

VOLUME I: RESEARCH COMPONENT

**POST-TRAUMATIC STRESS DISORDER AND
SUBSTANCE USE IN MILITARY VETERANS**

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Psychology at the University of Birmingham, August 2012**

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THESIS OVERVIEW

The two volumes that comprise this thesis were completed as part of the University of Birmingham Doctoral Training Programme in Clinical Psychology. The first volume contains three papers: a systematic literature review of treatments for co-occurring post-traumatic stress disorder (PTSD) and substance use disorder (SUD) in military veterans; an Interpretative Phenomenological Analysis (IPA) of military veterans' perspectives on the relationship between alcohol use and PTSD; and an executive summary of the IPA study.

The second volume of this thesis is made up of five clinical practice reports (CPRs) that were completed during training placements within the National Health Service (NHS). The first of these presents two formulations – one from a psychodynamic and the other from a systemic perspective – of behaviour displayed by a young man with an autistic spectrum condition that other people were finding challenging. The second report is of a single-case experimental study of a behavioural intervention to reduce the incidence of self-injurious behaviour in a woman with profound learning disabilities. The third report is a case study of the use of narrative therapy with an elderly woman who had been low in mood. The fourth report describes an evaluation of staff group facilitation skills in delivering a cognitive-behavioural group programme for anxiety and depression to clients attending a day hospital for older adults. The final report is a short summary of a presentation on work carried out to support a father in his efforts to secure autism spectrum condition and dyslexia assessments for his son, informed by principles and values derived from community psychology.

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LITERATURE REVIEW

HOW EFFECTIVE ARE TREATMENTS FOR MILITARY VETERANS WITH CO-OCCURRING PTSD/SUD?

ABSTRACT

The current literature review evaluated the effectiveness of published treatments for military veterans with co-occurring posttraumatic stress disorder (PTSD) and substance use disorders (SUD). The review begins with a summary of background issues pertinent to the treatment of military veterans with PTSD/SUD. These include: estimates of the prevalence of PTSD/SUD in this population; existing arguments regarding treatment delivery; and the rationale for the review. This is followed by a description of the methods used to select and methodologically evaluate the research literature. Fifteen studies were selected for inclusion in the review and were grouped as follows: psychosocial SUD-only treatment; pharmacological SUD-only treatment; 'present-focussed' joint PTSD/SUD treatment; and combined 'past-' and 'present-focussed' joint PTSD/SUD treatment. The best available evidence for SUD-only treatments was for the effectiveness of disulfiram and naltrexone on alcohol use outcomes, for disulfiram on PTSD outcomes, and for the use of opiate substitution therapy with heroin-dependent veterans. The strongest evidence for present-focussed joint PTSD/SUD treatment was for the effectiveness of the 'Seeking Safety' protocol in reducing drug use. Preliminary evidence was found for the effectiveness of combined past- and present-focussed joint PTSD/SUD treatment adopting CBT-orientated approaches. The implications of these findings for further research and treatment delivery are discussed.

Keywords: *PTSD, Substance Use Disorder, Treatment, Military veterans, Literature review, Intervention*

INTRODUCTION

Prevalence of PTSD/SUD amongst military veterans

The co-occurrence of PTSD and substance use problems in veterans of past wars (perhaps most notably, the Vietnam War) has been well documented. The National Vietnam Veterans Readjustment Study (NVVRS), a large study of US veterans who had served in the Armed Forces during the Vietnam era, found that 75% of combat veterans with a diagnosis of PTSD met criteria for lifetime alcohol abuse or dependence (Kulka *et al.*, 1990). In one inpatient treatment programme, between 51% and 61% of US Vietnam veterans with combat-related PTSD were also diagnosed with alcohol dependence or abuse (Boudewyns, Woods, Hyer, & Albrecht, 1991). Steindl, Young, Creamer and Crompton (2003) documented the co-occurrence of PTSD in veterans diagnosed with substance abuse to be in the range of between 41% and 85%.

More recently, high rates of co-occurring PTSD and SUD have been reported in US servicemen and servicewomen returning from conflicts in Iraq and Afghanistan (Baker *et al.*, 2009; Bernhardt, 2009; Gulliver & Steffen, 2010; Hoge *et al.*, 2004; Seal *et al.*, 2009). Some estimates of prevalence rates amongst veterans have been reported to be as high as 50% (Gulliver & Steffen, 2010).

With such a high prevalence of co-occurring PTSD/SUD in this population, and increasing numbers of veterans from the conflicts in Iraq and Afghanistan presenting to services, the onus is on treatment providers to develop and disseminate best practices for treatment for these conditions.

Treating co-occurring PTSD/SUD

To date, the literature on treatments for co-occurring PTSD/SUD has been fairly limited.

Much of the debate, historically, concerned the question of sequencing treatments.

Substance use treatment providers were faced with decisions focussed on whether to wait until clients had maintained a sufficiently long period of abstinence before addressing their trauma-related symptoms, or how best to address clients' trauma issues within the context of their substance use treatment (Henslee & Coffey, 2010).

Although not writing specifically about military veteran populations, a number of authors (eg Cukor, Olden, Lee, & Difede, 2010; Henslee & Coffey, 2010; McGovern *et al.*, 2009) reported that the 'conventional wisdom' was to use sequential treatment, requiring clients to complete substance use treatment first, before being provided with, or referred elsewhere for, trauma-related treatment. Of prime concern seemed to be the fear that early periods of abstinence might be jeopardised by prematurely focussing on PTSD, before clients had sufficient coping skills, other than substance use, to deal with the exacerbation of PTSD symptoms that trauma-focussed work might arouse.

Bernhardt (2009) reports a similar approach amongst treatment programmes offered by specialised US Veterans Affairs Medical Centre programmes for PTSD. He writes that such programmes traditionally required veterans to abstain from all substance use for up to a month or longer before entering treatment, usually via a referral to an intensive outpatient substance use treatment provider. However, Bernhardt suggests that, in the absence of help to deal with PTSD symptoms, many veterans would find it difficult to give up substances, leading many to drop out of treatment altogether. He adds that many may be reluctant to attend substance use treatment if they do not regard themselves as having a

problem with their use of substances – another factor which may lead to poorer treatment retention rates.

The case for joint PTSD/SUD treatment

Increasingly, researchers have proposed that jointly treating PTSD and SUDs may be a more viable option than waiting for clients first to become ‘substance free’ (eg Back, 2010; Dass-Brailsford & Myrick, 2010; Henslee & Coffey, 2010; Hien *et al.*, 2010). In support of a joint approach, Henslee & Coffey (2010) cited treatment studies that offered preliminary findings to suggest that treating PTSD symptoms in clients with SUDs may have a positive impact on substance-related variables (Back, Brady, Sonne, & Verduin, 2006b; Brady, Dansky, Back, Foa, & Carroll, 2001; Ouimette, Moos, & Finney, 2003). However, it should be noted that the sample sizes used in these studies were fairly small, and only the study by Ouimette and colleagues was carried out with military veterans, limiting the rigour of these findings and their generalizability beyond a civilian population.

With respect to keeping veterans engaged with services, Dass-Brailsford & Myrick (2010) suggested that treatment strategies that address both PTSD and SUD at the same time are likely to prevent individuals from dropping out of treatment because of an exacerbation in the symptoms of one disorder when the other is being addressed. However, they also pointed out that for some individuals, working on both sets of problems at the same time may be seen as too overwhelming. When asked, given the choice, whether they would prefer to address their substance use or their PTSD first, or both at the same time, 41% of civilian participants in a study by Back, Brady, Jaanimagi and Jackson (2006a), and 52.5% of those in a study by Brown, Stout and Gannon-Rowley (1998), expressed a preference for tackling both simultaneously, suggesting that it may be the preferred option for some,

despite the reservations in the literature. However, both samples were relatively small in number (n=23 and n=42 respectively) and were drawn from non-military populations.

Manualised psychosocial treatments for co-occurring PTSD/SUD

In a brief discussion of the literature for combined PTSD/SUD treatments for all populations (ie not only military veterans), Gulliver & Steffen (2010) found five standardised interventions developed specifically to address co-occurring PTSD and SUDs, namely: “Seeking Safety” (Najavits, Weiss, Shaw and Muenz, 1998); ‘Concurrent Treatment of PTSD and Cocaine Dependence’ (CTPCD; Back, Dansky, Carroll, Foa, & Brady, 2001); ‘CBT for PTSD adapted for persons with PTSD/SUD’ (McGovern *et al.*, 2009); ‘Substance Dependence PTSD Therapy’ (SDPT; Triffleman, Carroll, & Kellogg, 1999); and ‘Transcend’ (Donovan, Padin-Rivera, & Kowaliw, 2001). Gulliver & Steffen reported that a small number of feasibility trials documenting pre-post changes had been published for these treatment models, but, with the exception of “Seeking Safety”, none had been studied using a randomised controlled research design. In addition, only “Seeking Safety” and ‘Transcend’ had published outcomes for military veteran populations.

Rationale for the current review

There are no clear, empirically-supported treatment guidelines for how best to address co-occurring PTSD/SUD in military veterans. The most recent Department of Veterans Affairs (2010) practice recommendations for the treatment of veterans with co-occurring PTSD/SUD state that:

“...since the current VA/Department of Defence clinical practice guidelines for PTSD and SUD were not developed to address the comorbidity, clinical

judgement will continue to be needed in deciding which specific treatments to implement, for which patients, and under which treatment conditions.” (p1.)

A search of the scientific literature did not find any systematic reviews of treatments for military veterans with co-occurring PTSD/SUD. The aim of the current review, therefore, was to assess the current available evidence base for the effectiveness of treatments for military veterans with co-occurring PTSD/SUD, in order to establish which interventions may be the most effective, and whether these disorders are best treated simultaneously or sequentially.

METHOD

Inclusion criteria

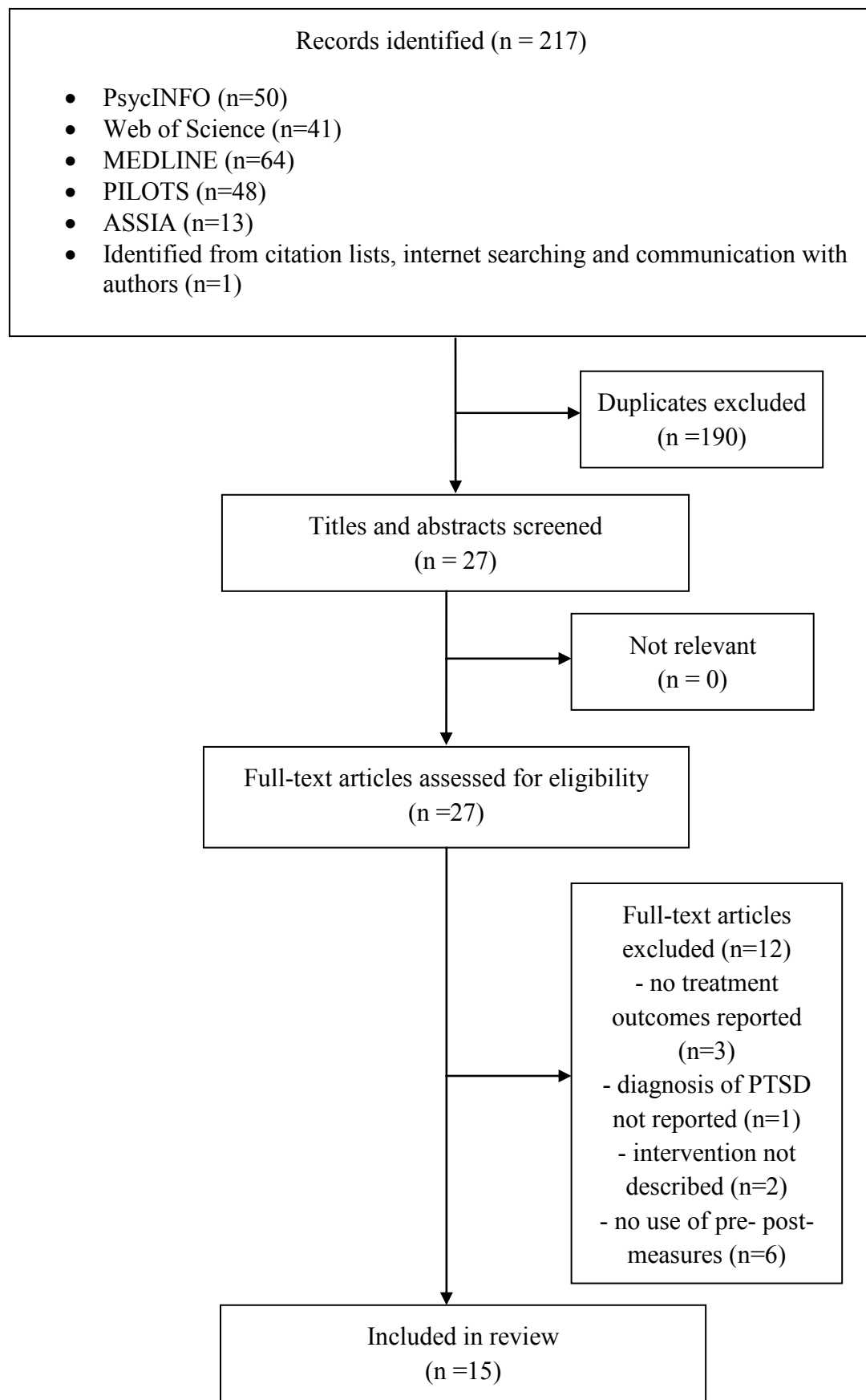
Published studies and book chapters reporting outcomes of treatments for military veterans with co-occurring PTSD/SUD were included in the current review. Studies were included if they clearly defined participants as having an existing diagnosis of PTSD and/or a SUD prior to participating in the study, or reported the use of recognised measures or structured clinical interviews in order to establish that participants met criteria for current PTSD and/or a SUD. Only studies with a clear description of the treatment or intervention applied were included. It was also a requirement for studies to report the use of pre- and post- measures as part of treatment outcome measurement. Studies of PTSD or SUD-only treatment were included.

Literature search methodology

Please see Appendix 2 for the literature search methodology.

The flow diagram in Figure 1 illustrates the review selection process.

Figure 1. Flow diagram of review selection process



Data extraction

A data extraction form was designed to facilitate the capturing of the required information about the characteristics and findings of the remaining 15 studies included in this review.

The content of this form included the following: name of study author/s; study design; description of participant/s; study aim/s; intervention/s; method; measures used; study findings; and quality rating. See Appendix 3 for the completed data extraction form.

Relevant data were extracted from the 15 articles and entered into the data extraction form.

Articles were subjected to quality assessment as part of this process.

Quality assessment

Included articles were subjected to quality assessment in order to establish their methodological rigour, using checklists of quality items. For studies reporting randomised and non-randomised trials, Downs and Black's (1998) checklist was used. As no published checklist could be located for case studies and case series designs, one was developed by adapting Tate *et al.*'s (2008) Single-Case Experimental Design (SCED) Scale. The checklists are included in Appendix 4.

Having assessed each study using the checklists, their methodological quality was rated using the following coding system (Scottish Intercollegiate Guidelines Network [SIGN], 2001):

Figure 2. SIGN rating system for methodological quality of studies (SIGN, 2001)

++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions of the study or review are thought <u>very unlikely</u> to alter.
+	Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought <u>unlikely</u> to alter the conclusions.
-	Few or no criteria fulfilled. The conclusions of the study are thought <u>likely or very likely</u> to alter.

Once the studies had been rated for quality, they were ascribed a level of evidence based on the system outlined in SIGN's (2001) handbook for the development of guidelines.

This combines quality ratings with level of evidence. In the original SIGN system, unlike level 1 and level 2 studies, level 3 studies are not rated for quality (ie ++, +, or -). In order to broaden the scope of the current review to encompass a more detailed appraisal of the level 3 studies included (eg case studies, case series designs), quality ratings were used, as outlined in Figure 3.

Figure 3. Rating system for ascribing level of evidence

Level of evidence	Type of evidence
1++	High quality meta-analyses, systematic reviews of RCTs (including cluster RCTs), or RCTs with a very low risk of bias.
1+	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias.
1-*	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias.
2++	High quality systematic reviews of, or individual high quality non-randomised intervention studies (controlled non-randomised trial, controlled before-and-after, interrupted time series), comparative cohort and correlation studies with a very low risk of confounding, bias or chance.
2+	Well conducted, non-randomised intervention studies (controlled non-randomised trial, controlled before-and-after, interrupted time series), comparative cohort and correlation studies with a low risk of confounding, bias or chance.
2-*	Non-randomised intervention studies (controlled non-randomised trial, controlled before-and-after, interrupted time series), comparative cohort and correlation studies with a high risk of confounding, bias or chance.
3++	Non-analytical studies (eg case reports, case series) where all or most of the

	quality checklist criteria have been fulfilled.
3+	Non-analytical studies (eg case reports, case series) where some of the quality checklist criteria have been fulfilled.
3-	Non-analytical studies (eg case reports, case series) where few or none of the quality checklist criteria have been fulfilled.
4	Expert opinion, formal consensus.
* Studies with a level of evidence (-) should not be used as a basis for making recommendations.	

The studies were then organised and reviewed as follows:

- Studies reporting non trauma-focussed treatment (ie SUD-only)
- Studies reporting trauma-focussed treatment targeting both SUD and PTSD

No PTSD-only studies met the inclusion criteria. The findings of the review were then summarised and discussed in relation to treatment effectiveness.

REVIEW OF EFFECTIVENESS OF TREATMENTS FOR MILITARY VETERANS WITH CO-OCCURRING PTSD/SUD

Non trauma-focussed treatments

Four studies were identified that reported non trauma-focussed treatments – in other words, interventions targeting only SUDs. One of these was a study of a psychosocial treatment, and the remaining 3 were of pharmacological treatments.

Psychosocial

An uncontrolled pilot study by Rotunda, O’Farrell, Murphy and Babey (2008), rated 3- for quality, evaluated a programme of behavioural couples therapy (BCT; O’Farrell & Fals-Stewart, 2006), delivered to 19 male veterans with alcohol dependence/combat-related PTSD and their non-substance-abusing female partners. Outcomes in drinking, relationship and psychological distress were compared from pre-treatment to immediately

post-treatment and at 12-month follow-up. All outcomes showed improvement from before BCT to immediately after treatment and 12-month follow-up. The authors concluded that the results are suggestive of the effectiveness of the use of BCT with this population. However, as the authors acknowledged, due to the lack of a no-treatment control group the observed improvements could not be attributed to the BCT. In addition, around 60% of the sample had received concurrent or recent counselling for PTSD, although this was not a prescribed part of the BCT programme itself. It is possible that this may have had a confounding effect on outcomes.

