is: i) what contribution

does the motivational interview make to the integrated intervention, ii) are motivational based approaches more effective for those with low rates of motivation at baseline, iii) are other more direct interventions as effective when baseline motivation is high at baseline, and iv) and for how long are motivational based approaches are effective.

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**A comparison of reasons for cannabis use in people with
and without severe mental health problems.**

Word count: 8528

Abstract

The present study examined reasons for cannabis use amongst individuals with and without severe mental health problems. Participants (N=42) included cannabis users with severe mental health problems (N=18) and cannabis users without severe mental health problems (N=23). All participants were interviewed about motives and expectancies of the effects from using cannabis. Findings from the present study were that individuals with severe mental health (SMH) problems did not differ from those without mental health problems in terms of motives for using cannabis; they use for coping, enhancement and social reasons. However individuals with SMH problems differed in that they expected cannabis to be more 'socially and sexually facilitative'. The finding from the qualitative component of the study indicated that only a small minority of individuals with SMH problems used cannabis to help with symptoms of their SMH problem or side effects of medication. Irrespective of mental health status, participants who used cannabis more problematically endorsed more coping and enhancement motives. Interventions aimed at reducing sources of distress, developing more adaptive ways of coping, together with treatments aimed at reducing the limitations for obtaining pleasure may be helpful in reducing enhancement and coping motives amongst more problematic cannabis users with SMH problems.

Introduction

Problems associated with cannabis use amongst individuals with severe mental health problems

There is good evidence to suggest that individuals who have severe mental health (SMH) problems (that is, difficulties that lie on the schizophrenia spectrum) and use cannabis have poorer treatment outcomes than their non-cannabis using counterparts and even relatively minor use can be predictive of poor outcome (for example, Van Os, Bak, Hanssen, Bijl, De Graaf & Verdoux, 2002; Caspari, 1999; Buhler, Hambrecht, Loffler, Van der Heiden & Hafner, 2002). Cannabis is recognised as a drug that when used by people with severe mental health problems may: increase the risk of depression (Patton, Coffey, Carlin, Degenhardt, Lynskey & Hall, 2002); increase psychotic symptoms (for example, Semple, McIntosh & Lawrie, 2005; Arseneault, Cannon, Witton & Murray, 2004; Degenhardt, Hall & Lynskey, 2003; Linszen, Dingemans & Lenior, 1994); exacerbate cognitive impairment and medication side effects (for example, D'Sousa, Abi-Saab, Madonick, Forselius-Bielen, Doesrch, Braley, Gueorguieva, Cooper & Krystal, 2005) and is associated with increased relapses and hospitalisations (Barrowclough, Haddock, Fitzsimmons & Johnson, 2006).

Dixon, Haas, Weiden, Sweeney and Frances, (1990) defined the clinical problem as continued cannabis use frequently exacerbates severe mental health problems, yet many individuals with a SMH problem also derive beneficial effects from cannabis and continue to use it. Epidemiological studies have consistently reported a higher prevalence of cannabis use and misuse in people with severe mental health (SMH) problems compared to the general population (Mueser, Yarnold, Levinson, Singh, Bellack, Kee, Morrison & Yadalam, 1990). Estimates of prevalence based upon data from 53 studies of treatment samples suggest that lifetime cannabis use and abuse rates amongst people with severe mental health problems are 42.1% and 22.5% respectively. Estimates for current use and current misuse are 23.0% and 11.3% respectively (Green, Young & Kavanagh, 2005). A number of methodological variations are likely to have contributed to the range in estimates present in the prevalence literature, notably: sample sizes, participant selection,

diagnostic criteria, definitions of abuse / dependence and changes in patterns of cannabis use over time (Fowler, Carr, Carter & Lewin, 1998).

A recent review of treatments for substance use reduction amongst individuals with SMH problems (Cleary, Hunt, Matheson & Walter, 2008), indicated that motivational interviewing (Miller & Rollnick, 2002) is the most empirically supported intervention. Motivational approaches involve exploring people's motives for using substances and/ or their expectations of what substance use will achieve (Spencer, Castle & Michie, 2002). An understanding of self-reported expectancies and motives that people are consciously aware of is required in order to inform treatment approaches (Graham, 1998). The next section introduces a motivational model of alcohol use. This motivational model aims to utilise self-reported expectancies and motives that people are consciously aware in order to help understand why the general population continue to use alcohol problematically. Subsequently, this motivational model will be applied to help understand why cannabis is continuously used within the SMH population.

The motivational model

An empirically based model of alcohol use by Cox and Klinger (1988) incorporates expectations of the effects of alcohol and motives for using alcohol into its conceptual framework. This model may have been overlooked in explaining reasons for continued cannabis use amongst individuals with severe mental health problems (Spencer et al., 2002). The motivational model posits that individuals are motivated to use alcohol based on the desire to achieve a particular emotional effect, rather than being driven solely by the direct chemical effects or the avoidance of any symptoms of withdrawal. A range of factors may play a part in the likelihood of alcohol being used to achieve such a desired emotional effect: biochemical reactivity (for example, the ability to metabolise alcohol efficiently); personality characteristics (for example, nonconformity or impulsivity traits); environmental influences (for example, cultural acceptability and family/ peer attitudes), and current contextual factors (for example, availability), however it is argued by Cox and Klinger (1988) that the final decision to use alcohol is mediated by cognitive processes. For an individual to use alcohol, first they must have the expectation that using alcohol will achieve a particular emotional effect (cognitive element) and second, the individual must

also place a positive value on achieving this emotional effect; that is they must be motivated. Expectancies and motives are distinct conceptually; expectancies are thought to be more distal to substance use behaviour and motives more proximate (Cooper, 1994). The next section will define these concepts more distinctly.

Drug use expectancies

Drug use expectancies are beliefs that an individual holds about the expected effects from using a drug. These beliefs can be derived from a combination of factors, notably: environmental and cultural influences; interactions with peers; and previous experiences of use (Schafer & Brown, 1991). In terms of influencing substance use behaviour, the congruence of the expected effect with the actual effect is considered to be of minimal significance, rather it is the endorsement of the expected effect that is definitive (Jones, Corbin & Fromme, 2001). It is anticipated that expectations of highly valued outcome (positive expectancies) would increase the probability of cannabis being used, and expectations of undesirable outcomes (negative expectancies) would decrease it (Green, Kavanagh & Young, 2007). Statistically significant associations between cannabis expectancies and patterns of cannabis use have been reported within in-patient substance treatment (Galen & Henderson, 1992), college students (Schafer & Brown, 1991) and adolescents (Aarons, Brown, Stice & Coe, 2001). In general, less problematic cannabis users expected more negative effects from using cannabis which include: 'global negative effects' and 'cognitive and behavioural impairment'. In contrast, more problematic cannabis users reported lower expectations of negative effects and greater expectations of positive effects which include: 'relaxation and tension reduction'; 'social and sexual facilitation'; and 'perceptual and cognitive enhancement' (Aarons et al., 2001).