Pharmacological

One pharmacological study was identified that reported outcomes for both SUD and PTSD. This 12-week long randomised controlled trial (RCT), assessed for quality as 1+, investigated the effects of disulfiram and naltrexone, both used in the treatment of alcohol dependence, on 93 male veterans at 3 VA outpatient clinics (Petrakis *et al.*, 2006). The authors found that, compared to a placebo group, participants with PTSD who were treated with medication (disulfiram or naltrexone) had significantly more consecutive days of abstinence and a lower percentage of heavy drinking days. Significant decreases in PTSD symptoms over time were also found, with subjects treated with disulfiram scoring significantly lower total scores on a measure of PTSD symptoms (the Clinician Administered PTSD scale [CAPS]; Blake *et al.*, 1996) compared to those on naltrexone. Petrakis *et al.* concluded that individuals with PTSD and co-occurring alcohol dependence are particularly well suited for pharmacotherapy for their alcohol dependence, and may respond especially well to disulfiram. Although this was a well conducted RCT in many ways, with an adequate sample size, such assertions should be treated with caution, as the authors pointed out that participants in the study were being treated with a variety of

additional psychotropic medications concurrently, and that participants' abstinence may have had a confounding effect on their PTSD symptoms, thereby limiting the extent to which treatment outcomes could be attributed to disulfiram and naltrexone alone.

Two studies were included, by Monnelly, Ciraulo, Knapp, LoCastro and Sepulveda (2004) and by Trafton, Minkel and Humphreys (2006), which measured substance use outcomes only. Monnelly *et al.* carried out a retrospective review of medical records at a VA substance abuse treatment unit, and compared indices of alcohol use for alcohol-dependent veterans who were either being treated with quetiapine for alcohol dependence (n=30) or were not (n=20), over the course of 1 year. Trafton *et al.*'s study was a prospective observational trial of 255 veterans, which compared substance use outcomes for veterans with and without PTSD, who were receiving opioid substitution treatment (OST) at 8 US Veterans Health Administration (VHA) clinics.

Monnelly *et al.* found that the mean number of times that subjects in the quetiapine group were admitted for detoxification was significantly less than it was for the control group, and the mean for the total number of abstinent days during the study period year was significantly greater in the quetiapine group than in the control group. They concluded that quetiapine may help alcohol-dependent patients to maintain abstinence, but acknowledge that the decreased drinking they found may also have been a result of improved PTSD symptoms amongst participants. However, no outcomes for PTSD were measured as part of this study, so this is highly speculative. The study had a number of notable limitations, which the authors mentioned, that may have biased the results: both groups contained a large number of subjects treated with psychiatric medications other than quetiapine; no standardised measures of alcohol use were administered; the diagnoses of alcohol dependence and other psychiatric disorders in participants were not

standardised; there were differences between the groups in the frequency of some co-occurring diagnoses and for the administration of concurrent psychiatric medications; and no reliable measures of compliance with the quetiapine treatment regimen were used. The study was rated as 2- for quality.

Trafton *et al.* (2006) found that participants receiving OST, divided into two groups with and without a diagnosis of PTSD, demonstrated equivalent significant reductions in frequency of heroin and cocaine use. Alcohol problem severity also decreased similarly in both groups over time. A notable strength of this study, rated 2++ on quality, was its low drop-out rate (14%). The latter may have been due to the provision of OST as the regular receipt of opiate substitution medication could be seen as an incentive to remain engaged in treatment. The authors suggested that, because OST is a long-term intervention that can be maintained indefinitely, it may be particularly helpful to PTSD clients, who might risk relapsing to substance use following the completion of intensive trauma-focussed treatment.

In summary, Rotunda *et al.*'s (2008) pilot study of BCT was the only one of the SUD-only studies to report a psychosocial intervention. Although the findings indicated positive preliminary results for the use of this therapy, which specifically targeted alcohol use amongst the veterans who took part, due to the high likelihood of bias in this study and the lack of a control group, it is not possible, at this stage, to make robust claims for the effectiveness of BCT for this particular client group in terms of alcohol and PTSD outcomes.

The potential confounds in Petrakis *et al.*'s (2006) RCT limit the confidence with which assertions can be made about *specific* effects of disulfiram and naltrexone on PTSD and

SUD outcomes. However, taking into account the fact that this was a RCT, which was judged to have been well conducted overall, the findings did suggest that both medications were potentially effective for alcohol-dependent veterans with PTSD, as positive alcohol outcomes were reported for both drugs, with favourable effects on participants' PTSD also reported for disulfiram.

The studies by Trafton *et al.* (2006) and Monnelly *et al.* (2004) measured substance use outcomes only. It is not possible, therefore, to draw conclusions regarding the effects of treatment on participants' PTSD symptomatology. Trafton *et al.*'s findings do appear to indicate the potential for OST programmes to be beneficial in reducing substance use amongst heroin dependent veterans with PTSD, including alcohol and cocaine in addition to heroin. Monnelly *et al.*'s study was appraised as having a high risk of bias. Claims for the effectiveness of quetiapine as a treatment cannot, therefore, be made on the basis of these findings alone.

Trauma-focussed treatments

Trauma-focussed interventions may be broadly categorised as past- or present-focussed, or a combination of the two (Najavits, 2007). Past-focussed interventions, such as exposure therapy, ask clients to provide a descriptive account of the trauma they experienced or witnessed in full detail, with the aim of processing their memories of the event and associated emotions. Present-focussed interventions aim to help clients develop coping skills to improve their day-to-day functioning.

Eleven studies of trauma-focussed treatments were identified, and all reported joint treatments for PTSD and SUD. Six of these were present-focussed approaches and the remaining five were combinations of past- and present-focussed approaches. One was an

account of a ‘sequential’ approach, in which one disorder is treated, then the other, and 10 described the use of an ‘integrated’ approach, where disorders are treated at the same time and by the same service provider.

PTSD/SUD

‘Present-focussed’ approaches

Six studies of integrated, present-focussed interventions were identified, all of which reported implementing the ‘Seeking Safety’ protocol. Four of these were pilot studies on the efficacy of ‘Seeking Safety’ delivered in ‘stand-alone’ format, one was a randomised controlled trial (RCT) of ‘Seeking Safety’ incorporated into a pre-existing VA treatment programme, and one was a pilot study of an Acceptance and Commitment Therapy programme (ACT; Hayes, Strosahl & Wilson, 1999) that included ‘Seeking Safety’ as part of the treatment.

‘Seeking Safety’ is a manualised, present-focussed, programme that aims to promote client safety whilst addressing both PTSD and SUD problems. It comprises 25 topics, usually delivered in a group format, covering cognitive, behavioural and interpersonal skills – for example, compassion, honesty, coping with triggers, grounding, integrating the ‘split self’, regaining control over substances and setting boundaries in relationships (Najavits, 2002).

Two of the four pilot studies that reported findings of ‘Seeking Safety’ delivered in stand-alone format were of programmes exclusively involving women veterans. One of these, a study by Desai, Harpaz-Rotem, Najavits and Rosenheck (2008), rated as 2- for quality, used a pre-post non-equivalent control group design to assess the effectiveness of ‘Seeking Safety’ when used with homeless women veterans. The full, 25-session, ‘Seeking Safety’ programme was delivered to 91 participants across 11 VA medical centres, over the course

of 6 months. The other study, by Weller (2005), rated 3+ for quality, was a case series of 6 female veterans who took part in a 25-session ‘Seeking Safety’ programme delivered over 13 weeks.

The ‘Seeking Safety’ cohort in Desai *et al.*’s (2008) study had significantly better outcomes than the non-equivalent control group, in terms of employment status, social support, and symptoms of PTSD, measured at 3-monthly intervals over the course of one year. However, they were also significantly more likely to have used illicit drugs in the previous 30 days. Weller (2005) reported contrasting findings. She found no significant changes between individual pre- and post-treatment PTSD scores amongst her cohort, whilst 4 out of 6 participants reported a reduction in their use of substances or abstinence from substance use over the course of the programme.

The robustness of Desai *et al.*’s findings were compromised by low follow-up rates (27%-53% at 12 months), no clear description of how ‘social support’ was measured, and an assessment of ‘employment status’ – namely, the number of days that participants had worked in the previous 30 – which, arguably, falls short of comprising a clinically meaningful outcome. In addition to the lack of a control group, a small sample size and changes in substance use being assessed by unspecified measures, Weller’s study was limited by the potentially confounding effects on the substance use findings of participants being encouraged to attend 12-step programmes as an adjunct to treatment, and the fact that one of the women who took part was simultaneously enrolled in a methadone maintenance programme.

The two other uncontrolled pilot studies of stand-alone ‘Seeking Safety’ programmes were by Cook, Walser, Kane, Ruzek and Woody (2006), in which 4 groups of male and female

veterans took part in a 25-session, 14-month ‘Seeking Safety’ programme delivered at a US VA medical centre, and by Norman, Wilkins, Tapert, Lang and Najavits (2010), who reported the findings of a 10-session ‘Seeking Safety’ programme carried out over 18 months with 14 male veteran outpatients, also at a VA medical centre. Both were rated as 3- in terms of quality. Eighteen out of an initial 25 participants completed treatment in the study by Cook *et al.*, and the authors found statistically significant improvements from pre- to post-treatment on measures of PTSD and quality of life. Results from urine testing demonstrated “continued abstinence” amongst participants. Norman *et al.* (2010) measured changes in PTSD and SUD symptomatology from pre- to post-treatment and at 3- and 6-month follow-up, on an individual basis. Nine of the 14 veterans completed treatment, and 6 completed one or both follow-up assessments. Amongst the 8 who improved, four showed clinically significant decreases in their scores. Five out of 7 participants who had endorsed problem drinking pre-treatment reported a reduction in number of drinking days, drinks per episode, or both.

Both studies have a number of limitations. As well as adopting an uncontrolled design, Cook *et al.*’s (2006) study was limited by a lack of any follow-up of participants who dropped out of the treatment programme, or follow-up of treatment completers several months post-treatment, so there is no evidence from this study of lasting effects of the treatment. Moreover, although not made explicit by the authors, their description of “continued abstinence” amongst participants suggests that abstinence was a pre-requisite for inclusion in the treatment programme, thus biasing the treatment sample. In the study by Norman *et al.* (2010), the characteristics of the 6 participants who dropped out were not described and they were not followed up, and no follow-up data at all was made available on 8 of the total 14 study participants (over half the original sample). Without follow-up

data, it is not possible to make claims for the longevity of post-treatment clinical gains. Moreover, measures were administered by the therapy team, which may have biased participants' responses. Finally, the supplied data on substance use outcomes was restricted to measures of alcohol use, despite 2 of the 9 participants who completed treatment being described as having "marijuana dependence".

The only RCT on 'Seeking Safety' was carried out by Boden *et al.* (2012). They investigated the impact on substance use and PTSD outcomes of substituting part of an established VA outpatients speciality treatment programme with SS. This study, ascribed a quality rating of 1+, randomly assigned 98 male veterans with co-occurring PTSD/SUD to attend a 'Seeking Safety' treatment track or treatment-as-usual (TAU). TAU comprised motivational enhancement and 'recovery' groups as standard, with attendance at a number of additional groups – including anger management, CBT, relaxation, family therapy and health education – tailored to suit individual clients. The 'Seeking Safety' treatment track was the same as TAU, except that 'recovery' groups were substituted with 24 sessions of 'Seeking Safety'. More reduction in drug use outcomes, measured at post-treatment and 3-month follow-up, were associated with 'Seeking Safety' than with TAU, but no significant differences were found between treatments with respect to alcohol use and PTSD severity. The authors also reported that attendance was greater for 'Seeking Safety', and client satisfaction scores were higher, than for TAU. Overall, this was a well-designed study, with an adequate sample size and good follow-up rates, although follow-up data were only collected at 3-months post-treatment, limiting the extent to which treatment effects could be said to have a longer-lasting impact on participants. Moreover, some notable differences between treatment groups may have introduced a degree of bias to the results. The 'Seeking Safety' groups were led by a psychologist from the research team, who had

received intensive training in ‘Seeking Safety’, which contrasted with what the authors described as a more “didactic” style of group leadership for TAU. The ‘Seeking Safety’ groups were also substantially smaller than the TAU groups, and all group members had PTSD symptomatology, in contrast to only some members of TAU groups. Apart from the potential benefits of a smaller group size, the fact that all members had experience of PTSD may have increased cohesion and a sense of shared identity in the ‘Seeking Safety’ treatment sample, which may, in turn, have had a beneficial effect on outcomes, rather than the ‘Seeking Safety’ programme *per se*.

The sixth of the ‘Seeking Safety’ studies identified was conducted by Batten *et al.* (2009) and reported preliminary data on the first 15 months of an ongoing evaluation of a residential treatment programme developed to treat co-occurring SUD/PTSD using Acceptance and Commitment Therapy (ACT) and ‘Seeking Safety’. The quality of the study was rated as 3-, and the authors described the data presented as “promising” and “suggestive”, as a large number of participants did not provide complete data and there was no control condition. ACT considers substance use amongst people with PTSD as indicative of ‘experiential avoidance’ – an effort to avoid intrusive memories, feelings and thoughts associated with their traumatic experience/s. The construct of experiential avoidance was used in the programme as a single conceptual framework with which to understand co-occurring PTSD/SUD amongst veterans. The authors described a comprehensive intervention programme delivered over 6 weeks, comprising several ACT- and trauma-related groups, as well as groups on sleep hygiene, anger management, occupational therapy and 12 sessions of ‘Seeking Safety’. Compared to pre-treatment, significantly lower post-treatment scores were reported on two measures of PTSD, as well as a significant increase (indicating improvement) in scores on a measure of experiential

avoidance. Improved scores in experiential avoidance may be conceptualised, within the ethos of the programme, as indicative of an improved combined PTSD/substance use outcome. However, the validity of these findings is severely compromised by a high drop-out rate and very low completion rate of pre- post-measures. Of 60 participants who consented to take part in the project, only 20 completed both sets of measures, with the authors attributing this to low retention in the programme and a lack of dedicated research staff to collect data.

To summarise the ‘Seeking Safety’ studies reviewed, with the exception of the RCT by Boden *et al.* (2012), the limiting factors of small sample sizes (Norman *et al.*, 2010; Weller, 2005), poor follow-up rates (Desai *et al.*; Cook *et al.*; Norman *et al.*; Batten *et al.*), and the uncontrolled or non-equivalent control designs characteristic of the studies identified, severely restricted the claims that can be made for the effectiveness of ‘Seeking Safety’ on the basis of the findings described above. However, it should be noted that the preliminary data reported by Batten *et al.* comprised part of an ongoing evaluation of the ACT/‘Seeking Safety’ programme. Hence, once the findings of the larger study become available, it may be possible to make a more informed appraisal of the effectiveness of the treatment they describe.

Only Boden *et al.*’s and Weller’s studies satisfied the quality assessment criteria to a sufficient degree for their findings to be considered as a basis for evidence. The evidence from Boden *et al.*’s RCT is more robust, and suggests that ‘Seeking Safety’ may be more effective at reducing drug use than a standard treatment available to US veterans with co-occurring PTSD/SUD, but no more effective with respect to alcohol and PTSD outcomes. Although participants in Weller’s study demonstrated positive substance use outcomes, the potentially confounding effect of concurrent attendance at 12-step meetings and the low

level of evidence of the study design limit the degree to which it could be considered as evidence of the effectiveness of 'Seeking Safety'. However, full attendance at all 'Seeking Safety' sessions was reported, which provides preliminary evidence for the acceptability of the 'Seeking Safety' protocol to all-female veteran groups.

Combined 'past-' and 'present-focussed' approaches

Among the five studies identified that reported treatments adopting a combined past- and present-focussed approach to joint PTSD/SUD treatment, two described programmes delivered to groups of veterans and three were case studies.

Donovan, Padin-Rivera and Kowaliw (2001) piloted the 'Transcend' treatment programme with 46 male US Vietnam veterans with co-occurring diagnoses of PTSD and substance abuse (SA), using an uncontrolled pre- post- design. Steindl *et al.* (2003) reported the outcomes of another uncontrolled study, involving 608 Australian veterans, admitted to multiple treatment centres for veterans diagnosed with PTSD. Both studies were rated as 3++ in terms of quality.

'Transcend' is a manualised, sequential, treatment programme, developed by drawing on ideas from constructivist and dynamic approaches, as well as cognitive-behavioural and 12-step theories. The trauma component of the treatment described by Donovan *et al.* comprised 6 weeks of skills training followed by 6 weeks of trauma processing, delivered in group and individual sessions, and provided in an inpatient setting. Clients were required to be abstinent for at least 30 days before entering the programme, and to attend a primary SA rehabilitation programme within 6 months of beginning 'Transcend'. The programme described by Steindl *et al.* differed in that it adopted an integrated, rather than sequential, approach to SUD/PTSD treatment. CBT-focussed treatment was delivered to

6-8 person cohorts with co-occurring alcohol problems by an interdisciplinary team (psychiatrists, social workers and psychotherapists), and included: PTSD psychoeducation; symptom management; interpersonal skills development; relapse prevention; social skills training; motivational enhancement; imaginal exposure to traumatic memories; and *in vivo* exposure to current feared situations. Participants were also provided with individual therapy.

Donovan *et al.* reported significant decreases on measures of PTSD and addiction severity at 6- and 12-month follow-up, compared to pre-treatment. Participants reported significant decreases in alcohol consumption, drinking alcohol to intoxication and polysubstance drug abuse. They also reported higher self-esteem, improved relationships and greater hope for the future, suggestive of clinically, as well as statistically, significant changes in the participants studied. For participants in the Steindl *et al.* study, significant improvement was found both in alcohol use and in PTSD symptoms from intake to 9-month post-treatment follow-up.

Apart from the lack of a comparison group, Donovan *et al.*'s study was limited by an apparent lack of standardisation in the 'primary substance abuse rehabilitation programmes' which participants reportedly attended, restricting the extent to which improvements in addiction severity scores could be interpreted as being attributable to the 'Transcend' programme interventions. In addition, only 76% of all participants were successfully followed up at both 6 and 12 months, with no information provided on the characteristics of those who were not retained in the study, limiting the generalizability of the findings and the degree to which the 'acceptability' of the programme to the veterans who took part could be gauged. A strength of the Steindl *et al.* study was its large sample size, although, as the authors pointed out, the fact that all participants received the same

treatment means that it is not possible to determine the overall efficacy of the treatment approach. Another potential bias was the fact that staff collecting follow-up data were not blind to the initial clinical status of the participants.

The three case studies were all rated as 3+ for quality. McDevitt-Murphy (2011) reported on two veterans who were treated using the VALOR protocol – a series of cognitive-behavioural coping skills modules and some exposure work, drawn from established treatment manuals for PTSD (Foa, Hembree and Rothbaum, 2007; Leahy & Holland, 2000; Meichenbaum, 1985; Zayfert & Becker, 2007) and alcohol misuse (Monti, Kadden, Rohsenow, Cooney, & Abrams, 2002; O’Farrell & Fals-Stewart, 2006), and involving veterans’ ‘significant others’ in the treatment. Lindner and Lindley (2010) described the use of a combination of exposure therapy, stress management, ‘Seeking Safety’ and prazosin (to help with nightmares) with a 49-year-old US Army veteran, at a VA health care facility. Although reportedly having diagnoses of PTSD and alcohol dependence, the client had been abstinent for a period of six months prior to starting treatment. McCarthy & Petrakis (2011) used 12 weekly 60-minute sessions of Cognitive Processing Therapy – Cognitive (CPT-C) with a combat veteran with PTSD and co-occurring alcohol dependence (AD). CPT-C is a modified version of cognitive processing therapy (CPT; Resick & Schnicke, 1992). Standard CPT involves clients writing an account of their trauma as part of the therapy. CPT-C does not require this, but other aspects of the therapy are unchanged. In addition, bupropion was prescribed for depression and prazosin for nightmares. A number of enhancements from practices in the substance use field were also included: psychoeducation about alcohol use as an avoidance strategy and its relationship with PTSD; the use of daily drink diaries; coping skills teaching to promote abstinence; and prescription of disulfiram.

Both of the veterans in McDevitt-Murphy's study were assessed at baseline, end-of-treatment and 1-month follow-up, and the author reported that they demonstrated substantial decreases in PTSD symptoms and made drastic reductions in their alcohol use, to the point of abstaining from alcohol altogether at end-of-treatment and 1-month follow-up. Both were also reported as feeling "considerably better" and one of the veterans had started a new job, although the other was struggling to adjust to post-military life. In the case of the veteran in Lindner and Lindley's study, five months into therapy, prior to the exposure work, the client still had a clinically significant level of PTSD symptoms. The authors reported that by the end of 30 sessions of exposure therapy, this had fallen below the recommended cut-off for PTSD in veterans, and that the client remained abstinent throughout the course of exposure therapy. Qualitative feedback from the client indicated that he had found the 'Seeking Safety' groups "extremely beneficial". The client also found a job during the course of the therapy. McCarthy & Petrakis reported that, post-treatment, their client no longer met criteria for PTSD and had maintained abstinence for 3 weeks (since being prescribed disulfiram). Up to and including 12-week follow-up, these treatment gains were maintained, and he reported continued abstinence from alcohol.

These case studies, by McDevitt-Murphy, Lindner & Lindley, and McCarthy & Petrakis, were generally well conducted and reported, albeit with some qualifications. With regards to McDevitt-Murphy's study, although favourable results were reported, it is notable that the treatment effect of including 'significant others', which is a distinctive feature of the VALOR protocol, were neither evaluated nor discussed. With respect to the veteran treated in the study by Lindner & Lindley, his 6-month record of successful abstinence prior to beginning treatment should be borne in mind before attributing his continued abstinence to the treatment he received. Moreover, it is possible that his ability to tolerate

the exposure work (of concern when considering using this approach with co-occurring SUD/PTSD clients, as mentioned in the introduction to this review) may have been affected by the fact that he began to attend ‘Seeking Safety’ groups when starting this stage of the treatment. If the ‘Seeking Safety’ groups provided a degree of support at a potentially vulnerable time in treatment, this would suggest that some caution should be exercised before drawing inferences regarding the feasibility of exposure work for co-occurring PTSD/SUD in veterans based on the findings of this study. Aside from the limitations inherent to McCarthy & Petrakis’s case study design, which the authors acknowledged, some data may have been biased by the fact that they were collected by a study clinician. There were also possible confounds to the study by the use of medications as part of the intervention.

In summary, the five studies of combined past- and present-focussed approaches to joint PTSD/SUD treatment all reported favourable PTSD and substance use outcomes.

Statistically significant, positive outcomes in PTSD symptoms were found for the mix of group and individual interventions of Donovan *et al.*’s sequentially delivered ‘Transcend’ programme, and for Steindl *et al.*’s integrated programme implemented with Australian veterans, also in group and one-to-one format. Both were CBT-orientated, although the ‘Transcend’ manualised programme also draws from constructivist and dynamic approaches, and adopts a 12-step ‘ethos’ to substance use. The two veterans treated with CBT-focussed approaches in the studies by Lindner & Lindley and McCarthy & Petrakis no longer met criteria for PTSD at the end of treatment, and the two veterans treated with the CBT-orientated VALOR protocol, described by McDevitt-Murphy, demonstrated “substantial” decreases in PTSD symptoms.

With regards to substance use outcomes, significant decreases at follow-up in alcohol and other drug use were reported for participants in Donovan *et al.*'s study, and in alcohol use for the veterans who took part in Steindl *et al.*'s study. Abstinence was maintained by the veterans in Lindner & Lindley's and McCarthy & Petrakis's studies, the former employing 'Seeking Safety' as its alcohol treatment modality and the latter using a combination of disulfiram, psychoeducation and coping skills training. The VALOR protocol study by McDevitt-Murphy found "drastic reductions" in alcohol use by the two veterans who took part.

Taken together, and taking into account that all five studies were considered to be of sufficient quality to be considered as evidence, these findings appear to provide preliminary support for the use of combined past- and present- approaches to PTSD/SUD treatment for PTSD outcomes. However, the evidence for substance use outcomes, whilst still favourable, is harder to appraise on the basis of the studies' findings. This is partly because the participants in the studies by Donovan *et al.* and by Lindner & Lindley had been abstinent prior to starting treatment, limiting the extent to which longer-term outcomes could be attributed to the treatment itself. In addition, what is meant by the "drastic reductions" reported for the implementation of the VALOR protocol is difficult to ascertain, and the use of disulfiram in McCarthy & Petrakis's study of CPT-C means that it is not possible to attribute the favourable outcomes in alcohol use status to the application of CPT-C itself. However, none of the studies reported either relapse to substance use or a worsening of substance use, which provides a degree of support that engaging veterans with co-occurring PTSD/SUD in treatments that employ a past-focussed approach as part of the treatment does not necessarily risk jeopardising clients' substance use gains.

DISCUSSION

Amongst the 15 studies reviewed, which reported treatment outcomes for veterans with co-occurring post-traumatic stress disorder and substance use disorder, four were accounts of SUD-only treatment and 11 reported treatments jointly targeting PTSD and SUD.

Out of 15 studies reviewed, only nine met sufficient quality criteria to be used as a basis for appraising the effectiveness of the treatments they described. Of these, two were RCTs (comprising the highest level of evidence, level 1) and one was a prospective observational trial (level 2 in terms of evidence). The remaining seven were level 3 studies, the lowest level of evidence for treatment studies. The lack of power inherent in the designs of level 3 studies limits the claims that can be made for the effectiveness of the treatments they describe. These considerations shall now be taken into account in discussing the implications of the study findings reported in this review. Attention is paid to treatment effectiveness, and to questions regarding the retention of clients in treatment and the acceptability to clients of different treatment approaches.

Treatment effectiveness

In terms of PTSD/SUD outcomes, the best available evidence for non trauma-focussed interventions was found for the use of either disulfiram or naltrexone in treating alcohol-dependent veterans for their use of alcohol (Petrakis *et al.*, 2006), and for opioid substitution treatment as an effective substitute for veterans dependent on heroin (Trafton *et al.*, 2006). With respect to disulfiram, this medication may also have a beneficial effect on veterans' PTSD symptoms, in addition to their alcohol use. Further research should, therefore, be considered into the effectiveness of naltrexone and disulfiram for co-occurring PTSD/SUD in military veterans.

The remaining studies reviewed were of joint PTSD/SUD treatments. The only studies of present-focussed interventions were of the ‘Seeking Safety’ protocol (Najavits, 2002), and only two of these were appraised as being of sufficient quality to be considered as evidence for its effectiveness. The most robust evidence, from Boden *et al.*’s (2012) RCT, was for the superior effectiveness of ‘Seeking Safety’ in reducing drug use, compared to standard VA treatment in the US, when ‘Seeking Safety’ is provided alongside such treatment (ie. not as a ‘stand-alone’ treatment). ‘Seeking Safety’ was found to be no more effective than standard VA treatment with respect to alcohol and PTSD outcomes. Although Weller’s (2005) study can only be regarded as a low level of evidence, and was carried out with a small number of participants (n=6), the findings suggest that ‘Seeking Safety’ may be effective for substance use, rather than PTSD.

The five studies of combined past- and present-focussed treatments were all level 3 studies and CBT-orientated. In the case of the ‘Transcend’ programme, dynamic and constructivist approaches were also used. Although they provide preliminary evidence for the effectiveness of this approach to treatment, it is a low level of evidence. Given their larger sample sizes, the most robust evidence amongst these studies was for Donovan *et al.*’s (2001) ‘Transcend’ programme and for the intervention described by Steindl *et al.* (2003). ‘Transcend’ showed promising, clinically significant, PTSD and SUD outcomes for this manualised, sequential, combined past-/present-focussed treatment. Whilst only pilot data, the findings indicate that ‘Transcend’ may warrant further study with this population, using a more robust, experimental, research design. Steindl *et al.*’s programme was not manualised and would thus be difficult to replicate in further study. It does, however, appear to provide limited evidence for the acceptability to clients of addressing their PTSD and substance use in an integrated manner.

The remaining studies, by McDevitt-Murphy (2011), Lindner & Lindley (2010) and McCarthy & Petrakis (2011), which were all case studies, provided a measure of preliminary support for CBT-focussed joint PTSD/SUD treatment, where past- and present-focussed approaches are both used as part of the intervention.

Treatment retention

The low drop-out rate reported in Trafton *et al.*'s study suggests that OST may also assist with treatment retention. There may thus be potential benefits to OST for opiate dependent veterans embarking on trauma-focussed treatment, as it might serve to mitigate against clients relapsing to substance use – an historical concern outlined in the introduction to the current review. There are grounds, therefore, to consider further researching OST with this population, both as a 'stand-alone' treatment option, and in tandem with trauma-focussed interventions.

Although Rotunda *et al.*'s pilot study of Behavioural Couples Therapy had a high possibility of bias, the reported high participant retention rate, possibly influenced by the additional involvement of veterans' partners, suggests that the specific treatment effects of including 'significant others' in therapy may warrant further investigation.

Four of the six studies reporting a present-focussed treatment approach had high drop-out rates. Given that all six studies were of the 'Seeking Safety' protocol, it is possible that there is something about 'Seeking Safety' itself, rather than present-focussed approaches more generally, that may go some way to account for this. One possibility might be the lengthy duration of the entire 'Seeking Safety' programme, which is 25 sessions long, which may be considered too demanding by some veterans. However, all six female veterans who took part in Weller's programme did complete the programme, although this

may have been influenced by the possible appeal of an all-female group, rather than the 'Seeking Safety' programme itself. Further research, with closer attention paid to following up treatment drop-outs, would help to clarify this issue.

CONCLUSION

The current review highlighted the shortage of quality studies on treatments for co-occurring PTSD/SUD in veterans upon which to base clinical decisions for treating this population. On the basis of the available evidence, it remains unclear whether treatment providers should target PTSD-only, SUD-only or jointly treat PTSD/SUD in clients presenting for treatment. No studies were reviewed for PTSD-only treatment. Two quality studies of SUD-only treatment, both of pharmacological interventions, showed favourable outcomes in terms of alcohol use for disulfiram and naltrexone, PTSD symptomatology for disulfiram, and for the effectiveness of opiate substitution therapy as a substitute for heroin with heroin-dependent veterans. The only studies of psychosocial interventions included in this review were for joint SUD/PTSD treatments. Studies of present-focussed treatments, where clients' trauma histories are not addressed, were all of the 'Seeking Safety' protocol, hence it is only possible to make claims for this protocol in particular, rather than present-focussed approaches generally. The strongest evidence for the effectiveness of the 'Seeking Safety' protocol, from an RCT, was in reducing drug use. The findings from the combined past- and present-focussed studies reviewed provide preliminary evidence for CBT-orientated approaches, and suggest a need for larger-scale controlled studies to further investigate their effectiveness. It is notable that these studies did not report difficulties on the part of clients with addressing their PTSD and use of substances jointly, and, in particular, that engaging in exposure work as part of the intervention did not appear to precipitate a worsening of their substance use, or to lead

clients to drop out of treatment altogether. This is suggestive that such an approach to treatment may be less risky than historically feared, as outlined in the introduction to this review.

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RESEARCH PAPER

**THE RELATIONSHIP BETWEEN ALCOHOL USE AND POST-TRAUMATIC
STRESS: PERSPECTIVES FROM MILITARY VETERANS**

ABSTRACT

The current paper presents a qualitative study exploring military veterans' perspectives on the relationship between their use of alcohol and their experiences of post-traumatic stress. It focuses on participants' motives for using alcohol and their perceptions of the impact of their use on their subjective experiences of post-traumatic stress. Six male participants were recruited from a treatment centre specialising in the treatment of military veterans diagnosed with PTSD. Each participant was interviewed separately using a semi-structured interview schedule and the resulting transcripts were analysed using Interpretative Phenomenological Analysis (IPA). The paper reports the findings of this analysis, and these are discussed in relation to relevant literature. The analysis suggested that participants had used alcohol to 'self-medicate' distressing post-traumatic stress symptoms. Participants' accounts suggested that alcohol had been partially effective at blocking out, or reducing the intensity of symptoms in the short-term, but that longer-term use had led to an exacerbation in symptoms. Alcohol had also been used by some participants to facilitate dissociative states and to enable engagement in social and work activities. The study's strengths and limitations, as well as implications for clinical practice and future research, are presented.

Keywords: *Post-traumatic stress, PTSD, Interpretative Phenomenological Analysis, Alcohol misuse, Substance misuse, Dissociation*

INTRODUCTION

There is an established body of research, predominantly from the United States, that indicates a high prevalence of alcohol misuse amongst military veterans diagnosed with post-traumatic stress disorder (PTSD) (eg Kulka *et al.*, 1990; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Stewart, 1996; Steindl, Young, Creamer, & Crompton, 2003; Seal *et al.*, 2008). For veterans with PTSD who drink to excess, alcohol has the potential to harm their physical and social well-being, and to lead to poorer mental health in general, notably, in relation to their PTSD (Jacobsen, Southwick, & Kosten, 2001). For example, alcohol may exacerbate symptoms of increased arousal – such as sleeping difficulties, irritability and hypervigilance – and exaggerate both the frequency and severity of symptoms associated with the re-experiencing of traumatic events, such as nightmares and flashbacks (Jacobsen *et al.*, 2001).

Historically, health care providers have been reluctant to concurrently address alcohol problems amongst veterans presenting for PTSD treatment. The preference has been for sequential treatment, as exemplified by current National Institute for Clinical Excellence (NICE) guidelines on PTSD treatment, which state, “Treat any significant drug or alcohol problem before treating the PTSD” (NICE, 2005). Bernhardt (2009), writing about specialised US Veterans Affairs Medical Centre programmes for PTSD, reported that veterans had traditionally been required to abstain from using alcohol for up to a month or longer before entering PTSD treatment, usually via a referral to a specialist outpatient alcohol misuse treatment provider. However, Bernhardt suggests that, in the absence of help to deal with PTSD symptoms, many veterans would find it difficult to give up alcohol

in order to participate in substance use programmes. Moreover, many veterans may be reluctant to attend alcohol misuse treatment if they consider PTSD, rather than alcohol, to be their primary concern. Both of these factors may negatively impact on veterans' willingness to engage with treatment (Bernhardt, 2009).

Steindl *et al.* (2003) have argued that effective treatment of co-occurring alcohol misuse is crucial if veterans are to achieve improvement in terms of their PTSD. The authors studied treatment outcome amongst 364 Australian male combat veterans with 'hazardous' levels of alcohol consumption – as indicated by an Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Puente, & Grant, 1993) score of 8 or more – and found that the extent of reduction in alcohol use during treatment was associated with later improvement in PTSD symptoms.

With regards to co-occurring PTSD and substance misuse within the general (rather than military) population, researchers have increasingly argued that jointly treating PTSD and substance use may be a more feasible option than first waiting for clients to become substance free (eg Back, 2010; Dass-Brailsford & Myrick, 2010; Henslee & Coffey, 2010; Hien *et al.*, 2010). A joint approach is now supported by the US National Center [*sic*] for PTSD (NCPTSD):

“Treatment for PTSD and substance use problems should be designed as a single consistent plan that addresses both sources of difficulty together”.
(NCPTSD website, accessed August 2012)

Of specific relevance to the present study, it has been argued that clinicians need to understand the complicated interactions that exist between PTSD and alcohol use (Dass-

Brailsford & Myrick, 2010). Furthermore, Stimson (2006) has argued that for interventions designed to target a particular group's drinking behaviour to be most effective, they should be informed by an understanding of that group's drinking motives and practices.

A commonly cited reason for alcohol misuse amongst people diagnosed with PTSD is the 'self-medication' hypothesis (Khantzian, 1999). According to this perspective, alcohol may be used to provide relief from unpleasant symptoms of PTSD. These symptoms are commonly divided into three main symptom 'clusters': avoidance, re-experiencing and arousal. Symptoms of avoidance include attempts to avoid trauma-related thoughts, conversations, feelings, activities or places, or an inability to recall significant parts of the trauma, a sense of detachment from others, a sense of a foreshortened future and a limited range of affect. Re-experiencing symptoms involve repeated and intrusive memories of the trauma, including flashbacks, images, thoughts and nightmares. Arousal symptoms may include difficulties sleeping, an inability to concentrate, an exaggerated startle response, irritability and a pervasive sense of threat, often manifest as 'hypervigilance' – the scanning of one's environment for threat.