Deficits in more constructive coping mechanisms and positive expectancies about substance use operate to jointly promote the use of a drug as a coping strategy (Cooper et al., 1988). Problematic substance users are therefore considered to diverge from non-problematic users in their capacity to cope with everyday stressors and in their expectations of a substance as being facilitative (Abrams & Niaura, 1987). From a clinical intervention perspective, drug use expectancies, both positive and negative, are maintained despite incongruence with actual effects. Increasing congruence between expected and

actual effects may reduce the likelihood of cannabis being viewed as facilitative (Hayaki, Anderson & Stein, 2008). This may reduce the likelihood of cannabis being used and serve to reduce the risk of relapse of SMH symptoms.

Drug motives

Whilst an individual must hold a particular expectancy that a desired emotional effect will be achieved before a substance is consumed, they must also be motivated to achieve this specific emotional effect (Leigh, 1990). Cooper, Russell, Skinner and Windle (1992) adapted and developed the motivational model (Cox & Klinger 1988) and introduced the concept of three different motives for using alcohol. These are: Enhancement motives; Coping motives and Social motives. Enhancement motives are defined as the desire to use a substance to experience a particular emotional state rather than modify a pre-existing negative emotional state (e.g. to get high, to have fun; Cooper, Krull, Agocha, Flanagan, Grabe, Orcutt, Jackson & Dermen, 2008). In contrast, coping motives are defined as using a substance to attempt to minimise negative affect and thought to involve a more reactive response precipitated by a negative emotional experience. Coping motives are thought to be more prevalent amongst individuals susceptible to experiencing high levels of negative emotions (Cooper, Frone, Russell & Mudar, 1995). Social motives are defined as substance use primarily for social reasons thereby engaging in customary or normative behaviour (e.g. something to do with friends; Cooper et al., 2008).

Enhancement, Coping and Social motives for drinking are measured in the Drinking Motives Questionnaire (DMQ) (Cooper et al., 1992), outcomes from which indicate that using alcohol to cope is more strongly predictive of heavier and solitary alcohol use and dependence (Cooper et al., 1995). Increased dependence may be understood in the context that individuals using for coping motives are less capable of exercising volitional control over precipitating factors (Cooper et al., 1992). In contrast, mood states, either positive or negative, do not directly predict drinking for enhancement motives (Cooper et al., 1995). Enhancement motives are more likely to be related to relatively heavier, more sporadic periods of drinking, i.e. drinking to intoxication within a social context (Cooper, 1994), but are less likely to be directly related to problematic alcohol use (Cooper, 1994). Social

motives are associated with moderate drinking in a social context and are unlikely to be related to problematic use (Cooper, 1994). Given the empirical support for the motivational model of alcohol use, it is thought that this model has been somewhat overlooked when examining cannabis use amongst individuals with SMH problems (Spencer et al., 2002). The next section will summarise research that has been conducted on cannabis use amongst individuals with SMH problems.

Research on cannabis use amongst individuals with severe mental health problems

Research investigating cannabis use amongst individuals with SMH problems has tended to examine self-reported reasons for using cannabis (e.g. Addington & Duchak, 1997; Fowler, Carr, Carter & Lewin, 1998; Goswami, Singh, Mattoo & Basu, 2003; Schofield, Tennant, Nash, Degenhardt, Cornish, Hobbs & Brennan, 2006) or reasons for using a variety of different substances, of which cannabis was one (e.g. Test, Wallisch, Allness & Ripp, 1989; Dixon, Haas, Weiden, Sweeney & Frances, 1991; Warner, Taylor, Wright, Sloat, Springett, Arnold & Weinberg 1994; Baigent, Holme & Hafner, 1995; Gearon, Bellack, Rachbeisel & Dixon, 2001). The methodologies utilised in the above studies either asked participants open-ended questions about their reasons for using cannabis, or participants were asked to select reasons from predetermined lists. A recent review of this literature (Dekker, Linzen & de Haan, 2009) reported that regardless of the methodology used, the majority of the self-reported reasons can be categorised in to three main groups: enhancement motives, motives to cope with negative emotional affect, and social motives. A minority of participants reported using cannabis to relieve symptoms and medication side effects stemming from SMH problems (e.g. “to decrease voices, to decrease hallucinations” Addington et al., 1997; Schofield et al., 2006). I suggest that the three main motives reported by Dekker et al., 2009 correspond closely with the three motives implicit to the motivational model (Cooper et al., 1992), and can be measured by an adapted version of the DMQ (Cooper et al., 1992) and the Drug Use Motives Measure DUMM (Meuser et al., 1995).

Numerous studies have also provided qualitative data on the subjective expectations from using cannabis (Green et al., 2007; Dixon et al., 1991; Addington et al., 1997; Goswami et al., 2003; Baigent et al., 1995; Schofield et al., 2006). Outcomes from these studies

indicated that positive expectations of effects on mood, anxiety, relaxation, energy and socialisation were reported together with a number of negative expectancies (Dekker et al., 2009). These expectations correspond to many of the items on the Marijuana Effect Expectancy Questionnaire, a scale designed to measure the expected effects from using cannabis and validated amongst individuals with SMH problems (Schafer & Brown, 1991).

Two studies to date have applied the motivational model to substance use amongst individuals with SMH and have used standardised measures to examine motives and expectancies problems. The first, Mueser, Nishith, Tracy, DeGirolamo and Molinaro (1995) assessed expectancies and motives amongst 70 inpatients and outpatients with SMH problems who used variable quantities of a range of different substances. Motives were measured by the Drug Use Motives Measure (DUMM). Cannabis expectancies were measured using the Marijuana Effect Expectancy Questionnaire (MEEQ). The outcomes suggested that coping and enhancement motives (but not social motives) were more strongly associated with drug-related difficulties. The study also found that a history of / or recent drug abuse was associated with increased endorsement of 'social and sexual facilitation' and 'perceptual and cognitive enhancement', both of which are positive expectancy domains. The second study (Spencer et al., 2002) interviewed 69 participants with SMH diagnoses and assessed the motives for using a range of substances using the Drug Motives Questionnaire (DMQ). They also found that coping and enhancement motives, but not social motives, were associated with substance dependence. A low endorsement of an additional motive 'to relieve positive symptoms and medication side effects' was also reported, but this was not associated with substance dependence. Evidence that coping and enhancement motives for substance use were associated with levels of dependence provides support for the proposition that substance use amongst individuals with SMH problems can be understood using the motivational model.

A strength of the studies by Mueser et al. (1995) and Spencer et al. (2002) is that unlike previous work in this area, they employed standardised measures. However a limitation was that they did not employ a comparison group, a criticism applicable to several studies investigating reasons for substance use amongst SMH samples (e.g. Dixon et al., 1991; Fowler et al., 1998; Fowler et al., 1998) stated that direct comparison of outcomes with

studies that use general population samples is potentially misleading since the demographic characteristics of the two groups may differ substantially. To this end, Fowler et al. (1998) suggested the employment of a comparison group which would normally consist of 'young to middle aged, predominantly male, single, unemployed persons'. Two studies to date have incorporated an appropriate comparison group (Green, Kavanagh & Young, 2004; Schaub, Fanghaenel & Stohler, 2008). Green et al. (2004) used a qualitative self report methodology and found that participants with psychosis were more likely to use cannabis to cope with negative affective states and reduce boredom. They concluded that interventions may need to address poverty of reinforcement and reduce social exclusion and increase social activity. Schaub et al. (2008) implemented a quantitative methodology (an non-standardised list of motives) and reported that participants with schizophrenia were more likely to use cannabis to reduce boredom. A limitation of these two studies was that they did not utilise standardised measures.