The findings from a number of quantitative studies of associations between PTSD and alcohol use, carried out with non-military populations, although looking at associations rather than cause, have appeared consistent with the 'self-medication' account of alcohol consumption (Ullman, Filipas, Townsend, & Starzynski, 2005; Waldrop, Back, Verduin, & Brady, 2007; Simons, Gaher, Jacobs, Meyer, & Johnson-Jimenez, 2005; Dixon, Leen-Feldner, Ham, Feldner, & Lewis, 2009; O'Hare, Sherrer, Yeaman, & Cutler, 2009).

However, symptoms of PTSD are not experienced uniformly by all individuals diagnosed with the disorder. Ehlers and Clark (2000) have highlighted the influence of individuals' *interpretations* of their traumatic experiences on the severity and nature of their PTSD symptoms (Ehlers & Clark, 2000). Findings from civilian populations may not, therefore, be appropriate to be generalised to veterans, whose traumatic experiences, largely combat-related, may be qualitatively different from those of civilians with PTSD, hence the reason for the current study.

There have been relatively few studies specifically on military veterans' motives for using alcohol in relation to their experiences of PTSD, with mixed findings. In a number of quantitative studies, alcohol has been directly identified by Vietnam veterans with a diagnosis of PTSD as being beneficial in managing PTSD symptoms (Bremner, Southwick, Darnell, & Chamey, 1996; Ouimette, Finney, & Moos, 1999; Calhoun *et al.*, 2002). However, in another quantitative study, Norman, Inaba, Smith and Brown (2008) compared the expectations of what alcohol would achieve for Vietnam veterans with and without PTSD, and found that those with PTSD did not report more positive anticipated experiences from alcohol than those without PTSD.

With regards to specific PTSD symptom clusters, in a study of Vietnam veterans seeking treatment for alcohol problems, alcohol use severity was found to correlate significantly with symptoms of arousal and re-experiencing, but not with avoidance or emotional numbing, suggesting that alcohol might be used by veterans in order to 'self-medicate' experiences of 'reliving' traumatic events and increased physiological arousal (McFall, MacKay, & Donovan, 1992). The findings from a longitudinal study of US veterans

returning from the 1991 Gulf War appeared to be consistent with a broader conceptualisation of self-medication, as significant correlations were found between all three PTSD symptom clusters and problematic use of alcohol two years following return from the Gulf (Shipherd, Stafford, & Tanner, 2005). However, the researchers asked participants simply to rate the degree to which they viewed their use of alcohol as a problem, rather than employing a standardised measure of alcohol use, compromising the validity of the findings.

The present study

The quantitative focus of existing research has been valuable in drawing attention to possible functional relationships between certain symptoms of PTSD and the ‘self-medicating’ properties of alcohol, although the *nature* of these relationships does not appear to have been explored in great depth. Moreover, the bulk of this research has been carried out with non-military populations, whose subjective experiences of post-traumatic stress may differ from those of veterans. With increasing emphasis on treatment providers to address veterans’ alcohol use concurrently with their PTSD, it is proposed that clinicians could benefit from a more refined understanding of the interplay between their use of alcohol and their experiences of post-traumatic stress. Batten *et al.* (2009) have argued that more integrated models, based on a functional understanding of alcohol misuse and PTSD, are necessary for joint treatment in this area to advance. The aim of the current study, therefore, was to explore how military veterans with a diagnosis of PTSD understand the relationship between their use of alcohol and their experiences of post-traumatic stress.

The current study collected qualitative data from veterans diagnosed with PTSD who use alcohol. Darke (1995), writing about the utility of qualitative methods in substance use research, commented that “Qualitative research is a good means to gain an understanding of the nature of what we are dealing with”. An important aim was that data gathered from participants’ subjective accounts would help to illuminate the nature of previously identified associations between alcohol use and PTSD symptoms in quantitative studies.

The present study also sought to allow participants to voice their thoughts, feelings and concerns regarding their use of alcohol in relation to their broader lived experience, as unique individuals *living* with post-traumatic stress. Qualitative methods have been described as being well suited to describing substance users’ ‘lived experience’ from their points of view (Rhodes & Moore, 2001). Smith (1998) has argued that a phenomenological approach is best suited amongst qualitative methodologies to eliciting data regarding individuals’ lived experience. Interpretative Phenomenological Analysis (IPA) has been previously used to research individuals’ subjective experiences of addiction and alcohol misuse (Larkin & Griffiths, 2002; Smith, 1998; Shinebourne & Smith, 2009). IPA was, therefore, considered to be an appropriate qualitative methodology for the current population and research question.

METHOD

Participants

Participants were six male clients aged between 30 and 70 years from a Residential Treatment Centre for military veterans with mental health problems. The Centre operated a 'rolling' programme, with clients typically attending the Centre for two-week admissions, up to three times per year. Participants had been clients of the Centre for between 3 and 5 years. All met the study eligibility criteria, which included: a diagnosis, by a psychiatrist, of PTSD; evidence of a history of problematic alcohol use, measured by whether they had ever scored 10 or more on the Alcohol Use Disorders Identification Test (AUDIT; Saunders *et al.*, 1993), which was routinely administered to clients on each admission to the Centre; sufficient 'stability' with respect to being able to manage their symptoms of post-traumatic stress over the course of an in-depth interview; and confirmation from Treatment Centre staff that the potential participant would be sufficiently reflective, and prepared, to discuss their use of alcohol in relation to their experiences of post-traumatic stress. This final criterion was included to minimise the possibility of recruiting participants who might focus solely, or disproportionately, on *either* their use of alcohol *or* their experiences of post-traumatic stress. Brief narrative details on each of the participants are provided in Appendix 5. Their names and identifiable details have been changed to preserve confidentiality.

Recruitment procedure

Participants were recruited using a purposive sampling strategy. Staff contacted the researcher if they felt that a resident at the Centre might meet the eligibility criteria. Following a discussion to confirm the above inclusion criteria, staff approached the potential participant, briefly introduced the project, and, if they expressed an interest in taking part, provided a copy of the project's 'Participant Information Sheet' (see Appendix 6). The researcher subsequently met with the participant, usually within two or three days of their receipt of the Participant Information Sheet, and if their consent to take part was given, a meeting was arranged for them to be interviewed by the researcher.

Data collection

Interviews were conducted in a quiet room at the Treatment Centre. Prior to each interview, participants completed a Consent Form (see Appendix 7), and the conditions for taking part in the research were reiterated. It was explained that the project had ethical approval from the University of Birmingham Research Ethics Committee and the Treatment Centre (see Appendix 8 for a copy of the University e-mail granting ethical approval).

A semi-structured interview schedule was used to guide the discussion (see Appendix 9). The aim for the interviews was to capture rich, detailed accounts of participants' experiences of the following: (i) their alcohol use prior to, during and following their careers in the Armed Forces; (ii) the onset of what they understood to be symptoms of

post-traumatic stress; (iii) the course of their experiences of post-traumatic stress and use of alcohol; and (iv) the ways in which the participant perceived their experiences of alcohol use and post-traumatic stress to relate to one another.

The researcher had previously worked at the treatment centre, prior to clinical training, and had facilitated a psychoeducational group on alcohol for a number of months. Particular care was taken to try to 'bracket' previous knowledge and preconceptions about participants' use of alcohol derived from this experience. Consultation with research supervisors over the content of the interview schedule helped to ensure that the questions asked remained open and, where possible, non-directive, thereby reducing the potential for bias in data collection.

Due to the highly sensitive nature of the interview topics, care was taken not to question participants directly about the traumatic events they had experienced, in order to minimise the risk of inducing symptoms of anxiety or re-experiencing (for example, intrusive thoughts or images) in participants. For similar reasons, they were encouraged not to discuss their traumas directly; rather, to focus on how the traumatic events they had experienced had subsequently affected them in terms of post-traumatic stress and their day-to-day lived experience. Participants were encouraged to seek out staff after the interview was completed if, at any point, they appeared upset or anxious during the interview, and in such cases the interviewer also informed staff.

Interviews lasted between 50 and 105 minutes. The median average length was 85 minutes. Each was typed up to produce a verbatim transcript.

Analysis

Transcripts were analysed in accordance with Interpretative Phenomenological Analysis (IPA) principles (Smith, Flowers, & Larkin, 2009). This proceeded on a case by case basis. In the first instance, transcripts were read in their entirety, a number of times, in order to become familiarised with the data. The next stage involved an initial coding of the transcripts, with notes made on passages of text that appeared significant or interesting, categorised into: descriptive comments (simply the *content* of what participants said); linguistic comments (exploring the participant's particular uses of language); and conceptual comments (with a more interpretative focus). An example of a passage of notated text is provided in Appendix 10. In the next phase, these notes were developed into emerging concepts or themes. Themes were then clustered together by searching for conceptual commonalities across themes. The resulting clusters were then given a label to describe their conceptual 'essence', and were grouped according to main and sub-themes, providing a structure within which themes could be regarded as, conceptually, 'higher' or 'lower' level themes. Where appropriate, 'in vivo codes' were used to label themes, thereby preserving participants' own words and phrases to describe their experiences. Once this procedure had been followed for all transcripts, a final table of themes was produced (see 'Findings' section below). Illustrative comments were included for each theme.

Themes and preliminary findings were discussed with members of the supervisory team in order to maximise the reliability of the researcher's interpretation of the interview data,

and to confirm that IPA principles had been applied. This process also helped to minimise the risk of biases in interpretation arising from the researcher's previous experiences as an employee of the Centre. About six months following their interviews, three of the participants were consulted in order to clarify the researcher's interpretation of selected data and provide a degree of 'triangulation'.

FINDINGS

The analysis suggested two main themes, each divided into two sub themes as shown below in Table 1. However, these themes need to be considered in light of the military context, as it was experienced and understood by participants. This has, therefore, been summarised briefly below, although the focus remains on the main research question – how military veterans with a diagnosis of PTSD understand the relationship between their use of alcohol and their experiences of post-traumatic stress.

Table 1. Summary table of themes

Main theme	Sub themes
<ul style="list-style-type: none"> Reasons for drinking 	<ul style="list-style-type: none"> "I just don't wanna think" "It got me through"
<ul style="list-style-type: none"> The effects of alcohol on participants' experiences of post-traumatic stress 	<ul style="list-style-type: none"> "The trouble is it helps in the short term" "I didn't feel the same as anyone else"

The military context

Group norms and values relating to the consumption and function of alcohol use within a Forces context were considered by all participants to have shaped their drinking patterns to some extent whilst they were serving, and by some to have laid the foundations for their longer-term attitudes towards, and use of, alcohol.

Many respondents gave examples of how the high availability and low cost of alcohol when they were in the Forces made it easy for them to obtain and consume alcohol. Drinking within the Military “was just much more encouraged” (Steve, line 1714) and “just what you did” (John, line 93). It would be considered that there was “something strange” (Mark, line 238) about someone who did not drink and the consequences of this could be extreme. Thus, participants felt that they conformed to group norms and expectations around drinking, with some mentioning how they believed that the heavy drinking practices served the function of bonding Units together. Drinking was also seen as a method to help them cope with stress, for example, as “a way to let off steam” (John, line 97), and consuming large amounts of alcohol was considered routine after a traumatic incident.

Furthermore, the consumption of large amounts of alcohol would be considered unremarkable, thus creating environmental and cultural conditions which effectively ‘normalised’ heavy alcohol use. Against such a backdrop, in which alcohol was regarded, and indeed encouraged, as a means of coping with stress, participants appeared to be socialised into such behaviour for the duration of their military careers and beyond. The

experiences described by the veterans below, therefore, should be considered in this context.

Reasons for drinking

This overarching theme relates to what participants were hoping to gain from drinking. It is divided into two sub-themes, “I just don’t wanna think” and “It got me through”.

“I just don’t wanna think”

Five out of the six interviewees recalled that they had drunk alcohol in order to help them to cope with symptoms of post-traumatic stress. Although the personal experiences of specific symptoms of post-traumatic stress varied for each participant, and the course of their symptoms appeared to have fluctuated over time, they had all at times experienced distressing feelings and intrusions (such as flashbacks, disturbing thoughts and nightmares) and had tried to manage these in some way with alcohol. John and Derek had also gone through periods where they reported having been highly dissociative, in the sense that they would protect themselves from feelings or memories related to their traumatic experiences by mentally ‘spacing out’ or ‘going blank’.

Participants’ accounts suggested that a number of aims and intentions lay behind their use of alcohol.

In the following accounts, Steve and Mark described their attempts to use alcohol to take some control over their thoughts. For Steve, the repetitive and insistent use of the phrase “I just don’t wanna think” conveyed a sense of exasperation with their unwanted, intrusive quality and Mark saw it as a way of maintaining his day to day functioning:

“You know I’d get home, and it was just, I would just be, ermmm, “I just don’t wanna think”, you know, “I just don’t wanna think”, I don’t, I just wanna have enough alcohol so my head slows down, and stops thinking all these thoughts about all *kinds* of things” (Steve, line 1067)

“The alcohol was there to stop me ‘avin these thoughts and feelings, just to keep me fuckin’ together” (Mark, line 529)

In some instances, alcohol was intended to prevent symptoms from occurring. Vince described how he drank to prevent intrusive memories:

“I couldn’t, err, sort of put them out there, I couldn’t block ‘em out, unless I was drinking, and if I was drinking PTSD would go away...” (Vince, line 68)

A second motive for using alcohol that emerged from the data, to help symptoms be tolerated, rather than prevented, is implied by participants’ use of such terms as “numbing” and “desensitise”. These suggest a palliative, rather than preventative, role for alcohol. For example, Vince described “drinking heavily to numb the pain”, and Steve spoke of his drinking as “just a way of just tryin’ to desensitise myself to it”. Vince had been frightened by his feelings of vulnerability and his inability to make sense of these feelings, leading him to seek “oblivion” through alcohol:

“Once I had no beer in me, I was wide open for everything then...and it frightened me sometimes...y’know, I just, I couldn’t get me head round it, so I just drank myself...into an oblivion...err, which wasn’t good, at the time I didn’t understand...” (Vince, line 208)

In the following passage from Derek's interview, the concept of 'numbing' is extended beyond the idea of tolerating symptoms to encompass a sense of 'taking time off':

"Derek: ...at the time, it was a numbing thing, and you didn't have to think about what had happened while you were...you know, it gave you a break, as it were, you felt as though you had a break long enough to kind of get over it, and once you got over it, you wouldn't have to do it, then it was just for pleasure, but of course it wasn't just for pleasure, ermm, you still did it...the real reason was still underlying.

Interviewer: What do you think you were taking a break from?

Derek: Feelings? Thoughts? Images? I guess it was that." (Derek, line 631)

This sense of taking time off, or time away, from distressing symptoms of PTSD is also illustrated by Steve's description of 'detaching' himself:

"It's that, that short term where you just, my, my head is just...I feel miserable or angry, or upset or whatever, and my head is just, I just wanna detach myself from reality I suppose, detach from anything, ermm..."
(Steve, line 866)

Steve explained how, as his alcohol intake increased over time, he started "to look at it [*ie alcohol*] as much more of a mechanism to escape". Whilst in Steve's case, the escape he was seeking was from symptoms, or whatever distress he was feeling, for Derek, alcohol was seen as an aid to escape from *himself* and was linked to feelings of guilt:

"...I hated myself, really. There were things I'd done I...you can't run away from yourself. And I was trying to get away from me, really. I was trying to pretend that it wasn't me had done these things." (Derek, line 1519)

Mark and Steve gave accounts of using alcohol in anticipation of possible symptoms later on, in particular during the night, thus highlighting the unpredictable nature of their symptoms and the anxiety that this in itself could provoke. Both made reference to the

period after they went to bed as a potentially difficult time, a time when racing thoughts about the events that underlay their post-traumatic stress could be particularly troubling. They spoke of how this period of night-time was such an unknown, that it could generate anticipatory fear and anxiety.

Mark described this as follows:

“I think it was a *fear* there of somethin’, maybe a fear of the unknown, but there was definitely a fear there, that somethin’ was gonna ‘appen...so I would get drunk, knowin’ that that’d fuckin’ drink me ‘til 2, 3 mornin’...it didn’t really matter then, ‘cause I’d got through that period, err” (Mark, line 1707)

For Steve:

“ “I’m gonna lay in bed and I’m not gonna sleep”, and I’m just gonna start thinking about things...and it was...almost, almost the anxiety that...of not knowing how my mind was gonna be, was enough to kind of drive me to have alcohol...” (Steve, line 1041)

“It got me through”

In contrast to the avoidance function described for alcohol use, participants’ accounts of their drinking also suggested that some had attributed an enabling, or facilitative role to alcohol consumption, with their drinking intended to help them with social engagement and soldiering duties.

Steve and Lofty described how, through their use of alcohol, they were seeking to achieve some degree of social engagement. For Steve, his low mood had become “a bit of a barrier

to family life”, and a glass of wine when he came home after a day at work was intended to allow him to “engage a bit” with his family. Lofty used alcohol to help him to leave the house and engage to some extent, albeit from the perspective of an immersed ‘observer’ rather than an active participant, with the ‘outside world’ of the pub environment. Hence, whilst alcohol may be having a sedating effect on his feelings of anxiety/arousal, he appears to be motivated primarily by the desire for social engagement:

“...but it’s always...ermm, a social thing in the sense that the football would be on, but everyone would be talkin’ amongst themselves, and sort of, ermmm, I normally sit right back out the way, but I can see it all goin’ on, and it, ermm...that’s how I see life now, you know, I see other people livin’ it, ermm...[pause] you know, I just, and that’s, it’s just, I think it’s for me, it’s just a nice way of goin’ out, ermmm, havin’ a couple of bevvies and just relaxin’, it’s a way of – although I might...on edge and it takes 3 or 4 pints to actually settle that edge” (Lofty, line 1971)

Derek and Vince talked of using alcohol to enable them to carry out the kind of professional duties that were expected of them as soldiers.