Present study

The present study aimed to address the limitations of studies that either have not used a comparison group (Mueser et al., 1995; Spencer et al., 2002) or have not used standardised measures (Green et al., 2004; Schaub et al., 2008) and aimed to contribute to the understanding of what drives individuals with SMH to continue to use cannabis by directly comparing motives and expectancies amongst cannabis users with and without SMH problems.

To compare the motives and outcome expectancies amongst cannabis users with and without SMH problems, the present study recruited two groups who both used comparable quantities of cannabis, the first group were diagnosed with SMH problems (SMH group); the second group were not diagnosed with SMH problems (non-SMH group). The study measured and compared the expectancies and motives for using cannabis reported by participants in the two groups, using standardised measures.

The cannabis motives measure (DUMM) does not assess for motives related to helping with SMH symptoms or SMH medication side effects. However studies have reported a

small proportion of individuals with SMH problems report motives concerning medication side effects or to help with the SMH symptoms directly (for example: Warner et al., 1994; Fowler et al., 1998). The present study therefore included an additional qualitative component to enable participants to report any additional motives that were either related to the experience of having a SMH or additional motives that were not already included in the DUMM.

The second aim of the study was to compare the motives and expectancies of (i) high dependent and low dependent cannabis users and (ii) high use and low use cannabis users. To achieve this, all participants regardless of mental health status were allocated into either high or low groups using a 'median split' technique.

Hypotheses

The primary hypothesis was that there would be no difference between the SMH and the non-SMH group on measures of motives or endorsement of negative and positive expectancies from using cannabis. The primary hypothesis is therefore expressed in the null form.

The secondary hypothesis was that regardless of mental health status, participants who were categorised into high cannabis usage and participants categorised into high cannabis dependence would endorse more coping and enhancement motives, more positive expectancies and less negative expectancies compared to their low usage and low dependent counterparts.

Method

Sampling and participants

Two groups were recruited for the current study. The first group included participants (N=18) with a diagnosis of severe mental health problems (SMH group) and who recently used cannabis. All participants in the SMH group were recruited between 2009 and 2010. Participants were recruited through four Assertive Outreach Teams (AOT) located within Birmingham and Solihull Mental Health Foundation Trust and three AOTs located within Coventry and Warwickshire NHS Trust. AOTs provide intensive support for service-users with SMH problems who are 'difficult to engage' within traditional community mental health teams. Intensive input is available from the service to sustain engagement with care and support offered at times suited to the service user either in their home or other community setting. Support from the service is not time-limited and is often provided for years rather than months (Bond, 1991).

The second group consisted of participants (N=23) without SMH problems (non-SMH group). Participants in the comparison group were recruited from a substance misuse service located within Birmingham and Solihull Mental Health Found NHS Trust between 2009 and 2010. The substance misuse service was predominantly orientated towards supporting individuals with both past and current heroin-use difficulties, although individuals with other alcohol and drug difficulties were also supported. Service users attended the service in an outpatient setting and engaged in harm reduction interventions. The vast majority of service users would not be diagnosed with a severe mental health problem, consequently this service was considered an appropriate source from where to recruit a comparable sample of cannabis users who did not have SMH problems.

Ethical approval for the study was granted by the Local Research Ethics committee (Appendix A). Research and development approval was granted by the appropriate NHS Trusts (Appendix A)

Severe mental health group inclusion criteria

To be included in the SMH group participants had to meet the following criteria:

i) to be a user of the assertive outreach team service; ii) to have a diagnosis of a severe mental health problem (i.e. a diagnosis on the schizophrenia spectrum); iii) to have used cannabis at least once within the previous month. Non-severe mental health diagnoses (for example: depression, anxiety) or diagnoses related to substance use were not criteria for exclusion. Participants who displayed acute psychotic symptoms or signs of acute intoxication at the time of assessment were excluded.

Non-severe mental health group inclusion criteria

To be included in the non SMH group potential, participants had to meet the following criteria: i) to be a user of the substance misuse service; ii) to not have a diagnosis of a severe mental health problem and iii) to have used cannabis at least once within the last month. Non-severe mental health diagnoses (for example: depression, anxiety) or diagnoses related to substance use or the use of other substances were not criteria for exclusion. Participants were excluded if they had a severe mental health diagnosis.

Participants displaying acute mental health symptoms or signs of acute intoxication at the time of assessment were excluded.

Procedure

Potential participants who met the criteria outlined above were identified by the team within their relevant service and the presence of a SMH diagnosis was ascertained from the service users' clinical records by their care co-ordinators. Potential participants were then approached by their care co-ordinators and information concerning their cannabis usage within the 30 days prior was requested. If potential participants fulfilled the inclusion criteria, their care co-ordinators gave them a Participant Information Sheet (Appendix B). This informed potential participants of the purpose of the study and provided the basis for discussion as to whether they were interested in participating. Individuals who were interested in participating informed their care co-ordinator who then informed the principal researcher. The potential participant and their care co-ordinator met with the principal researcher and were given a chance to discuss the information sheet and clarify any questions they may have had regarding the research. It was emphasised that any

information provided by them during the assessments would be held confidentially, that they could withdraw from the study at any time and withdrawal would in no way impact any current or future treatment they may receive. Participants were contacted individually to arrange appointments either at the location where they received their service or at their own accommodation, depending on their preference and an assessment of risk. At the start of each research interview, participants were informed that they could stop the interview, take a break or rearrange their appointment at any time should they wish to do so. If the participants felt distressed by any of the assessments, they were encouraged to express these concerns to the researcher. If it was the researcher's opinion that the participant was either distressed or at risk at any point before, during or after the assessment, then the care co-ordinator was informed.

Participants who agreed were asked to sign a Consent Form (Appendix C). Permission was given by the participant to access their notes to confirm that they met the inclusion criteria for the study. All participants were volunteers and received a nominal amount of £5 voucher to reimburse them for their travel time and expenses incurred. The amount was assumed to be small enough not to influence response to the intervention but adequate to reduce non-compliance caused by any inconvenience in attending sessions.

Measures

A battery of measures was administered by the interviewer (principal researcher). The administration of the questionnaires involved the interviewer reading out each item to the participant thereby ensuring consistency and ensuring that the participant understood each item. In addition to the five questionnaires administered to the participants, the interviewer also asked each participant in both groups an open ended question "Are there any other reasons you use cannabis other than those you have already been asked or you have already stated?" and responses were recorded verbatim. This assessment process took approximately 40 minutes per participant to complete.

General Health Questionnaire

Non-severe mental health was measured using The General Health Questionnaire version 28 (GHQ-28) (Goldberg, Gater, Sartorius, Ustun, Piccinelli, Gureje & Rutter, 1997). The

GHQ (28) is a measure of four common mental health domains: depression, anxiety, somatic symptoms and social withdrawal. The Likert scoring method is advocated for research as it is more sensitive to small variations. The total score for the scale ranges from 0 to 84, a score greater than 23 is evidence of 'caseness' (Goldberg et al., 1997). Validity assessments of the scale and items were highly satisfactory (Cronbach's alpha 0.91) (Appendix D)

Substance use in previous 30 days

History of substance use was gathered using 'section B' of the Maudsley Addiction Profile (MAP) (Marsden, Gossop, Stewart, Best, Farrell, Lehmann, Edwards, & Strang 1998). The MAP is a brief, interviewer administered questionnaire designed for treatment outcome research applications. The MAP assesses substances use which is broadly representative of the treatment seeking population in the UK. Intensity and frequency of substance use was assessed from the verbatim report of the amount consumed on a typical 'using day' in the past month (given by retail price, with prompting as required). With the exception of alcohol, the usual route(s) of administration were recorded using the following categories: oral, intranasal, inhalation and injection. Validity assessments of the scale and items were highly satisfactory (Cronbach's alpha 0.88) (Marsden et al., 1998). (Appendix E)

Cannabis dependency

Cannabis dependency was measured using the Leeds Dependence Questionnaire (LDQ) which was adapted to identify dependence cannabis only rather than alcohol and other drugs (Raistrick, Bradshaw, Tober, Weiner, Allison, & Healey 1994). The LDQ is a 10-item, continuous, self report measure of dependence that is not substance specific. Outcomes are reported on a scale from 0 (little or no dependence) to 30 (high dependence). There are no formal cut off points indicating presence or absence of dependence. Validity assessments of the scale and items were highly satisfactory (Cronbach's alpha was 0.94). Test-retest reliability was found to be 0.95 (Raistrick et al., 1994). (Appendix F)

Motives for using cannabis

The Drug Use Motives Measure (DUMM) was adapted by Mueser et al. (1995) from the Drinking Motives Measure (Cooper et al., 1992). The DUMM measures three different

motives for using cannabis: coping motives, social motives and enhancement of positive effect and contains 15 items, with each item rated on a 4 point Likert scale. It is validated in the general, primary substance using and psychiatric population and has good internal reliability with a coefficient alpha of 0.77 (Mueser et al., 1995). The DUMM does not measure motives that may be specifically related to an individual's severe mental health problems (for example, to medicate the symptoms of schizophrenia or to help with side-effects from medication). To measure any SMH related motives, after completion of the DUMM, the SMH and non-SMH participants were asked an open-ended question "Are there any other reasons you use cannabis other than those you have already been asked or you have already stated?" and responses were recorded verbatim. (Appendix G)

Expectancies from using cannabis

The Marijuana Effect Expectancy Scale (MEEQ) was developed by Schafer et al. (1991) and contains 70 items describing the common effects of cannabis. Participants are asked to agree or disagree with each item according their current beliefs. The instrument includes five subscales, two measure negative effects (cognitive and behavioural impairment; global negative effects); three measure positive effects (relaxation and tension reduction; social and sexual facilitation; perceptual and cognitive enhancement). The measure is validated in both the general, primary substance using, and psychiatric population and has good internal reliability. It has a high test-retest reliabilities and good internal reliability with a coefficient alpha of 0.84 (Mueser et al., 1995). (Appendix H)

The Data Analysis

Analyses for the current study were performed using SPSS v.18 for Windows. The normality of distribution was assessed using the Kolmogorov- Smirnov test. Where outliers were present, they were removed and the analysis re-run, however the results remained the same. Levene's test for homogeneity of variance was used to test the data for homogeneity. Multivariate analysis was conducted to explore the data in this study.

In order to examine for the relationship between cannabis dependence, cannabis usage and the increased endorsement of coping motives, two median split procedures were performed. The median split technique allocates participants regardless of mental health status to either a high group or a low group depending upon whether they reported a score that was either above or below the median average. The median split was carried out for cannabis dependence scores (LDQ) which created high and low cannabis dependent groups and also for cannabis usage scores (MAP) which high and low cannabis usage groups.

The data from the qualitative section where participants were asked "Are there any other reasons you use cannabis other than those you have already been asked or you have already stated?" was recorded verbatim and these responses were then coded according to broad themes using a rudimentary thematic analysis.

Presentation of results

The results of the severe mental health group (SMH) group and the non-severe mental health group (non-SMH) are presented below and include: demographic characteristics; clinical characteristics (depression, anxiety, somatic symptoms and social withdrawal); substance use characteristics (frequency and intensity of all substances used within the previous 30 days, levels of cannabis dependency, cannabis motives and cannabis expectancies).

Results

For both the SMH group and the non-SMH group, a total of 67 and 32 potential participants respectively were identified who fulfilled the inclusion criteria and were approached by their care coordinator. Adhering to ethical procedure, the care co-ordinator, using the participant information sheet as guidance, discussed with the potential participant the purpose of the study and the implications of participation. Forty-nine potential participants in the SMH group and nine potential participants in the non-SMH group refused participation, most frequently citing a lack of interest in participating in any research.

Demographic characteristics

The demographic characteristics of the two samples are presented in Table 1. The SMH group for this study comprised 18 participants all of whom were male, with a mean age of 39.44 years (SD = 6.74). The non – SMH group for this study comprised 20 male (87%) and 3 female (13%) participants, with a mean age of 30.43 years (SD = 4.97). One-way ANOVA between the two samples showed significant differences in age ($F_{(1,39)} = 24.25$, $P < 0.01$) with an older mean age in the SMH group compared to the non-SMH group. The SMH and non-SMH groups did not differ on gender or ethnicity.

Mental health characteristics

On measures of general mental health, the groups did not differ on depression, anxiety, somatic symptoms or social withdrawal, suggesting the groups were comparable. Information was gathered on the severe mental health diagnoses of both groups by accessing their clinical file (electronic and paper). Of the participants in the SMH group, 50% were diagnosed with paranoid schizophrenia, 44% were diagnosed with schizophrenia and 6% were diagnosed with schizoaffective disorder. None of the participants in the non-SMH group were diagnosed with severe mental health problems.

Table 1: Demographic and mental health characteristics of the severe mental health and non-severe mental health groups.