“I needed alcohol in me to...to get me through the day, to get me through whatever I had to do...er...yeah...it’s, it was silly...drinking, with a weapon as well, a loaded weapon...it was, it was shocking, to say the least...for me to go out and do that, but, that was the only way I could get by.” (Vince, line 498)

This passage captures his sense of dependency on alcohol, with the phrase “*I needed alcohol...*”

The effects of alcohol on participants' experiences of post-traumatic stress

Although this main theme is divided into the sub-themes below, it was clear that throughout these two themes, three key areas of post-traumatic stress were evident: intrusions, arousal and dissociation. Participants' accounts below, therefore, also describe the impact of alcohol on each of these. In addition, participants described trade-offs in relation to the use of alcohol, for example, short versus long-term impact. There were differing views about the effectiveness of alcohol in achieving the desired effects that motivated use (outlined in the previous theme), although everybody believed that alcohol, on some level and to some degree, had been helpful.

“The trouble is it helps in the short term”

With respect to ‘intrusions’ – ie distressing, unwanted thoughts or memories, flashbacks and nightmares – participants gave mixed reports about how they perceived alcohol to have affected their experiences of such symptoms. Inevitably, there is some overlap with the last theme in this account but Mark's view of alcohol was that it had been highly effective, indeed far more effective than medication. In the following extract he emphasises the functional effectiveness of alcohol as a ‘suppressant’:

“Deadening. The, the drink *really* put a cap on it...you know what I mean, the drink put a cap on it, in *my* ‘ead, these fuckin’ nasty thoughts I was ‘avin, or flashbacks...” (Mark, line 2006)

Steve, for whom “switching off” and not wanting to think he described as his “biggest thing”, believed, along with several other respondents, that alcohol had been *partially* effective:

“It did its job to a certain point, where it would shut my head down a bit when I was home” (Steve, line 576)

This notion of alcohol being partially effective was echoed by other participants’ accounts of how drinking, rather than eradicating or blocking out memories altogether, seemed to *assist* them in their attempts to cope. Vince said, “It just helped me forget. Helped me forget everything, and anything” and Derek commented that he “did find forgetfulness to some extent in it”.

However, participants also gave accounts of alcohol worsening their intrusive symptoms over time. Derek talked about how, following weekend-long binges, his intrusive symptoms were worse on a Monday morning than during the week, and how he appeared, in particular, to become more sensitive to being ‘triggered’, in the sense that he seemed more susceptible to his symptoms being exacerbated by trauma-related cues such as the smell of petrol fumes. John explained how his drinking had seemed to “magnify” the intrusions he was having, which he described as unwanted mental images, flashbacks and nightmares, and how the worse these seemed to get, the more he would drink to try to prevent them:

“I think the alcohol was fuelling what was goin’ through ma head. I can’t think of the bloody word. Anyway, it seemed, know, it was gettin’ bigger and bigger, of course I was drinkin’ *more* to stop the intrusions...” (John, line 338)

Consistent with some of the other participants' accounts, despite believing that alcohol would make his intrusions worse overall, there seemed to be a point where if he had drunk enough alcohol, at least in the short-term (ie the point of acute intoxication) the intrusions would no longer bother him:

"I just used it as a coping mechanism, 'cause I worked out quite quickly that, know, "magnify" that's what I mean, that's the word I was searchin', it would magnify the intrusions – flashbacks. But what I did...found out very quickly was once I got past a certain point, it didn't really matter any more, know." (John, line 658)

Similarly, John felt that during periods when he was drinking, if he drank enough alcohol, either he did not have nightmares, or, if he did, they were not "recorded" in his head.

John's account illustrates the complexity of the relationship between his alcohol use and his experiences of intrusions, and the choices he faced in terms of a trade-off between, on the one hand, achieving some kind of short-term respite from his intrusions through alcohol, and on the other, "magnifying" his intrusions over the longer-term.

A similar dilemma had faced Steve:

"Steve: Fortunately now I've learned enough to know that longer term, it's gonna make things worse, ermm, but the trouble is in the short term, it does help, and it's that, that short term where you just, my, my head is just...I feel miserable or angry, or upset or whatever, and my head is just, I just wanna detach myself from reality I suppose, detach from anything, ermmm...

Interviewer: What does 'detaching' mean to you?

Steve: And I suppose it means, it means 'dull the thoughts', it means, ermm...ermm...I dunno, yeah, alcohol just takes the edge off reality, I suppose, it...the intrusive thoughts aren't...don't have such, have such an impact, ermmm...but then again, I'm more likely to have bad thoughts when

I'm drinking because...because your mood is, I don't know, it's really difficult..." (Steve, line 857)

Three participants gave accounts of how alcohol had affected what could be categorised as their symptoms of arousal – ie sleeping difficulties, difficulty ‘switching off’ and more generalised feelings of being ‘wound up’. Lofty spoke of the “numbing” effect of alcohol helping him to sleep, allowing him to relax and taking “the edge off” feelings of panic, this relaxant effect also seeming to dampen down ongoing feelings of pent-up anger and frustration he had experienced as a consequence of his trauma. Steve had also used alcohol to help him to fall asleep, by calming the racing thoughts he would customarily experience when lying in bed. Suggestive of how little control Mark had felt over his ability to fall asleep, he described alcohol as “the only thing that *allowed* me to sleep, basically [*his emphasis*]”.

Four of the participants talked about how they had had experiences of “dissociation”. Mark recounted dissociating, but did not connect it with his use of alcohol. John, who explained that he dissociated “quite a lot”, described how, when he drank, a younger version of himself would appear – his 19-year-old self, “very sad...scared...but very angry, very angry”.

In contrast to going into a troubled state, Lofty and Derek linked dissociation with a sense of ‘safety’ and ‘security’. Derek was clear that he used alcohol to accelerate the onset of his dissociation:

“Interviewer: So alcohol was allowing you...

Derek: To speed up my dissociation. I could just get it, I could just go there [*clasps hands together*], “Oh please, take me there”, you know...but in the end, I mean I could dissociate without alcohol *at will*...ermm, saved me a lot of money, really.” (Derek, line 1945)

With apparent similarities to the trade-offs facing John and Steve, outlined above, Derek drew attention to the fact that despite feeling that his symptoms of post-traumatic stress were worse during periods where he was drinking, at the same time alcohol was serving a facilitative role in his quest for dissociation and the ‘escape’ or ‘relief’ that this provided:

“My symptoms were worse when I was drinking. I just had more time out of my life *missing* that I didn’t have to cope with.” (Derek, line 1977)

“I didn’t feel the same as anyone else”

Several of the participants described having difficulties relating to other people. The relationship they perceived between their use of alcohol and this social, relational aspect of their experiences of living with post-traumatic stress is now explored.

Derek described, as part of his lived experience of post-traumatic stress, his inability, or unwillingness, to share his feelings with others, or to forge emotional bonds with them. In the following extract, he draws attention to the functional role of alcohol in facilitating social contact:

“I couldn’t share anything with anybody...apart from going out together. You didn’t make emotional bonds with people, that could consciously...they were *there* actually but you didn’t realise it, because you suppressed it...you suppressed any, ermm, they were just mates, they were nothing ever more, even though you were desperately fond of these people, a lot of them, and you, you suppressed any feelings like that, and err, because you don’t *want*

people too close and you don't...you don't want anybody too close to you, and you don't wanna get too close to anybody else...you don't, you can't, it's almost unbearable to share your feelings with other people, and, and, you know, they're only bearable if they're just yours, sometimes, very difficult to share them. So when you go out, you all put your big gang mask on, and "let's get pissed and have fun together", you know, that sort of thing." (Derek, line 744)

Interestingly, Derek appears caught, between being unwilling to "get too close to anybody else", yet he does wish for some human connection, albeit on a more superficial level. At one point, his steady repetition of the phrase "you don't..." ("want anybody too close to you") shifts, rather suddenly, to "you can't". This may betray a sense in which Derek's apparent unwillingness was, in fact, better understood as an *inability* to get too close to others, as if the "unbearable" proposition of allowing other people into his inner emotional world was too much for him. Thus, alcohol appears to provide Derek with a means of maintaining the *type* of connection that he is able to tolerate.

For Lofty, alcohol enabled him to be part of a group:

"...it allowed me to be social, in the sense that it took away the inhibitions I had, or slackened them off a bit, and allowed me to come over the top, and try and be me...I don't suppose it *was* me, but you know what I mean, it was...just allowed me to get out there and live, you know...and feel the same as anyone else, but I didn't, I didn't feel the same as anyone else [*quite upset*]...if that makes sense." (Lofty, line 2032)

Lofty's attempts to "feel the same as anyone else" may be conceptualised as indicative of the isolation and lack of connectedness, or feeling of 'difference' from others, that characterised a number of the participants' experiences of post-traumatic stress. The imagery of the First World War evoked in his likening of the act of engaging with others as going "over the top" underlines how difficult and exposing this was for him.

Mark felt that alcohol allowed him to show his emotions in a way that was socially acceptable to others:

“I just wanted to get fuckin’ drunk, I just wanted to get *drunk*, and get through, you know, drinkin’ with my mask to say, “Look at fuckin’ me” – I could get drunk, I could cry, everyone blamed it on the drink, “Fuckin’ ‘ell he can’t take ‘is drink”, whereas drink allowed me to fuckin’ be myself...when I was sober I couldn’t be myself, because people couldn’t react to me bein’ myself, as what was goin’ on inside me.” (Mark, line 1530)

Thus, for Mark, it appears that alcohol is facilitating a display of his emotional pain (“drink allowed me to fuckin’ be myself”), but only on terms which he, and, he believes, other people, can manage.

DISCUSSION

The research used Interpretative Phenomenological Analysis (IPA) to explore the perspectives of six ex-servicemen on the relationship between their use of alcohol and their experiences of post-traumatic stress. An interpretative account was created following analysis of the data. This aimed to represent, as closely as possible, participants’ subjective experiences. It comprised two main themes: ‘Reasons for drinking’ and ‘The effects of alcohol on participants’ experiences of post-traumatic stress’.

The main themes should be considered against the backdrop of the cultural and environmental context of alcohol use within the military described by participants, as this

may be seen to have shaped participants' experiences, perspectives and attitudes with respect to alcohol and its relationship with post-traumatic stress.

A number of influential factors were considered to have promoted drinking within the Forces, including: the high availability of cheap alcohol; the pressure to conform to heavy drinking practices; the functional utility of alcohol in 'bonding' Units together; and the encouragement of alcohol use to cope with the stress of traumatic events and Forces duties in general. To varying degrees, participants believed that these factors influenced their subsequent drinking patterns. Participants' experiences of being socialised into using alcohol as an appropriate way to deal with stress is of particular relevance to the present study, as this may have affected how they subsequently coped with their symptoms of post-traumatic stress.

The main themes from the analysis are now re-visited, with previous observations developed and considered within the context of relevant literature. Strengths and limitations of the study are also discussed, as well as clinical and research implications.

Reasons for drinking

It is notable from participants' accounts how aware they appeared to be of the effects of their alcohol use. Whether seeking "oblivion" or drinking just enough to ease their symptoms to a manageable level, the veterans interviewed gave the sense that they were making choices regarding their use, and drank for specific effects. This was in contrast to

some previous research where veterans' drinking has been described as more akin to an unconditioned automatic response to negative internal states (Norman *et al.*, 2008).

The analysis supports a view of participants' alcohol use as a form of 'self-medication' to cope with experienced distress (Khantzian, 1999). Sleeping difficulties, trouble 'switching off' and feelings of being 'wound up', or hypervigilant for signs of threat – all characteristic of the arousal cluster of PTSD symptoms – were reported to have motivated participants' use of alcohol.

Through their use of alcohol, participants had sought to prevent, or tolerate, their symptoms of post-traumatic stress. In addition to participants' descriptions of drinking in order to "detach" or "escape" from their symptoms, this appears consistent with a view of substance misuse as a type of avoidance strategy. Fahnstock (1993) has referred to this as 'substance-enhanced' avoidance.

Some found the unpredictability of their symptoms in itself unsettling and reported drinking in order to cope with the anticipatory anxiety that this could provoke.

In addition to using alcohol to avoid unwanted symptoms, participants were also found to use alcohol in order to facilitate engagement in activities (including military duties) and social situations. When considered in terms of the self-medication conceptualisation of alcohol use in relation to particular PTSD symptom 'clusters', this suggests a link between alcohol and the avoidance cluster. For several participants, the facilitative role they attributed to alcohol appeared to be in helping them to engage in activities they would

rather avoid (such as going on patrol in Northern Ireland) or to overcome, or break through, their sense of isolation or disconnection from others. Thus, it appears that alcohol was operating as both an avoidance *and* engagement strategy for some participants. This appears to support Shay's (2002) argument that a veteran's use of alcohol can be understood as their method of regaining some semblance of control over their symptoms. Zaslav (1994) suggested that intoxicating substances can be used to 'tune out' feelings. He described such emotional withdrawal as a behaviour used by members of the military to survive and perform their military duties, where, for example, the demands of battle require combatants neither to care nor to feel too deeply. This resonates with some participants' accounts of their use of alcohol within the military enabling them to perform their duties as soldiers, suggesting that, for some, the 'dual function' of alcohol as an avoidance/engagement strategy may have some foundation in their military past. Further research into the formative role of the military context in the development of veterans' drinking careers may help to illuminate this.

The effects of alcohol on participants' experiences of post-traumatic stress

All participants reported, to some degree, beneficial effects from alcohol with respect to their symptoms. The identification by veterans that alcohol helped them to cope with symptoms of post-traumatic stress is consistent with reports from a number of previous studies (Bremner *et al.*, 1996; Dass-Brailsford & Myrick, 2010; Fahnstock, 1993; Steindl *et al.*, 2003; Calhoun *et al.*, 2002).

However, the analysis also revealed that alcohol use, over time, could make symptoms worse, as has been reported previously (Seidel, Gusman, & Abueg, 1994; Dass-Brailsford & Myrick, 2010). Dass-Brailsford and Myrick draw attention to how substances, like alcohol, that *acutely* depress arousal levels can exacerbate symptoms of hyperarousal and hypervigilance in the longer term. This may partly account for participants' reports of the 'trade-off' they would make between short-term improvement in symptoms over longer-term exacerbation.

The reported worsening of intrusive symptoms following periods of heavy drinking by some participants may be explained, in part, by alcohol withdrawal. Jacobsen *et al.* (2001) hypothesised that a hyperaroused state brought on by alcohol withdrawal might act as a conditioned reminder for an individual of past traumatic experiences and thereby trigger an increase in intrusive symptoms.

Dissociation can be understood as a detachment from present reality in order to protect against intolerable feelings or memories related to trauma (van der Kolk, 1987; Lynn & Rhue, 1994). Two of the four participants who reported dissociative experiences perceived a link between such experiences and their use of alcohol, in the sense that they believed alcohol would put them into a dissociative state. Relationships between post-traumatic stress, substance use and dissociation have relatively recently begun to be explored by researchers (Najavits & Walsh, 2012). Roesler and Dafler (1993) proposed that substances could be used as a form of 'chemical dissociation' in order to ward off symptoms of post-traumatic stress. In a similar vein, the analysis suggested that for one of the participants alcohol was used to facilitate dissociation and thereby provide an 'escape'

from his symptoms. This appears to be consistent with a view of alcohol use as facilitating avoidance.

Substances have been reported as being used to access memories or emotions related to trauma (Najavits, 2002). One of the participants described how his dissociative experiences, whilst under the influence of alcohol, involved a return to the emotions and sense of vulnerability he felt when he was 19 (the same age he had been at the time of his trauma). It is possible that his use of alcohol in this sense was intended to help him to make sense of unresolved feelings dating back to the time of his trauma. However, it is not clear from the analysis whether the dissociative states he described were actively sought or an unwelcome consequence of his alcohol use, so this remains speculative. Further research focussing on veterans' experiences of alcohol use in relation to experiences of dissociation might help to clarify a possible functional role for alcohol.

The present analysis indicated that for some of the participants, for whom 'connecting' with others had proved difficult, alcohol provided them with the means with which to manage or tolerate group situations. The use of substances amongst individuals diagnosed with PTSD in order to overcome feelings of social isolation and 'reconnect' with others has been reported previously (Bremner *et al.*, 1996; Dass-Brailsford & Myrick, 2010). For one or two of the participants in the current study, it appeared that alcohol had been used as a means of regulating this 'reconnection' so that it took place on terms with which they felt comfortable, whether by keeping the emotional intensity of their interaction at a superficial level, or by allowing them to display their distress to others without having to explain themselves, with their intoxicated state being held to account for their behaviour.

The notion of individuals with PTSD using alcohol to allow them to connect with others appears to be an area which would benefit from further research. The present analysis suggested that participants desired a connection with others, but could also seem trapped by their sense of isolation and wariness. Alcohol appeared to help them not only to achieve a connection, but also to mediate it. Further research, into how people with PTSD experience this particular dimension of their day-to-day lives, between isolation on the one hand and connectedness on the other, and the role that alcohol might play in their attempts to negotiate such a connection, would be an interesting addition to the current study. Qualitative methods, with their sensitivity to subjective experience and personal meaning, may be well suited to explore in greater depth what, on the basis of the present analysis, appeared to be a complex and nuanced area of participants' lives.

What seemed clear from the findings, however, was that participants viewed the two experiences, ie the symptoms of post-traumatic stress and resulting problems and the alcohol consumption, as clearly interrelated.

Clinical implications

The study findings contribute to a growing body of research into the relationship between PTSD and alcohol use. Participants were found to use alcohol in order to cope with their symptoms of post-traumatic stress. The conceptualisation of their coping as a type of avoidance strategy has clinical relevance because understanding alcohol use coping motives with respect to post-traumatic stress symptoms may help to inform clinical

interventions (Marshall- Berenz *et al.*, 2011). The current findings provide a degree of support for treatment approaches that regard substance use amongst veterans as a form of avoidance. On this basis, it could be argued that alcohol be regarded as integral to the PTSD avoidance symptom cluster, suggesting that alcohol use be addressed within an integrated, rather than sequential or concurrent, approach to PTSD/alcohol misuse treatment. Two existing models of therapy used in the treatment of PTSD that conceptualise alcohol use as avoidance, both cognitive-behavioural in orientation, are Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006) and Cognitive Processing Therapy (CPT; Monson & Rizvi, 2007).

The variation in participants' accounts, in terms of the relative emphasis and importance placed on different aspects of their experiences of post-traumatic stress, and when describing the impact of their alcohol use on these experiences, suggest that, at least for these veterans, the relationship between alcohol use and post-traumatic stress may be highly individualised. This would seem to support Batten and Hayes's (2005) proposal that clinicians working with such clients use integrated treatment approaches that are based on a functional understanding of an individual veteran's use of alcohol in relation to their symptoms of post-traumatic stress, rather than addressing the two problems concurrently using disparate approaches.