Measure	Non SMH Group N=23	SMH Group n=18	P value
Age¹ (years)	30.43 (4.97)	39.44 (6.74)	$F_{(1,39)} = 24.25$ $p < 0.01$
Range (years)	19	25	
Gender			
Male	20	18	-
Female	3	0	-
Ethnicity			
White UK	18 (78.3%)	13 (72.2%)	-
Asian	1 (4.3%)	1 (5.6%)	-
White/Black Caribbean	2 (8.7%)	1 (5.6%)	-
Black Caribbean	2 (8.7%)	2 (11.1%)	-
Mental Health Diagnosis			
Schizophrenia	-	8 (44%)	-
Paranoid - Schizophrenia	-	9 (50%)	-
Schizophrenia Schizoaffective	-	1 (6%)	-
General Health Questionnaire			
Anxiety ¹	6.17 (3.75)	4.28 (3.90)	$F_{(1,39)} = 2.48$ n.s
Depression ¹	2.65 (2.88)	3.50 (5.27)	$F_{(1,39)} = 0.43$ n.s
Somatic ¹	5.48 (4.05)	5.56 (3.39)	$F_{(1,39)} = 0.00$ n.s
Social Withdrawal ¹	5.87 (2.71)	6.56 (2.45)	$F_{(1,39)} = 0.69$ n.s
Total ¹	20.13 (9.92)	19.89 (11.14)	$F_{(1,39)} = 0.00$ n.s

¹Mean and (Standard deviation)

Substance use characteristics

Substance use in last 30 days

The SMH and non-SMH groups did not differ significantly on substances used in the previous 30 days, suggesting the substance use behaviour of the two groups was comparable. A number of non-statistically different variations in substance use included: the SMH group reported consuming more cannabis per day but using for fewer days. Whilst both groups used alcohol for similar numbers of days, the SMH group consumed more alcohol per day. The non-SMH group used heroin and crack on more days and more per day compared to the SMH group. Cocaine and amphetamines were used by a small minority: only two participants used cocaine in each group; only one participant in the SMH group used amphetamines. The minority of participants who used cocaine and amphetamines tended to use large quantities. These outliers were not removed, but instead are reflected in standard deviation scores reported in Table 2 (below). None of the participants in either group reported using any other illicit substance in the previous 30 days.

Cannabis dependence

The SMH group and the non –SMH group did not differ on measures of cannabis dependency suggesting the two groups were comparable. In interpreting the clinical severity of these results, the LDQ does not employ cut-off scores for dependence. Comparing the mean scores (9.39 and 7.57) in the present study with the mean scores (18.65) reported in a study of 300 primarily cocaine and opiate users (Kelly, Magill, Slaymaker & Kahler, 2010) suggests that neither the SMH nor the non SMH group were likely to have been considered to be severely dependent upon cannabis.

Cannabis use history

The SMH group and the non –SMH group did not differ on measures of age when cannabis was first used and when cannabis was first used regularly. However the SMH group had used cannabis for a longer duration compared to the non-SMH group ($F_{(1,39)} = 24.25$, $P < 0.01$). This difference is considered to reflect the increased mean age of the SMH group compared to the non-SMH group.

Table 2: Table showing measures of current substance use, cannabis dependence and cannabis use history.

Measure	Non SMH Group N=23	SMH Group n=18	P value
Substance use in prior 30 days (money spent)			
Cannabis ¹ (£)	146.86 (160.12)	185.50 (218.89)	F _(1,39) = 0.42 n.s
Range	446	742	
Alcohol ¹ (units)	132.91 (147.27)	154.11 (205.74)	F _(1,39) = 0.14 n.s
Range	600	750	
Heroin ¹ (£)	97.39 (203.00)	21.66 (52.04)	F _(1,39) = 2.37 n.s
Range	900	200	
Crack Cocaine ¹ (£)	77.39 (146.94)	46.66 (146.00)	F _(1,39) = 0.44 n.s
Range	600	600	
Cocaine ¹ (£)	10.43 (36.61)	6.66 (28.28)	F _(1,39) = 0.89 n.s
Range	160	120	
Amphetamines ¹ (£)	0.0 (0.00)	66.66 (282.84)	F _(1,39) = 1.28 n.s
Range	0	1200	
Leeds Dependency Questionnaire			
Mean ¹	7.57 (5.28)	9.39 (6.86)	F _(1,39) = 0.92 n.s
Cannabis use history			
Age first used cannabis ¹	14.17 (3.39)	16.17 (3.79)	F _(1,39) = 3.14 n.s.
Age started to use regularly ¹	17.65 (6.05)	18.44 (4.91)	F _(1,39) = 0.20 n.s.
Duration using cannabis			
Years using cannabis ¹	16.29 (4.80)	23.27 (7.4)	F _(1,39) = 13.46 p<0.01
Years using cannabis regularly ¹	12.78 (6.61)	21.00 (9.00)	F _(1,39) = 11.36 p<0.01

¹ Mean and (Standard deviation)

Hypothesis one - motives and expectancies from using cannabis

The primary hypothesis was that there would be no difference between the SMH and the non-SMH group on motives for using cannabis or difference on the endorsement of negative and positive expectancies from using cannabis.

Motives

A one-way between groups ANOVA was conducted to explore the impact of group membership on the endorsement of enhancement, coping and social motives, as measured by the DUMM. There was not a statistically significant difference at the $p < 0.5$ level in enhancement, coping or social motives scores for the two groups. This indicates that there were no significant differences in motives for using cannabis between the SMH and the non-SMH group.

Expectancies

A one way between groups ANOVA was conducted to explore the impact of group membership on positive, negative and neutral expectancies. The two groups differed on one of the three positive expectancies: the SMH group expected greater 'social and sexual facilitation' ($F_{(1,39)} = 5.33 P < 0.05$). The two groups differed on one of the two negative expectancies: the SMH group expected lesser 'cognitive and behavioural impairment' ($F_{(1,39)} = 5.23 P < 0.05$). In summary, the SMH group expected increased 'social and sexual facilitation' from using cannabis and reduced 'cognitive and behavioural impairment' from using cannabis compared to the non-SMH group.

Table 3: Comparisons of motives and expectancies of the severe mental health group and the non-severe mental health group.

Measure	Non SMH Group N=23	SMH Group n=18	<i>P</i> value
Motives for cannabis use			
Enhancement ¹	12.17 (3.20)	12.67 (2.99)	$F_{(1,39)} = 0.25$ n.s
Social Reasons ¹	10.70 (2.47)	11.56 (3.89)	$F_{(1,39)} = 0.74$ n.s
Coping ¹	12.09 (4.17)	11.28 (4.24)	$F_{(1,39)} = 0.37$ n.s
Cannabis expectancies			
Relaxation /tension reduction ¹	6.08 (2.23)	6.01 (1.78)	$F_{(1,39)} = 0.01$ n.s
Social /sexual facilitation ¹	3.91 (2.60)	5.72 (2.32)	$F_{(1,39)} = 5.33$ $p < 0.05$
Perceptual /cognitive enhancement ¹	4.78 (2.57)	5.38 (2.40)	$F_{(1,39)} = 0.59$ n.s
Global negative effects ¹	2.86 (2.09)	3.16 (2.70)	$F_{(1,39)} = 0.15$ n.s
Cognitive behavioural impairment ¹	8.43 (2.92)	6.00 (3.89)	$F_{(1,39)} = 5.23$ $p < 0.05$

¹ Mean and Standard deviation

Hypothesis Two - cannabis dependency and cannabis usage

The secondary hypothesis was that regardless of mental health status, participants who were categorised into high cannabis usage and participants categorised into high cannabis dependence would endorse more coping and enhancement motives, more positive expectancies and less negative expectancies compared to their low cannabis usage and low cannabis dependent counterparts.

Motives and cannabis dependency

A two way between groups ANOVA was conducted to establish whether there was a difference between cannabis dependency, mental health status and coping, enhancement and social motives between the two groups. A significant main effect was observed for coping ($f_{1,37} = 5.08$; $p < 0.05$) and enhancement ($f_{1,37} = 13.66$; $p < 0.01$) and cannabis dependency. No other significant main or interaction effects were observed. In summary, the high dependent group endorsed more coping and enhancement motives than the low dependent group.

Motives and cannabis usage

A two way between groups ANOVA was conducted to establish whether there was a difference between cannabis usage, mental health status and coping, enhancement and social motives in the two groups. A significant main effect was observed for coping ($f_{1,37} = 4.88$; $p < 0.05$) and cannabis usage status. The value for enhancement motive approached being significant (p value of $p = 0.07$). No other main or interaction effects were reported. In summary, the high usage group endorsed more coping motives compared to the low usage group.

Expectancies and cannabis dependency

A two way between groups ANOVA was conducted to establish whether there was a difference between cannabis dependence, mental health status and cannabis expectancies in the two groups. Of the positive expectancies, a significant interaction effect for 'tension reduction and relaxation', severe mental health status and dependency group was observed ($F_{3,37} = 4.60$; $p < 0.05$). No other main or interaction effects were reported. In summary, increased dependence was associated with reduced expectations of 'tension reduction and

relaxation' amongst SMH participants. The opposite was observed amongst the non-SMH group, increased dependency was associated with increased expectations of 'tension reduction and relaxation'.

Of the negative expectancies, a significant interaction effect for 'cognitive behavioural impairment', mental health status and dependency group was observed ($F_{3,37} = 12.51$; $p < 0.01$). No other main or interaction effects were reported. In summary, amongst the SMH group, increased dependency was associated with increased expectations of 'cognitive and behavioural impairment'. The opposite was observed amongst the non-SMH group, increased dependency was associated with decreased expectations of 'cognitive and behavioural impairment'.

Expectancies and cannabis usage

A two way between groups analysis of variance was conducted to establish whether there was a difference between cannabis usage status, mental health status and cannabis expectancies. Of the positive expectancies, a significant interaction effect for 'tension reduction/relaxation', mental health status and cannabis usage status was observed ($F_{3,37} = 6.27$; $p < 0.05$). Therefore amongst the SMH group, increased cannabis usage was associated with reduced expectations of 'tension reduction and relaxation'. The opposite was observed amongst the non-SMH group: increased cannabis usage was associated with increased expectations of 'relaxation and tension reduction'. A significant main effect was observed for 'social and sexual facilitation' and mental health status ($F_{3,37} = 5.55$; $p < 0.05$). Therefore irrespective of cannabis usage status, significantly more SMH participants expected 'social and sexual facilitation effects' compared to the non-SMH group. Of the two negative expectancies, a significant main effect was observed for 'cognitive/behavioural impairment' and cannabis usage group. ($F_{3,37} = 4.85$; $p < 0.05$). Regardless of mental health status, the higher usage group expected significantly less 'cognitive behavioural impairment' from using cannabis compared to the low usage group. No other main or interaction effects were reported.

Qualitative results

The DUMM does not assess for motives related to SMH problems, therefore after administering the DUMM a qualitative question was asked to all participants “Are there any other reasons you use cannabis other than those you have already been asked or you have already stated?” Nineteen responses from the SMH group were recorded verbatim. These responses were then coded according to broad themes using a rudimentary thematic analysis. Five broad themes were identified. These are outlined below together with the participants’ responses.

Theme 1: Motives to cope with SMH related problems

Two participants reported using cannabis to reduce auditory hallucinations: “I use cannabis to reduce the voices I hear” and “it calms the voices”. One participant reported using cannabis to compensate for the side effects of SMH related medication, “I use it to speed up my thinking because the medication slows my thinking down”.

Theme 2: Motives to increase cognitive or behavioural performance

Three responses reported using cannabis to help improve cognitive performance: “I use it to help me concentrate when I am on the computer.... playing games”; “Smoking focuses my mind when I am doing something” and “I use cannabis because I find it easier to concentrate on things when I smoke”. One participant’s response concerned using cannabis to increase their motivation. “Cannabis increases my motivation to do things as I can’t do anything until I have had a smoke”.

Theme 3: Coping motives

Two participants’ responses which were categorised as motives to cope with negative affect: “it stops me from getting bored” and “cannabis helps me sleep”. One participant reported using cannabis “to help with ‘coming down’ from amphetamines”.

Theme 4: Enhancement motives

Two responses were classed as motives related to enhancement of positive effect these were: “cannabis makes the music I listen to sound better” and “cannabis enhances the high from the vodka that I drink”.

Theme 5: Attributions

Six responses were categorised as attributions for using cannabis use rather than motives for using cannabis, these were “It’s just a habit, because I’m addicted, because it’s available so I have it”. Attributions have been distinguished from motives within the alcohol literature (Young & Knight, 1989).

Discussion

The present study was the first to use standardised measures to compare cannabis motives and expectancies amongst two groups, one with severe mental health problems and one without. The two groups reported comparable levels of cannabis use, cannabis dependence and non-severe mental health. The two groups did differ significantly on mean age and hence were not comparable on this characteristic.

Primary hypothesis

The primary hypothesis was that the SMH group and non-SMH group would not differ on the motives and expectancies endorsed.

Motives

On quantitative measures of the motives or proximal reasons for using cannabis, the SMH and non-SMH group did not differ significantly and therefore the primary hypothesis was partially supported. The scores reported on the DUMM by both groups are considered comparable to the scores reported on the DUMM amongst individuals with SMH and recent drug use (14.69 positive enhancement; 12.37 for coping with negative emotions and 11.56 for social motives) (Mueser et al., 1995). The outcome of the present study did not support the results of Schaub et al. (2008) or Green et al. (2004) who found that significantly more SMH participants endorsed 'boredom' as a reason for smoking cannabis compared to non-SMH participants. Whilst the motives measure used in the present study (DUMM) does not include an item that specifically addresses 'boredom' as a motive for using cannabis, in the qualitative self-report component of the present study, the motive of 'boredom' was endorsed by a very small minority of participants (one participant in the SMH group and one participant in the non-SMH group). Additional outcomes from the qualitative data indicated that a small minority of participants with SMH problems (3 out of 18 participants) reported motives for using cannabis that were related to either their SMH symptoms or side effects of their SMH medications. This finding replicated outcomes reported in previous studies evaluating motives amongst individuals with SMH problems which used a qualitative methodology (for example: Fowler et al., 1998; Dixon et al., 1990; Green et al., 2004).