The finding that some participants reported great difficulties connecting with other people, or functioning socially in group situations, may have implications for the development of group interventions for military veterans. It is possible that in instances where group treatment outcomes may be related to non-specific treatment factors (ie. components of

treatment shared by group interventions in general, rather than specific interventions or techniques characteristic of a particular therapeutic approach) the function of a group in establishing conditions where participants feel able to ‘connect’ with other group members, thereby counteracting their sense of isolation, may be one mechanism through which favourable outcomes might be achieved. Such a possibility would appear to lend some support to the use of group treatment approaches with military veterans, and should be considered by practitioners and researchers involved in current and future efforts to design and implement treatment programmes for this particular client group.

Strengths and limitations of the study

The varying perceptions of the relationship between alcohol and post-traumatic stress that emerged from the analysis appear to support the applicability of a phenomenological approach such as IPA. With its commitment to the idiographic, it appeared well suited as an appropriate methodology with which to research the subjective nature of alcohol use in relation to post-traumatic stress. If this relationship is viewed as an idiosyncratic one, as the current findings suggest, this may account for some of the inconsistency in findings from previous, larger-scale quantitative studies of associations between specific PTSD symptom clusters and alcohol use, as outlined in the introduction.

It is from quantitative studies that our existing understanding of relationships between symptoms of post-traumatic stress and veterans’ use of alcohol has generally been derived. Whilst in many respects the present analysis served to corroborate a number of previously identified correlational relationships (for example, that alcohol is often used by veterans to

suppress symptoms of hyperarousal), the rich descriptions gathered from participants, through the use of a qualitative methodology, helped to generate a more nuanced understanding of their use of alcohol in relation to symptoms of post-traumatic stress. For example, the data on participants' motives for using alcohol suggested that, for a particular symptom, a *range* of desired effects might be sought, whereas correlational research designs may lack the sensitivity to detect such differences.

In addition, the use of qualitative methods revealed aspects of the post-traumatic stress/alcohol relationship beyond the scope of existing quantitative studies, given their traditional focus on alcohol use in relation to specific PTSD diagnostic symptom clusters. This is evident from the finding that a number of participants described a trade-off between short term gain from alcohol intoxication and longer-term exacerbation of symptoms. This appeared to play a part in their decisions to use or abstain from alcohol and is an area that might benefit from further research, as a better understanding of the role of such decision making might help to inform clinical interventions.

Finally, it is important to stress that the findings from the current study cannot be generalised beyond the particular population studied. Caution should also be exercised in drawing comparisons between the accounts derived from the veterans who took part and findings from other research on military veterans, as the particular nature of different wars and theatres of operation might have a marked influence on the subjective experience of post-traumatic stress for those who experience it.

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APPENDIX 1

Executive Summary

The Relationship Between Alcohol Use and Post-traumatic Stress: Perspectives from Military Veterans

This paper describes a qualitative study carried out by David Hinkly and presented as part of a thesis for submission to the School of Psychology, University of Birmingham, for the Doctorate in Clinical Psychology.

Background and Study Aims

A high prevalence of alcohol misuse amongst military veterans with a diagnosis of PTSD has been identified in the research literature. There are risks from excessive alcohol consumption by veterans with PTSD to their physical, social and mental well-being (notably, in relation to their symptoms of PTSD). Although it has been argued that for veterans to achieve improvement in terms of their PTSD, treatment of co-occurring alcohol misuse is crucial (Steindl *et al.*, 2003), historically, health care providers have been reluctant to address both problems concurrently, preferring veterans to achieve abstinence prior to commencing trauma work. Increasingly, researchers have argued for the feasibility of jointly treating PTSD and substance use in non-military populations (eg Back, 2010; Henslee & Coffey, 2010), and this is now supported by the US National Center for PTSD. It has been proposed that integrated treatment approaches, as well as clinicians working in this area, would benefit from a better functional understanding of the relationship between alcohol misuse and PTSD (eg Batten *et al.*, 2009). There has been relatively little research into alcohol misuse amongst military veterans and this has been largely quantitative. Mixed findings have generated a degree of support for a

conceptualisation of alcohol use as a form of ‘self-medication’ of PTSD symptoms (Khantzian, 1999). The present study proposed that, whilst existing research has helped to identify possible functional relationships between alcohol and certain symptoms of PTSD, the nature of these relationships has not been explored in great depth. The aim, therefore, was to explore how military veterans with a diagnosis of PTSD understand the relationship between their experiences of post-traumatic stress and their use of alcohol, using qualitative methods, in order to help to illuminate the nature of previously identified associations between PTSD symptoms and alcohol use from quantitative studies and to inform the development of clinical interventions in this area.

Method

Six participants were recruited from a Centre specialising in the treatment of PTSD amongst military veterans. They were interviewed individually, using a semi-structured interview schedule, about their experiences and perceptions of alcohol use in relation to post-traumatic stress. The interviews were transcribed verbatim and analysed using Interpretative Phenomenological Analysis (IPA; Smith *et al.*, 2009).

Findings

Two main themes were suggested by the data: ‘Reasons for drinking’ and ‘The effects of alcohol on participants’ experiences of post-traumatic stress’.

- Within the ‘Reasons for drinking’ theme two sub-themes emerged. In the first of these, “I just don’t wanna think”, participants’ accounts suggested that a number of aims and intentions lay behind their use of alcohol, including the prevention, or tolerance, of symptoms such as hyperarousal, intrusive thoughts, memories and

images, as well as emotional numbing and coping with anticipatory anxiety. The second sub-theme, “It got me through”, described participants’ use of alcohol as a facilitator, or enabler, to help them with social engagement and the fulfilment of military duties.

- Two sub-themes were subsumed within the second main theme, ‘The effects of alcohol on participants’ experiences of post-traumatic stress’. The first of these, “The trouble is it helps in the short term”, suggested that respondents had found alcohol to be at least partially effective in achieving the aims that participants had identified as their ‘Reasons for drinking’. However, several also gave accounts of how, over time, alcohol could make some symptoms worse, and described facing decisions involving a ‘trade-off’ between short-term gain over longer-term exacerbation of symptoms. In the second sub-theme, “I didn’t feel the same as anyone else”, the analysis suggested that participants had used alcohol to facilitate a degree of ‘connection’ with others, and to allow them to express their emotions in group settings in ways they felt able to manage.

Discussion

The analysis supported a view of participants’ use of alcohol as a form of ‘self-medication’ to cope with their symptoms of post-traumatic stress. This appeared consistent with a view of substance misuse amongst people diagnosed with PTSD as a type of avoidance strategy, although some participants also described using alcohol to help them engage with social and professional activities, suggesting a dual function for alcohol. The conceptualisation of alcohol use as a form of avoidance suggests that treatment approaches such as Acceptance and Commitment Therapy and Cognitive Processing Therapy, both of which share this conceptualisation, may be suitable treatments for use with this population.

Participants reported beneficial effects from alcohol in relation to their symptoms in the short term, but also a worsening of symptoms over time, and suggested that many were faced with making a ‘trade-off’ in their decision-making over their use. The idiosyncratic nature of participants’ accounts, in terms of their varying experiences of post-traumatic stress and particular motives for using alcohol, appears to support views expressed in the literature underlining the importance of basing joint treatment for alcohol/PTSD on a functional understanding of an individual’s use of alcohol in relation to their post-traumatic stress symptoms.

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APPENDIX 2

Literature search methodology

The literature search was carried out by searching the following databases: PsycInfo (*all years to date*); Web of Science (*all years to date*); PILOTS (*all years to date*); MEDLINE (*all years to date*); and ASSIA (*all years to date*).

The search strategy used to search PsycInfo was as follows:

1. alcoholism/
2. exp drug abuse/
3. “substance use disorder*”.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]
4. 1 or 2 or 3
5. posttraumatic stress disorder/
6. 4 and 5
7. exp treatment/
8. exp intervention/
9. 7 or 8
10. 6 and 9
11. exp Military Veterans/
12. 10 and 11

This search found 50 studies on the PsycInfo database. Abstracts for the studies identified were scrutinised and, on the basis of the information available, the full texts were obtained for studies which met the inclusion criteria described above, or, due to insufficient

information having being supplied in the abstract, could not be excluded at this stage. This resulted in 20 full text articles that potentially met criteria for inclusion in the review.

The search strategy used to search the remaining databases was as follows:

Topic=(“alcohol abuse*” or “alcohol misuse*” or “drug abuse*” or “drug misuse” or “alcohol dependenc*” or “drug dependenc*”) AND Topic=(“posttraumatic stress” or “post traumatic stress*” or ptsd) AND Topic=(treatment* or therap* or intervention*) AND Topic=(“military” or “veteran”)

This search found 41 studies on Web of Science, 48 studies on PILOTS, 64 studies on MEDLINE and 13 studies on ASSIA. Once papers had been excluded that duplicated those previously identified through PsycInfo, this resulted in a total of 2 more papers being identified through Web of Science, no extra papers via PILOTS, 4 additional papers through MEDLINE and none by ASSIA.

The above search strategy resulted in 26 full text articles being obtained that potentially met inclusion criteria. The reference sections of these articles were searched for additional articles. One additional article was identified for inclusion in this manner. However, 11 of the resulting 27 papers were then excluded from the study because: 3 did not report treatment outcomes; 1 did not report participants as having a diagnosis of PTSD, or the use of a measure or structured clinical interview to establish whether they met criteria for PTSD; 2 contained no clear description of an intervention or treatment plan; and 6 did not report the use of pre- and post- measures. This resulted in 15 studies which met the full inclusion criteria for this review.

E-mail correspondence was exchanged with 10 researchers identified during the course of the literature search as being key authors in the field of treatments for co-occurring

PTSD/SUD. The individuals contacted were asked if they were aware of any published studies involving military veterans or of any research in progress with preliminary outcome data which could be made available. None of the researchers identified further studies or data for inclusion in the review.

APPENDIX 3

Data extraction form

Author/s	Boden <i>et al.</i> (2011) – ‘Seeking Safety treatment for male veterans with a substance use disorder and post-traumatic stress disorder symptomatology’
Design	RCT
Participants	98 US male veterans with SUD/PTSD
Aim	Investigated whether veterans with a SUD and co-occurring PTSD symptomatology in a US Veterans Health Administration (VA) outpatient speciality SUD programme would benefit from a specialised treatment track for these comorbid disorders
Intervention	TAU – motivational enhancement (at least 3 group sessions) followed by bi-weekly abstinence-based ‘recovery’ groups – other groups in addition, based on need – smoking cessation, sobriety support, cocaine recovery, alcohol recovery, family therapy, anger management, CBT, fitness, relaxation, health education, hepatitis education, developing outside activities. SS – same as TAU except for the recovery groups being substituted for SS
Method	Assigned patients randomly to receive treatment-as-usual (TAU) or Seeking Safety (SS) Participants were already in initial phases of SUD treatment – if interested, were screened for PTSD and exclusion criteria and if met conditions for eligibility were randomised into one of two treatment conditions Primary outcomes – drug and alcohol use severity, secondary outcomes PTSD symptom severity - all outcomes measured at 3 timepoints – 1 st day of treatment (baseline), 3 months following baseline assessment (planned end of SS sessions), 6 months following baseline (ie 3 month post-trial follow-up) Close adherence to the SS manual maintained
Measures	ASI Impact of Events Scale-Revised (PTSD) Client Satisfaction Questionnaire at 3-month assessment Coping Responses Inventory (to assess active coping) Changes in PTSD severity from pre- to post-treatment
Findings	Average attendance at SS groups was 13.3 (SD = 5.3) although encouraged to attend 24 group sessions – attendance at TAU on average 9.1 (SD = 3.5) SS performed as well as TAU in terms of reducing alcohol use and PTSD symptoms, participants in SS had significantly greater treatment attendance, satisfaction and improvement in active coping – reductions in PTSD severity occurring during treatment did not account for reductions in drug use Authors confident that their findings provide support for the feasibility and benefit of addressing PTSD and SUD simultaneously, rather than requiring separate or sequential treatments or a period of abstinence prior to PTSD-focussed care
Quality rating	+ Level of evidence – 1 Adequate sample size Good follow-up rates SS groups were smaller than TAU – perhaps confounding effect on outcome? SS groups all had PTSD symptomatology, whereas not the case in TAU groups –

	<p>may have affected cohesion and identity amongst group members?</p> <p>Only 3-month post-trial follow-up – can't tell from the study whether the effects would still be found at 6-month, and 12-month post-treatment follow-up?</p> <p>Not an RCT of SS per se, but of how SS fares when incorporated into a front-line VA practice setting</p> <p>SS groups led by psychologist from research team, received intensive training in SS – in contrast to what authors report as 'didactic' training of the therapists and social workers in TAU, and psychologist reported as being PhD-level rather than Bachelor's or Master's level (TAU team) – perhaps addition of more specialised clinician made a difference</p> <p>Limitations mentioned by authors:</p> <p>Differing levels of training and education in clinicians delivering contrasting treatments</p> <p>Study included several participants who met only partial criteria for PTSD</p> <p>Can't dismantle the effect of providing smaller, more clinically homogeneous therapy groups from the effects of providing SS per se</p> <p>Only male veterans, limiting generalisation of results to female veterans</p>
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Author/s	McCarthy, E. & Petrakis, I. (2011) – 'Case Report on the use of cognitive processing therapy-cognitive, enhanced to address heavy alcohol use'
Design	Case study
Participants	1 (white male aged 30, divorced, college educated, employed full-time)
Aim	<p>Case report presented to highlight the effect of a 12-week course of CPT-C with medication management and enhancements "using standard practices from the addiction field"</p> <p>Treatment goals – reduce presence and severity of PTSD symptoms while simultaneously decreasing alcohol consumption and alcohol-related problems</p>
Intervention	<p>12 week course of Cognitive processing therapy-cognitive (CPT-C, a modified version of CPT without the written trauma account), with medication management and enhancements from practices in addiction field (listed on p475):</p> <p>Psychoeducation about alcohol use as an avoidance strategy</p> <p>Daily diaries on alcohol consumption</p> <p>Work in therapy sessions on identifying the use of alcohol to self-medicate and understanding of the connection between PTSD and alcohol use</p> <p>Teaching of coping skills to promote alcohol abstinence (eg enlisting social support, attending AA, dealing with craving)</p> <p>Disulfiram</p> <p>After first session of CPT-C, was prescribed bupropion for depression and prazosin for nightmares</p>
Method	Design assessed baseline performance and evaluated the enhanced CPT-C intervention over a period of 12 weeks to assess changes in PTSD symptoms and alcohol use – <i>see Measures below for details on procedure for administering measures</i>

	<p>12 weekly 60-minute sessions of CPT-C, enhanced to address heavy alcohol use, provided by trained clinician</p> <p>Breathalyzer reading obtained prior to each session, veteran completed PCL-C to assess past-week changes in PTSD symptoms</p> <p>Detailed descriptions given of all 12 sessions</p> <p>In addition to CPT-C protocol, sessions 3-7 included identification of the use of alcohol to self-medicate and work on understanding of the connection between PTSD and alcohol use.</p>
Measures	<p>Initial diagnosis established using Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-P) – confirming presence of DSM-IV AD and PTSD</p> <p>Baseline ratings assessed using:</p> <p>90-day time-line follow-back (TLFB) documenting quantity and frequency of alcohol use in the prior 90 days</p> <p>Clinician Administered PTSD Scale (CAPS) for baseline PTSD severity and to confirm diagnosis</p> <p>PTSD Checklist-Civilian (PCL-C) for subjective ratings of PTSD symptom severity</p> <p>Beck Depression Inventory (BDI) to determine depressive symptoms</p> <p>Brief Symptoms Inventory (BSI) for mental and physical health ratings</p> <p>SF-36 for quality of life</p> <p>Throughout treatment: Bi-weekly assessment by independent evaluator of current PTSD symptoms using CAPS and weekly past-week alcohol consumption (using TLFB)</p> <p>pre- and post-treatment CAPS evaluations completed by study clinician</p> <p>follow-up at weeks 3, 6, and 12 to assess alcohol use (TLFB) and PTSD symptoms (PCL-C) with study clinician</p>
Findings	<p>Completed all 12 sessions, arrived sober to all</p> <p>Clinically meaningful improvements in PTSD symptoms, as measured by CAPS overall scores:</p> <p>Pre-treatment score 69; posttreatment score 9</p> <p>Weeks 2, 4, 6, 8, 10 – scores 26, 45, 53, 32, 48 respectively</p> <p>Over time, decrease in PCL-C scores – baseline 50, posttreatment 30, 12 wks post treatment 36</p> <p>Over time, decrease in drinking and heavy drinking days baseline 100% of days</p>

	<p>were heavy drinking and 100% of days were drinking days</p> <p>Week 9 became abstinent (disulfiram begun) and remained up to end of treatment and 12 weeks posttreatment (self-report)</p> <p>BDI pre 15, post 10</p> <p>BSI pre 62, post 52</p> <p>SF-36 physical health pre 50.65, post 57.62</p> <p>SF-36 mental health pre 27.18, post 47.11</p> <p>Treatment end, no longer met criteria for PTSD and had maintained abstinence for 3 weeks</p>
Quality rating	<p>+</p> <p>Level of evidence – 3</p> <p>Authors’ comments - Case study, limited follow-up data, some data collected by study clinician, results primarily descriptive rather than analytical, threats to internal validity due to inherent lack of experimental design in case study</p> <p>Disulfiram begun in session 9</p> <p>After first session bupropion for depression and prazosin for nightmares prescribed – confounders?</p>