The clinical implications of the findings on motives from the present study are that given motives do not differ significantly between SMH and non-SMH groups, then the treatment approaches that have been developed for non-severe mental health substance users which focus on the motivational underpinnings of substance use behaviour (for example, relapse prevention and motivational interviewing: Marlatt & Gordon, 1985; Miller & Rollnick, 2002) may also be of benefit to people with severe mental health problems. The clinician, in their assessment of the service user's motives for using cannabis, should be vigilant for a small minority that may use cannabis for SMH related reasons. Clinicians should address these motives, thus reducing the need for patients to use cannabis, and therefore reducing the risk of relapse. The application of such interventions to individuals with SMH problems may require adaption to take account of any cognitive or affective difficulties they may experience (Barrowclough et al., 2006).

Expectancies

The outcomes from the measure of cannabis expectancies (distal beliefs about the effects that might be experienced from using cannabis), indicated that the SMH group were more likely to expect cannabis to be 'socially and sexually facilitative'. These expectancies were prevalent amongst all SMH participants regardless of cannabis use and dependency status and therefore the primary hypothesis was not fully supported. In understanding this finding, expectancies can be derived from a combination of environmental and cultural influences, interactions with peers and previous experiences of use (Schafer & Brown, 1991). It may be that individuals with SMH are exposed to environments where cannabis is viewed as being socially and sexually facilitative and these beliefs are then internalised. Evidence suggests that individuals with schizophrenia have reduced opportunities for social activity and may experience a loss of social status resulting from the stigma of having a SMH problem (Birchwood, Trower, Brunet, Gilbert, Iqbal, Jackson, 2007). Cannabis use may represent a non-stigmatising route through which increased social interaction and social status may be achieved, with a lack of availability of more adaptive approaches. It is hypothesised that beliefs about cannabis may develop through exposure to other people who may hold beliefs that cannabis is socially and sexually facilitative via cannabis-using social networks or ward environments. This exposure may occur either

before or after the onset of SMH problems. Over time, an individual may also form the belief that cannabis is socially and sexually facilitative.

The SMH group endorsed fewer expectancies of ‘cognitive/behavioural impairment’ compared to the non-SMH group. In understanding this finding, evidence suggests that individuals with SMH problems frequently experience a number of cognitive deficits (for example, memory problems, attention deficits, difficulties in abstract thought, executive functioning) as well as behavioural impairments (for example, apathy and negative SMH symptoms Berenbaum, Kerns, Vernon, & Gomez, 2008). It is hypothesised that existing cognitive and behavioural impairment may make any additional cognitive and behavioural impairment, as a result of smoking cannabis, increasingly difficult to detect. Through repeated exposure to cannabis-using SMH peers who may hold beliefs that cannabis does not cause ‘cognitive/behavioural impairment’. I would suggest that over time, an individual exposed to this environment may then also be less inclined to expect cannabis to be cognitive or behavioural impairing.

In terms of the clinical implications of these findings, individuals are more likely to use a substance when they hold overly positive expectancies about its effect (Aarons et al., 2001). Overly positive expectancies about the social and sexual facilitation and cognitive and behavioural impairment from using cannabis may be counterbalanced through interventions such as cognitive restructuring (Beck, 1975) which aims to replace counterfactual beliefs with more adaptive evidence-based beliefs. The results of a study by Green, Kavanagh and Young (2007) indicate that when individuals with psychosis become more aware of the negative outcomes of cannabis they are able to reduce the frequency of their cannabis use. In conclusion, motives for cannabis use do not differ between the SMH and non-SMH group, however expectations do differ as the SMH group expect more ‘social and sexual facilitation’ and expect less ‘cognitive behavioural impairment’ from using cannabis, consequently the primary hypothesis is not fully supported.

Secondary hypothesis

The secondary hypothesis that participants categorised as either more cannabis dependent, or as higher users of cannabis would endorse more coping and enhancement motives, more positive expectancies, and fewer negative expectancies compared to participants that are less dependent or low cannabis usage.

Motives

The findings partially supported this hypothesis. Regardless of mental health status, high cannabis-dependent participants endorsed both ‘coping’ and ‘enhancement’ motives significantly more often than the low cannabis dependent group. The high cannabis usage group endorsed more ‘coping’ motives compared to the low usage group (the outcome for enhancement approached being significant). These outcomes suggest that cannabis use is not differentially rooted in the regulation of negative and positive emotions amongst individuals with and without SMH problems but is differentially rooted in the regulation of negative and positive emotions amongst individuals with higher levels of cannabis dependency and usage. This finding lends credence to a motivational perspective (Cox & Klinger, 1988) and highlights its utility in understanding problematic cannabis use amongst individuals with SMH problems. The present finding supports other research carried out amongst the SMH population. Mueser et al. (1995) and Spencer et al. (2002), both found that amongst participants with SMH, more problematic use was associated with both increased ‘coping’ and ‘enhancement’ motives.

The clinical implications of the present study suggest that motives associated with more problematic cannabis use appear to be related to coping with negative affect (i.e. the relief of dysphoria/ distress) and enhancement (i.e. the pursuit of pleasurable activities). Interventions aimed at reducing sources of dysphoria / distress directly and/or developing more adaptive ways of coping with these stressors may be helpful for reducing coping motives. Treatments aimed at developing more adaptive ways of obtaining pleasure, reducing the limitations for obtaining pleasure, which may involve facilitating less restricted lifestyles or addressing circumstances associated with marginalisation (Birchwood et al., 2007) may be helpful in reducing enhancement motives. The reduction

of such motives may reduce the inclination to use cannabis which may then reduce the risk of relapse.

Expectancies

It was hypothesised that more problematic cannabis use would be associated with increased positive expectancies and decreased negative expectancies about the effects of cannabis.

This hypothesis was not supported. Amongst the SMH group, there was no difference between problematic and non-problematic cannabis users in endorsement of ‘perceptual and cognitive enhancement’, ‘social and sexual facilitation’ (as discussed above) and ‘global negative effects’. However, two findings amongst the SMH group (but not the non-SMH group) were contrary to the hypothesis. First, high dependent cannabis users expected significantly *less* ‘tension reduction and relaxation’ and *more* ‘cognitive and behavioural impairment’ compared to non-problematic cannabis users. A study by Hides, Kavanagh, Dawe & Young, (2009) using the Cannabis Expectancy Questionnaire (Young & Kavanagh, 1997), also found that amongst SMH participants, more cannabis dependent participants reported more negative expectancies compared to less dependent participants. Mueser et al. (1995) did not report this finding amongst cannabis users compared to non-cannabis users both with SMH problems and this finding is contrary to the research amongst the general substance using population. The reasons for this discrepancy are unclear, although it is recognised that opposing stimulation and sedation effects from cannabis have been reported within a single occasion or between occasions of use and may be accounted for the effects from cannabis being multi-dimensional (Block, Erwin, Farinpour & Braverman, 1998). The multi-dimensional effects of cannabis were apparent when administering the MEEQ; participants frequently reported that the effects of cannabis had different effects at different times.

In summary, the possible multi-dimensional effects of cannabis may contribute to the variation in expectancies amongst SMH and non-SMH problematic cannabis users, although further research is required to corroborate and understand this finding. However, what appears to be a stable and consistent pattern is that ‘social and sexual facilitation’ is

endorsed significantly more by individuals with SMH problems regardless of cannabis use status.

Limitations of the present study

One limitation is the small sample size used. The study aimed to collect 25 participants for each group but was only successful in recruiting 18 and 23 participants. This was considered to reflect the issues concerning engagement experienced within the Assertive Outreach Teams. It was considered an oversight to have not recorded prescribed medication as it is conceivable that these may have impacted upon participants' cannabis use or reasons for using and may have differed between the two groups. It is suggested by Addington et al. (1997) that current use of cannabis to help with SMH problems may depend on whether participants were currently symptomatic or not. The study excluded individuals who were acutely symptomatic. The current study does not therefore represent motives or expectancies for cannabis use amongst individuals who are acutely symptomatic.

Future Work

Suggestions for future work would first be to think about a strategy to increase participant numbers. My experience of the recruitment of individuals with SMH problems was complicated by the issue that I was not based in any of the Assertive Outreach Teams. If a researcher was based in one or more of these teams this may facilitate the recruitment of a larger number of participants. Second, future work could explore how, if at all, the differences in age between the SMH and non-SMH group may have influenced the outcomes from the present study. Therefore I would suggest that any future study could recruit participants, with and without SMH problems, but of a comparable age. This would lend support to the current finding. The above two issues could possibly be remedied through recruiting SMH participants from Early Intervention Services. Early Intervention Services are services that typically help people when they experience a first episode of psychosis. First, Early Intervention service users typically tend to be much younger than Assertive Outreach service users, as first episodes of psychosis typically occur between the age of 18 to 30. Second, Early Intervention service users may typically be less hard to

engage and recruit compared to Assertive Outreach service users. This would therefore facilitate the recruitment of a greater number of participants. A third area that I suggest for future work follows on from the hypothesis in the present study that expectancies of cannabis being socially and sexually facilitative amongst individuals with SMH problems may stem from cannabis using social networks or the influences from ward environments. A research study might compare the expectations and motives for using cannabis between participants with SMH problems who do and do not use cannabis and have and have not been exposed to cannabis using social networks / environments. This may contribute to the prevalence of any correlation between cannabis use and exposure to cannabis using environments and people.

Conclusion

The central finding to emerge from the present study was that individuals with SMH problems do not differ from individuals without SMH problems on their motives for using cannabis: they use for coping, enhancement and social reasons. However, individuals with SMH problems differ in that they expect cannabis to be more 'socially and sexually facilitative'. This suggests that treatments developed for individuals without SMH problems which are underpinned by understanding the motives and the expectancies from the effects of using a substance may be effective for individuals with SMH problems. The finding from the qualitative component of the study indicated that only a small minority of individuals with SMH problems used cannabis to help with their symptoms of their SMH problem or side-effects of prescribed medication. The second main finding indicated that regardless of mental health status, participants who used cannabis more problematically endorsed more coping and enhancement motives. Interventions aimed at reducing sources of distress, developing more adaptive ways of coping, together with treatments aimed at reducing the limitations for obtaining pleasure may be helpful in reducing enhancement and coping motives amongst more problematic cannabis users with SMH problems.

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Appendix A

Confirmation of Ethics Approval

Appendix B

Participant Information Sheet

Appendix C

Consent Form

Appendix D

Drug Use Motives Measure

Appendix E

The General Health Questionnaire

Appendix F

The Maudsley Addiction Profile

Appendix G

The Marijuana Effect Expectancy Questionnaire

Public Domain Briefing Document

Cannabis use amongst individuals with severe mental health problems: Reasons for use and motivational based interventions

This thesis was submitted as part of the Doctorate in Clinical Psychology at the School of Psychology, University of Birmingham. This document will describe Volume I that comprises two parts: a review of the literature and a research or empirical study.

Literature review

The first part of the review discusses motivational interviewing that has been shown to be effective in reducing a number of problematic behaviours including alcohol and substance use in the general population. The review then evaluates the effectiveness of a number of studies that incorporate motivational interviewing into the intervention amongst participants with severe mental health problems, such as schizophrenia or major depression. These studies aim to either reduce unhealthy behaviours such as alcohol or substance use, or increase healthy behaviours such as adherence to prescribed medication or attendance to the service where they receive treatment. The review found that such approaches were helpful in reducing substance use, most notably alcohol and tobacco use but there was less support for the approaches reducing cannabis use. The review found that motivational based interventions were also effective at increasing the attendance of individuals with severe mental health problems to appropriate services where they receive treatment. However, the evidence was less consistent when the intervention aimed to increase adherence to prescribed medication. Overall, the positive effect from the interventions diminished over time. Consequently the intervention may have to be repeated at regular intervals to maintain an individual's motivation to change their behaviour. Additionally, a number of the studies indicated that a motivational based approach may not be as helpful for individuals where their levels of motivation for changing behaviour are already initially high and for such individuals other interventions such as psycho-education may be equally as effective.

Empirical Paper

Background: Individuals with severe mental health problems (a diagnosis on the schizophrenia spectrum) often continue to use cannabis despite the issue that continued use can often make the symptoms of their illness worse. A model of alcohol use that has received widespread support indicated that the reasons for using alcohol can be divided into two; with the first related to the beliefs that an individual has about the effects of using alcohol and secondly the present motives that drive the individual to continue to use alcohol. The current study applied this framework to understand why some people with severe mental health problems continue to use cannabis by comparing the beliefs and motives for using cannabis between individuals who had a severe mental health problem with individuals who did not.

Method: Eighteen participants with severe mental health problems and twenty three participants without severe mental health problems who had used cannabis recently were asked to meet with the researcher and complete a series of questionnaires. The questionnaires asked them about their recent drug and alcohol use, dependence on cannabis, general health and their distal beliefs and proximal motives for using cannabis. The outcomes of these questionnaires were compared between the two groups.

Results: It was found that the group with severe mental health problems did not differ in their proximal motives for using cannabis when compared to the group without mental health problems, with both groups citing reasons for use associated with socialising, coping with difficult emotions and for enjoyment or pleasure reasons. However, the group with severe mental health problems differed in that they believed or expected that using cannabis would be socially and sexually helpful. A further finding was that regardless of whether a participant had a severe mental health problem or not, if a participant was categorised as using cannabis more problematically then they were more likely to use cannabis for reasons associated with coping with negative emotions and for reasons associated with enjoyment or pleasure.

Conclusions: The findings from the study indicated that participants with a severe mental health problem did not have different proximal motives for using cannabis compared to individuals without severe mental health problems. Therefore interventions developed amongst the general substance using population that aim to understand these motives for using a substance and have been demonstrated to be effective in reducing substance use (for example motivational interviewing or harm reduction), may also be effective amongst individuals with severe mental health problems. The finding that participants with severe mental health problems believe or expect cannabis to enhance their social or sexual performance may mean that interventions which aim to challenge unhelpful or counter-factual beliefs are helpful. Alternatively, facilitating more adaptive ways to achieve social interaction for individuals with severe mental health problems may be helpful.