Author/s	McDevitt-Murphy, M.E. (2011) – ‘Significant other enhanced cognitive-behavioral therapy for PTSD and alcohol misuse in OEF/OIF veterans’
Design	Case study
Participants	2 case studies, one 27-yr-old white male, one 27-yr-old African American male
Aim	<p>Thomas’s treatment goals – wanted to give up drinking for good</p> <p>Joseph’s goals – early partial remission on alcohol and marijuana at baseline, goal to live independently (at time of study in VA group home) and wanted to minimise risk of relapse upon that transition, wanted to reduce PTSD symptoms</p>
Intervention	VALOR protocol: manualised treatment includes series of cognitive-behavioural skills modules, drawn from established treatment manuals for PTSD and alcohol misuse – list of modules given in table on p43 of paper, 20-25 sessions of treatment (some optional, depending on patient’s symptoms), some in couples, some individual
Method	Assessment at baseline, end of treatment, and 1-month follow-up
Measures	<p>Baseline and follow-up assessment sessions:</p> <p>CAPS, PTSD checklist (PCL), TLFB, AUDIT</p> <p>At baseline: SCID to assess substance use disorders and comorbid conditions</p>
Findings	Thomas – baseline, averaged 5.2 drinks per week, scored 18 on AUDIT, moderate level of PTSD symptoms (CAPS score 46, PCL score 59), attended 17 sessions of therapy over 5 months, maintained abstinence throughout treatment and through follow-up period – end of treatment, scores of 11 on CAPS, 23 on PCL, 4 on AUDIT, reported no drinking in past month on TLFB – one month posttreatment,

	<p>scored 25 on CAPS, 23 on PCL, 6 on AUDIT, reported continuing abstinence</p> <p>Joseph – on TLFB at baseline reported drinking average of 23.8 drinks per week, and obtained score of 26 on AUDIT, PTSD symptoms were in severe range (CAPS 112, PCL75), met criteria for co-occurring major depressive disorder assessed using SCID</p> <p>Attended 25 sessions over 6 months</p> <p>End-of-treatment assessment, 52 on CAPS, 33 on PCL, 0 on AUDIT, one month post-treatment, reported no drinking on TLFB, 40 on CAPS, 36 on PCL, 0 on AUDIT</p>
Quality rating	<p>+</p> <p>Level of evidence - 3</p>

Author/s	Lindner & Lindley (2010) – ‘Dual Diagnosis (PTSD/SUD) treated in a veterans affairs health care facility’
Design	Book chapter, case study/report
Participants	1 49 yr old white male army vet with PTSD and excessive alcohol use, lives in residential treatment program for homeless vets with substance abuse problems
Aim	Chapter is an ‘illustration’ of the application of guidelines for PTSD adjusted for comorbid PTSD and substance abuse
Intervention	<p>Treatment at VA health care facility; concurrent use of individual therapy, group therapy and medication management:</p> <p>Authors say that in previous 10 years client had already enrolled in 3 substance abuse programmes</p> <p>Where he is now (residential treatment programme for substances) he has numerous weekly recovery-oriented group psychotherapies and weekly contact with a case manager, but no PTSD-specific treatment</p> <p>Presenting problem to the authors was PTSD, but due to worsening of symptoms over the period of the 6 months of sobriety prior to their work with him, intervention took into account how to develop additional coping skills to decrease reliance on alcohol, also relapse prevention work, and consideration of how to adjust traditional PTSD treatments to increase the likelihood of sustained sobriety</p> <p>Reports following Vet Affairs/Dep of Def guidelines for management of PTS (2004) – table given where these are outlined (includes medication administered thru referral to psychiatrist – prazosin for sleep)</p> <p>For substance use used SS, but this was following prior 12-week stress management for PTSD group, also attendance at AA, individual relapse prevention work, went to 25 SS sessions over 6 months (concurrent with exposure therapy, as in going on at the same time as he received exposure therapy from author/s)</p> <p>Exposure therapy but with modifications for substance use, as outlined by research (cited in paper) – authors report this as the focal treatment intervention in this case, with the sessions titrated and modified because of significant history of substance dependence</p> <p>In all, detailed description of all points of intervention and rationale, they say that a major concern was whether exposure therapy could be employed without increasing the odds of relapse to alcohol</p>
Method	Authors describe 2-phase course of therapy – phase 1: individual psychotherapy and stress management group – phase 2: exposure therapy and seeking safety (SS)
Measures	DSM-IV diagnosis of PTSD and alcohol dependence (although 6 months dry – in

	remission – at time of study); PTSD Checklist-Civilian version (PCL-C) reported as 70 (at pre); all others by self-report
Findings	Sleep appeared to improve (due to prazosin?) at evaluation after phase 1 (5 months in?) – had maintained sobriety now for 11 months, PCL-C score down from 70 to 62, but still clinically significant level of PTSD symptoms; after 6 sessions of exposure PCL-C was 60 (indicating PTSD symptoms had not improved); at end of exposure therapy (30 sessions total) PCL-C score was 42, falling below 50-point recommended cutoff for PTSD in vets; sobriety maintained throughout course of exposure therapy
Quality rating	+ Level of evidence – 3 Apparently found a job during the therapy; authors report that case could have benefitted from more measures aimed at monitoring improvements in social functioning, sense of well-being and interpersonal interactions Confounders not identified/discussed

Author/s	Norman, S.B. et al (2010) – ‘A pilot study of seeking safety therapy with OEF/OIF veterans’
Design	Uncontrolled pilot study
Participants	Enrolled 14 male outpatients (veterans) over an 18 month period; 9 out of 14 completed treatment and their post-treatment assessment; 7 of the 9 referred for PTSD and AUD; 2 out of 9 for PTSD and marijuana dependence; 6 of 9 completed one or both follow-up assessments
Aim	Report is an example of implementation of SS with vets at a VA, with preliminary data on 9 vets who completed SS
Intervention	Seeking Safety – 10 weekly 90-min sessions Participants could join at any time and attend for 10 weeks from their point of entry Not all 25 SS modules used – selection listed in paper
Method	Participants assessed at baseline, mid- and post-treatment, and 6-month follow-up Measures administered by the group therapists prior to the start of each patient’s 1 st , 5 th and 10 th week of treatment Follow-up measures at 3 months and 6 months were mailed to participants for their completion Session audiorecordings reviewed during weekly supervision and therapists given feedback on compliance with the SS manual
Measures	PTSD Checklist-Military Version (PCL-M), BDI-II, AUDIT, Drug Abuse Screening Test (DAST-10) – AUDIT and DAST modified to be completed in regard to the past month
Findings	Results presented in table 2 in paper on p85

	<p>Attendance averaged 7.64 sessions Groups had 5 to 10 weekly attendees</p> <p>Small sample size, so changes from pre- to post-treatment examined on an individual basis</p> <p>Study drop-outs had a tendency towards higher AUDIT scores and fewer sessions attended, suggesting that those with more alcohol problems may be harder to retain</p> <p>For PTSD and depression, 8 of 9 veterans decreased in PCL scores and 1 worsened (using calculations of reliable and clinically significant change) – of the 8 who improved, 6 had a reliable change in PCL total score of a decrease of 5 or more points, 4 had a clinically significant decrease of at least 10 points 5 decreased in BDI-II total scores by at least 15 points (15 point change both clinically significant and reliable) – remaining 4 showed BDI-II increases from 2 to 7 7 endorsed problem drinking at baseline, 5 reported a reduction in number of drinking days, drinks per episode, or both, both marijuana smokers reported using at least once in the month prior at post-treatment</p>
Quality rating	<p>- Level of evidence – 3</p> <p>Authors' own comments re limitations: Small sample size, so statistical differences not examined Limited by small sample, lack of control condition, fidelity assessment, reporting of all substance use post-intake, and lack of data on study drop-outs Pre- and post- measures administered by the therapists (potential bias in responses) High drop-out rate (42%) Low number of veterans who completed at least 1 follow-up assessment</p>

Author/s	Batten <i>et al.</i> (2009) – ‘Acceptance and Commitment Therapy for Comorbid PTSD and substance use disorders’
Design	<p>Uncontrolled pilot study (pre- and post-)</p> <p>Book chapter - overview of treatment programme developed to treat comorbid SUD-PTSD using ACT-based treatment to address comorbidity, in a military veteran population Programme assesses veterans before and after treatment as part of study examining the effectiveness of the residential treatment programme – reports on 1st 15 months of this evaluation (preliminary data) No control condition Experimental control minimal, large number of participants who consented did not provide complete data, authors say results are promising and suggestive</p>
Participants	All participants in programme have substance abuse issues, some also working on comorbid PTSD – reports on first 15 months of evaluation, during this time 90 vets admitted to residential programme, and 60 consented to be part of research project, of those 60 20 completed pre- and post-treatment assessments (primary

	reason for incomplete data were failure by vets to complete the programme and lack of dedicated research staff to collect data in a timely way) – of those 20 90% were male and mean age 49, 50% African-American, 45% college education 55% not working at time of assessment, fairly detailed demographic info supplied
Aim	Authors use ACT core principles in general and the construct of experiential avoidance in particular to provide a single conceptual framework for understanding comorbid presentation of PTSD and SUDs amongst veterans
Intervention	Veteran attend twice weekly, hour-long ACT education group on general ACT principles, 6-week dual-diagnosis programme, 3 times per week participate in 90-min, process oriented group, focussing on specific issues that have contributed to each group member's use of substances and current life concerns, two 90-minute sessions per week of SS (12 modules of SS over a 6-week cycle – skills framed in an ACT-consistent way); one-weekly trauma education group; weekly 60-minute group for sleep (authors say that as with all the group, presented from an ACT perspective); weekly 60-min anger group; OT group; exercise
Method	No follow-up, just pre- and post-
Measures	Background questionnaire filled out assessing demographic info and military history; two measures of PTSD symptomatology (PTSD checklist – the PCL, and the Mississippi Scale for Combat-Related PTSD – the MISS); Anxiety Sensitivity Index (ASI) and the Acceptance and Action Questionnaire II (AAQ-II, a measure of experiential avoidance); PHQ 9-item version to assess depression (PHQ9) and the Fear of Sleep Inventory (FOSI) – an instrument assessing fear of sleep and trauma-related nightmares
Findings	Regarding PTSD: post- scores on PCL significantly lower than scores at pre-; significantly lower post on MISS than at pre-. Significant change in desired direction (increase) from pre to post on the AAQ-II. ASI scores decreased significantly from pre- to post-, so did PHQ9, FOSI total score decreased from pre to post (but doesn't say it was a significant decrease) Means, SDs, p values provided on p324
Quality rating	- Level of evidence – 3 High drop-outs reported Low completion of pre- and post-treatment measures

Author/s	Tuerk, P. (2009) – 'Clinical case discussion: combat PTSD and substance use disorders'
Design	Case study
Participants	Case discussion 22-yr-old, single white man, with alcohol dependence and co-morbid PTSD
Aim	Illustration of use of exposure therapy for PTSD via telehealth technology
Intervention	Past-focussed Rapport building, psychoeducation, goal setting, interoceptive, imaginal and in vivo exposure to trauma cues, cognitive restructuring and behavioural homework (similar to the evidence-based prolonged exposure protocol for PTSD – Foa, 2007) – detailed description of intervention given No interventions targeted alcohol dependence or depression
Method	Attended community-based outpatient clinic for 11 weekly, 90 minute sessions

	conducted over videoconferencing with clinical psychologist specialised in treating PTSD
Measures	Modules from SCID to evaluate PTSD and depression, PCL-M, BDI, weekly semistructured clinical interviews, AUDIT
Findings	<p>Baseline assessment screened positive for alcohol dependence, alcohol consumption up to 7 times a week with 10 or more drinks per setting (AUDIT = 11), met criteria for current PTSD and scored a 59 on the PCL-M, scored 14 on BDI, indicating mild depression</p> <p>Session 7 scored 19 on PCL-M and 5 on BDI, both in nonclinical range Session 11 continued to demonstrate significant improvement in all 3 PTSD symptom clusters (no figures given)</p> <p>Session 11 self-reported no urge to drink to avoid traumatic memories or to sleep, reported drinking only at parties, less than once per week and could not remember the last time he had more than 6 drinks in one setting Formal AUDIT and AUDIT-C were not conducted during exposure treatment</p> <p>2 months after treatment patient's use informally assessed by psychiatrist reported that use was "social" 6 months after treatment screened negative for alcohol dependence (AUDIT-C = 2) and negative for PTSD (PCL-M = 21) – table shows clinical and assessment outcomes beginning from patient intake through a 6-month follow-up period</p>
Quality rating	+ Level of evidence - 3

Author/s	Desai, R.A. et al (2008) – 'Impact of the Seeking Safety Program on Clinical Outcomes Among Homeless Female Veterans with Psychiatric Disorders'
Design	Pre-post non-equivalent control group design
Participants	<p>Either homeless or at high risk of becoming homeless, not receiving VA health services for more than 6 weeks at the time of program entry</p> <p>Female</p> <p>No structured interviews used to assess eligibility</p> <p>Phase I – 359 Phase II (SS) - 91</p> <p>Included in analyses only if they had completed at least one follow-up interview – this was 70% of the baseline sample (450 of 643 participants)</p> <p>No statistical difference between those who completed at least one follow-up and those who completed only a baseline on demographics, social support, drug and alcohol use, PTSD scores and a number of other indices</p>
Aim	Principal hypothesis – that persons offered SS would have superior clinical and functional outcomes, compared with persons in the comparison condition
Intervention	Seeking Safety, 25 sessions
Method	<p>Pre-post non-equivalent control group design</p> <p>Intervention lasted for 6 months</p>

	<p>Carried out at 11 Dept of Veteran Affairs medical centres that had homeless women veterans' programmes</p> <p>Baseline interview, then follow-up interviews every 3 months for 1 year Trained staff (typically case managers with no prior experience in implementing any manualised CBT) Audiotapes reviewed by trained supervisor from each clinician at least once per month, scored tapes for fidelity to the model, at least monthly calls with clinicians – paper transparent about training of clinicians</p>
Measures	<p>Client characteristics: Sociodemographic characteristics Employment status Use of public support programs Use of services in non-VA settings in 3 months prior to program entry Military history</p> <p>Health status measured using composites from Addiction Severity Index (ASI), 30-item Symptom Checklist Revised (SCL-30-R) “a measure of self-esteem” 12-item Short-form Survey (SF-12) measures for physical and mental functioning “extensive trauma histories obtained on lifetime and recent traumas experienced by each client” PTSD Checklist to assess PTSD symptoms Housing status Social support variable computed</p>
Findings	<p>Data analyses described in how phase I and phase II participants were compared on baseline characteristics (inc adjustment for potential confounding)</p> <p>Mixed models for longitudinal data were used to compare outcomes over one year</p> <p>Adjustment for characteristics of patients lost to follow-up</p> <p>Comparison procedure described for study participants (N=450) to clients of homeless women veterans programs not enrolled in study (N=1,125) to evaluate representativeness of the sample</p> <p>Detailed description of recruitment rates and stats</p> <p><i>Baseline characteristics</i></p> <p>Detailed demographics given</p> <p>Different trauma histories given</p> <p>Explanations given for difference in numbers between phase I and phase II</p> <p>Drop-out rates provided (high drop-out)</p> <p><i>Outcomes</i></p> <p>Reported</p>

	<p>Significantly greater rates of improvement for phase II clients (SS) although also significantly more likely to have used drugs in past 30 days</p> <p>Substance use did not show a significantly positive effect of SS</p>
Quality rating	<p>-</p> <p>Level of evidence – 2</p> <p>Authors' own comments:</p> <p>2-phase observational design (participants not randomly assigned to SS)</p> <p>Risk of selection bias</p> <p>No contamination of effect in the implementation of SS</p> <p>Self-report interviews to assess substance use, not biochemical testing (power to detect effects of SS on substance use behaviour probably reduced)</p> <p>Substantial loss to follow-up</p>

Author/s	Rotunda, R.J. <i>et al.</i> (2008) – ‘Behavioural couples therapy for comorbid substance use disorders and combat-related PTSD among male veterans: An initial evaluation’
Design	Uncontrolled pilot study
Participants	<p>Total N=38 (two groups of vets, 19 dually diagnosed SUD (mainly alcohol) and PTSD, and 19 with SUD only) and their non-substance-abusing female partners</p> <p>19 with PTSD met DSM-III-R criteria for <i>lifetime</i> combat-related PTSD (9 also had current PTSD, 9 had subthreshold symptoms, 1 had no current PTSD-related distress, 11 had current or recent VA counselling for PTSD) – matched on demographics to the other 19</p> <p>17 in PTSD group and 15 in comparison group had current alcohol dependence and remainder and lifetime alcohol dependence</p> <p>Current drug dependence also present for 2 men (1 cocaine, 1 cannabis) in PTSD group and 1 man (cocaine and cannabis) in the comparison group</p> <p>Pretreatment scores on drinking, relationship and psychological symptom measures did not differ for PTSD and non-PTSD groups - similarities in other measures also reported</p>
Aim	Exploratory study compared drinking, relationship and psychological distress outcomes before and in the year after BCT for male veteran SUD patients with PTSD and veterans without PTSD
Intervention	<p>Behavioural couples therapy (BCT)</p> <p>Weekly sessions over 5-6 month period</p> <p>Recovery Contract to promote sobriety (including for most patients 12-step meetings and daily Antabuse ingestion witnessed and verbally reinforced by spouse)</p> <p>BCT program did not focus on PTSD</p>

Method	<p>Screening interview, then assessment sessions at baseline, immediately after BCT and quarterly in the year after BCT, further PTSD assessment if VA records or client intake responses said they had served in a war zone or had seen combat</p> <p>20 met lifetime criteria for PTSD using PTSD section of the Structured Clinical Interview for DSM-III-R (SCID-P) – 1 dropped out shortly after baseline</p> <p>Also used questionnaires about combat-related trauma exposure and PTSD (see measures column)</p>
Measures	<p>SCID-P PCL-M Mississippi Scale for combat-related PTSD (M-PTSD) Combat Exposure Scale (CES) Percent days abstinent in past year MAST Alcohol Dependence Scale (ADS) Drinker Inventory of Consequences (DrInC) Dyadic Adjustment Scale (DAS) Conflict Tactics Scale (CTS) Symptom Checklist 90 – Revised (SCL-90-R) Also used as treatment process indicators: Total number of BCT sessions attended Attended AA during treatment (%) Took Antabuse during treatment (%)</p>
Findings	<p>Report that “both groups attended a high number of BCT sessions” – <i>check variance from table stats</i></p> <p>Each outcome showed improvement from before BCT to immediately after and 12 months after BCT</p> <p>Extent of improvement and pattern of change over time similar for PTSD and non-PTSD clients</p> <p>Drinking – days abstinent increased and negative consequences of drinking decreased after BCT in both groups</p> <p>Relationship functioning improved similarly over time in both groups</p> <p>Psychological distress symptoms improved similarly in the 2 groups from before BCT to immediately after and 12 months after BCT</p> <p>Generally, extent and pattern of improvement over time were similar whether the client had PTSD or not</p>
Quality rating	<p>+</p> <p>Level of evidence – 3</p> <p>Authors’ comments: Not an RCT Small sample size, limited power to detect differences between PTSD and non-PTSD groups Not assessed for non-combat related traumatic events SUD-only clients not interviewed with PTSD section of SCID at all (may have undetected trauma) – <i>potential confounding?</i></p>

	<p>Other Axis I disorders (anxiety, affective disorders) not assessed in either sample, so their impact on findings not known (<i>confounding?</i>)</p> <p>Lack of a no-treatment control group, so can't conclude that BCT caused the improvements observed</p> <p>60% of PTSD clients had current or recent VA counselling for PTSD – extent and impact of counselling unknown</p> <p>Few with current PTSD (all had lifetime PTSD)</p>
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Author/s	Cook, J.M. <i>et al.</i> (2006) – 'Dissemination and feasibility of a cognitive-behavioral treatment for substance use disorders and posttraumatic stress disorder in the veterans administration'
Design	Uncontrolled pilot study (pre- and post- measures)
Participants	<p>25 outpatient veterans voluntarily began SS groups, all with clinician-diagnosed comorbid SUD-PTSD, of those 18 completed a series of 25 group treatment sessions, of the completers 72% were male</p> <p>Ages ranged from 41-59, mean 50</p> <p>Primary SUDs alcohol (N=14), cocaine (N=11), heroin (N=6)</p>
Aim	Overall goals to ascertain clinicians' acceptance of SS and initially evaluate its efficacy in use with veterans
Intervention	<p>SS (25 sessions)</p> <p>Front-line clinicians trained and assisted in their implementation of SS with male and female veterans</p> <p>One PhD therapist, two psychiatric nurses, one SUD counsellor (trained over daylong interactive staff training)</p>
Method	4 SS groups
Measures	PCL-M QoL
Findings	<p>Veterans who completed SS evidenced statistically significant improvements from pre- to post-treatment in self-report PTSD symptoms and quality of life, PTSD symptoms decreased as measured by the PCL-M, quality of life increased as measured by the Quality of Life Inventory</p> <p>Qualitative improvements reported by vets – reported increased ability to identify and manage PTSD and substance use triggers</p>
Quality rating	<p>-</p> <p>Level of evidence – 3</p> <p>Authors' comments:</p> <p>Uncontrolled pilot study, no control group, no follow-up on drop-outs and no follow-up months after completion to see if there were lasting effects of treatment</p> <p>No audio or videotaping to check clinician adherence or competence</p> <p>Issue of level of training provided – trained over daylong interactive staff training – short training, raises questions as to the level of adherence to the programme</p>

Author/s	Petrakis, I.L. <i>et al.</i> (2006) – 'Nalrexone and Disulfiram in Patients with Alcohol Dependence and Comorbid Post-Traumatic Stress Disorder'
Design	RCT
Participants	<p>Total sample – 254 outpatient veterans who met DSM IV criteria for alcohol dependence and a current DSM IV major Axis 1 disorder (determined using SCID), who were abstinent no more than 29 days</p> <p>Some individuals on psychiatric medication for at least 2 weeks prior to randomisation (confounding?)</p> <p>Some exclusion criteria reported (<i>restricting generalizability of study?</i>)</p> <p>93 with current DSM-IV PTSD, 10 with PTSD and alcohol dependence only, 35 with PTSD and cocaine dependence (<i>check papers here</i>)</p>
Aim	<ol style="list-style-type: none"> (1) To evaluate the relationship between the diagnosis of PTSD and alcohol use in terms of treatment response to disulfiram and naltrexone, alone and in combination (2) To evaluate what effects these medications may have on the specific psychiatric symptoms of PTSD (3) The relationship between diagnosis of PTSD or no PTSD on side effects and adverse effects in response to disulfiram and naltrexone alone and in combination
Intervention	Subjects randomised to one of four groups for a 12-week trial – naltrexone alone, placebo alone, disulfiram and naltrexone, disulfiram and placebo
Method	<p>Baseline assessments with psychiatrist, then 254 subjects randomised to 4 groups for 12-week trial: Naltrexone alone; placebo alone; disulfiram and naltrexone; disulfiram and placebo</p> <p>Individuals were randomised to either disulfiram or no disulfiram, and disulfiram was dispensed in an open-label fashion</p> <p>Dispensing of naltrexone was placebo-controlled and double-blind</p> <p>All participants also received weekly Clinical Management/Compliance Enhancement Therapy</p> <p>Research staff collected weekly self-reports of daily alcohol and other substance use throughout the 84-day treatment period as well as for the 90-day period prior to randomisation (Substance Abuse Calendar)</p> <p>PTSD symptoms assess by research staff at baseline and biweekly during treatment (CAPS) for those participants with PTSD (n=93)</p> <p>Analysis – see section in paper</p>
Measures	<p>SCID</p> <p>At baseline, Alcohol Dependence Scale (ADS) used to characterise the severity of alcohol dependence</p> <p>Primary outcomes were measures of alcohol use – Substance Abuse Calendar (based on Timeline Follow-Back Interview) – primary outcome variables were the</p>

	<p>number of drinking days and the number of heavy drinking days (defined as 5 or more standard drinks)</p> <p>Alcohol consumption confirmed using GGT (blood test for GGT)</p> <p>Craving assessed weekly using Obsessive Compulsive Drinking and Abstinence Scale (OCDS)</p> <p>PTSD symptoms assessed at baseline and biweekly by the CAPS for those with PTSD (n=93)</p> <p>Side effects and common adverse symptoms evaluated weekly using self-report Hopkins Symptom Checklist (HSCL)</p>
Findings	<p>Within entire sample 93 met criteria for DSM IV PTSD, 161 did not</p> <p>See p779 – lengthy</p> <p>No significant effect of the diagnosis of PTSD on the maximum consecutive days of abstinence, percent of heavy drinking days or the number of subjects abstinent for the entire study period</p> <p>Group of subjects with PTSD that was treated with medication (disulfiram or naltrexone) had significantly more consecutive days of abstinence and a lower percent of heavy drinking days than those treated with placebo</p> <p>PTSD symptoms – subsample of subjects with PTSD (n=87, 6 of the 93 had missing data) showed a significant decrease in PTSD symptoms over time in total CAPS-SX score also broken down in paper into symptom clusters</p> <p>Individuals with PTSD were more likely to report some side effects when treated with the combination of medications</p> <p>For several symptoms of PTSD, individuals treated with disulfiram showed significantly more improvement over time than those treated with naltrexone</p> <p><i>See discussion</i> – Authors comment “The results of this study suggest that individuals with PTSD and comorbid alcohol dependence are particularly well suited to pharmacotherapy for treatment of their alcohol dependence”</p> <p>“no evidence from this trial that either disulfiram or naltrexone worsen the specific symptoms of PTSD”</p>
Quality rating	<p>+</p> <p>Level of evidence – 1</p> <p>Authors’ comments: Large sample size Comprehensive assessment battery to examine diagnostic-specific psychiatric symptoms as well as alcohol consumption limited by subjects being treated with a variety of concurrent psychotropic medications (effect of specific interactions or combinations on alcohol use could not be determined), limited by predominantly male VA sample</p>

	RCT
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Author/s	Trafton, J.A., Minkel, J., & Humphreys, K. (2006) – ‘Opioid Substitution Treatment Reduces Substance Use Equivalently in Patients With and Without Posttraumatic Stress Disorder’
Design	Prospective observational trial
Participants	255 veterans (men = 248) entering opioid substitution treatment at 8 clinics in Veterans Health Administration (VHA), 28% had diagnosis of PTSD
Aim	To investigate whether opioid-dependent patients with diagnosed PTSD have poorer long-term outcomes in opioid substitution treatment than do patients without PTSD
Intervention	Opioid substitution treatment
Method	Participants interviewed at treatment entry, 6 months and 1 year about substance use and related problems Examined outcomes
Measures	ASI, QoL index, High risk injection practices questionnaire; main outcome measures for substance use were ASI composite score
Findings	Patients with and without a PTSD diagnosis showed equivalent significant reductions in frequency of drug use, alcohol problem severity decreased over time similarly in both groups as well, drug use outcome confirmed by urinalysis (strength of study) Authors comment that OST is a long-term maintenance treatment that can continue indefinitely, saying this may be particularly helpful to PTSD clients, who might risk relapse after completion of intensive treatment
Quality rating	++ Level of evidence - 2

Author/s	Weller, L.A. (2005) – ‘Group Therapy to treat substance use and traumatic symptoms in female veterans’
Design	Case study
Participants	6 female vets enrolled in treatment program Refusals from recruitment phase explained Inclusion criteria – meet SUD criteria currently or be in early SUD remission and report a history of traumatic events 5 white, one native American, employment statuses listed 4 alcohol, one of these also marijuana, one methamphetamine and cocaine, one poly drugs 4 met criteria for chronic PTSD
Aim	1 – To see whether female veterans would remain longer in an SUD treatment program specifically designed to address a history of traumatic stress 2 – to see whether participants who completed treatment protocol would reduce their use of alcohol or other substances

	3 – see whether participants would report decline in anxiety, depression and traumatic symptoms as well as an increase in self-efficacy
Intervention	<p>Used SS, 25 sessions over 13 weeks</p> <p>Participants encouraged to maintain attendance at 12-step programs as an adjunct to program (confounding?)</p> <p>2 of the women also attended classes in the standard mixed-gender SATC intensive outpatient treatment program (IOP) and one of the women was enrolled in the methadone maintenance program (confounding?)</p>
Method	<p>Case study design consisting of only one experimental condition – the use of group therapy to treat substance abuse and comorbid trauma symptoms in women vets – no control group</p> <p>Structured clinical interview at preenrolment and post-enrolment, completed drug and alcohol usage questionnaires</p> <p>Programme delivered by 2 female doctoral-level psychologists trained in delivery of CBT programs, experience in treating substance abuse, been trained in PTSD treatment programs at other VA facilities</p> <p>All 6 completed, attending average of 72% of sessions</p>
Measures	<p>Self-efficacy scale</p> <p>BDI-II</p> <p>Spielberger State-Trait Anxiety Inventory Form Y</p> <p>Profile of Mood States</p> <p>Automatic Thoughts Questionnaire (ATQ)</p> <p>Trauma Symptom Inventory (TSI)</p>
Findings	<p>Hypothesis (1) confirmed – exclusion of male vets helped?</p> <p>4 of 6 reported a reduction in their use of substances or abstinence from substance use over course of program, use patterns broken down in paper by substance</p> <p>No significant preenrolment to postenrolment score changes were significant when analysed using a paired-samples t-test</p> <p>Scores reported in table</p> <p>Authors claim results report positive trend although not significant</p>
Quality rating	<p>+</p> <p>Level of evidence – 3</p> <p>Case study design</p> <p>No control group</p> <p>Small sample size</p> <p>Lack of verification of participants' reports of substance use</p> <p>Lack of comparison between study group and waiting list groups or groups being treated for SUD and trauma as separate disorders</p> <p>Pilot project</p>

Author/s	Monnelly <i>et al.</i> (2004) – ‘Quetiapine for treatment of alcohol dependence’
Design	Retrospective review of computerized medical records for patients followed on a substance abuse treatment unit
Participants	Two groups of vets, 90% of each group diagnosed with PTSD, all had diagnosis of alcohol dependence 1 group (n=30) treated with quetiapine, 1 group (n=20) not (ie control group –but are they really, if they’re on other meds?) All subjects were men
Aim	
Intervention	Quetiapine
Method	Number of times subjects were hospitalized for detox in the year before the start of the study was tabulated from list of discharge summaries on the computer
Measures	Indices examined included: Total days of abstinence Number of hospitalizations for detoxification Days to first relapse over 1 year of clinic treatment No PTSD outcome measures Outcome measures: number of times subjects admitted to hospital for detox from alcohol dependence for the study year from the computer list of discharge summaries Total days abstinent – p533 they describe this – seems a bit weak Time to relapse was the interval of time in days between start of a subject’s study period and the first report that appears in the chart that the subject relapsed to any drinking
Findings	Use of quetiapine to improve disturbed sleep may help alcohol-dependent patients maintain abstinence, although decreased drinking may also be a result of improving PTSD symptoms or of a direct action of quetiapine to reduce alcohol use Mean number of times that subjects in the quetiapine group were admitted for detoxification was significantly less than it was for the control group Mean for the total number of abstinent days during the study period year was significantly greater in the quetiapine group than in the control group
Quality rating	- Level of evidence – 2 Both groups contained a large number of subjects treated with psychiatric medications other than quetiapine Has usual limitations of a retrospective review, including the lack of standardized assessments of alcohol use No standardised measures of alcohol consumption Diagnoses of alcohol dependence and other psychiatric disorders not standardized

	<p>Lack of reliable measures of compliance with the quetiapine treatment regimen</p> <p>Differences between groups in the frequency of some comorbid diagnoses and for the administration of concurrent psychiatric medications</p>
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Author/s	Steindl, S.R. <i>et al.</i> (2003) – ‘Hazardous Alcohol Use and Treatment Outcome in Male Combat Veterans With Posttraumatic Stress Disorder’
Design	Uncontrolled longitudinal study
Participants	<p>608 male participants (Australian)</p> <p>Vietnam vets mainly</p> <p>Detailed demographics provided – see p28 of paper</p>
Aim	<p>2 main questions:</p> <ul style="list-style-type: none"> - How are PTSD symptom clusters and alcohol problems related, and how does each disorder influence the treatment outcome of the other? - Secondly, when PTSD and alcohol problems are treated simultaneously, what is the impact of this treatment on symptomatology, and what is the sequence and pattern of changes in PTSD symptoms and alcohol problems?
Intervention	<p>Intervention described, past- and present-focussed</p> <p>Target both PTSD and alcohol, by multidisciplinary team, cohort based, usually 6-8 participants, CBT in nature, also weekly individual therapy</p> <p>Some inpatient, some outpatient treatment</p> <p>3-months long, included 4 contact days per week for 6 weeks followed by 1-2 contact days per week for a further 6 weeks</p> <p>Multidisciplinary teams of psychiatrists, psychiatric registrars, clinical psychologists, social workers, and psychiatric nurses provided assessment, treatment, and follow-up. Treatment was cohort based, usually comprising 6-8 participants, and cognitive-behavioural in nature. It included PTSD psychoeducation; symptom management, including anxiety, depression, and anger management; interpersonal skills development, including partner involvement, enhancement of physical health, and lifestyle issues; improving concentration and memory; imaginal exposure to traumatic memories; and graduated in vivo exposure to current feared situations. Participants also received weekly individual therapy.</p> <p>Treatment targeting alcohol misuse included education regarding safe levels of drinking, motivational enhancement (Miller & Rollnick, 1991), goal setting (Sobell & Sobell, 1978), social skills</p>

	training (Monti, Rohsenow, Colby, & Abrams, 1995), and relapse prevention (Marlatt & Gordon, 1985).
Method	<p>Referrals from various sources</p> <p>Initial assessment using CAPS and AUDIT Clinical psychologist or psychiatrist conducted the CAPS interview Detoxed with diazepam over 5 days Then baseline data collected (after detox to avoid confounds due to intoxication or acute cognitive dysfunction)</p> <p>Follow-up data at 3- and 9-month posttreatment, including readministration of the AUDIT and PCL</p> <p>The research does not directly compare sequential and simultaneous approaches</p>
Measures	<p>CAPS at initial assessment to confirm diagnosis of PTSD PCL to measure specific symptoms in previous month AUDIT for alcohol problems within previous 3 months CES to check for trauma-related differences between groups</p>
Findings	<p>3 sets of analyses described</p> <p>Total sample showed significant improvement in alcohol use from intake to 9-month follow-up</p> <p>Prior to intervention, PTSD symptoms of hazardous drinkers were similar to the PTSD symptoms of low-risk drinkers</p> <p>Drinking status at follow-up significantly associated with PTSD symptoms at follow-up (they unpick this a bit in the paper)</p> <p>Simultaneous treatment for alcohol use and PTSD did not impede treatment of hazardous drinkers when compared to the treatment of those with PTSD alone</p>
Quality rating	<p>++ Level of evidence - 3</p> <p>Authors' comments: Research compared the treatment outcome of PTSD with PTSD/alcohol misuse comorbidity, but did not compare these with an alcohol misuse only control group and all participants were allocated to the same treatment, so overall efficacy of the treatment approach cannot be determined</p> <p>Inter-rater reliabilities of the CAPS assessment was not assessed</p> <p>Follow-up data was collected by staff who were not blind to participants' initial clinical status</p>

Author/s	Donovan <i>et al.</i> (2001) – “‘Transcend’: Initial Outcomes From a Posttraumatic Stress Disorder/Substance Abuse Treatment Program’
Design	Single group pre- post- design (no control); uncontrolled pilot study
Participants	46 male Vietnam vets, all with comorbid diagnoses of PTSD and Substance abuse

	<p>(SA)</p> <p>PTSD diagnosis ascertained by scores on 4 instruments (CAPS, MMPI-2 PK Scale, Mississippi Scale for Combat-related PTSD and a structured diagnostic interview) – addiction diagnosis based on the ASI scores and a structured interview</p> <p>Active psychotic diagnosis the only disqualifying criterion (none had to be excluded for this reason)</p> <p>Had to abstain from active SA for at least 30 days before entering the program, verified by regular urine toxicology exams</p> <p>No attempts made to remove participants from medications, most were on some type of medication for depression, anxiety or sleep disturbance</p> <p>Age range 44 to 55; mean 49, demographic given (ethnicity, employment etc)</p> <p>14(30%) had an alcohol dependence diagnosis and 32 (70%) had a polysubstance dependence diagnosis</p>
Aim	<p>2 hypotheses – 1. That there would be a significant reduction in PTSD symptoms from pretreatment to discharge and that the reduction in symptoms would be maintained through 12-month follow-up</p> <p>2. – that there would be a significant reduction in substance abuse from the initial addiction assessment to 6-month follow-up and would be maintained at 12-month follow-up</p>
Intervention	<p>Past- and present-focussed</p> <p>Transcend – provides a 12-week partial hospitalization treatment for Vietnam veterans with PTSD and SA diagnoses (basic postulate is that a dual focus on PTSD and SA recovery will result in lower relapse rates as well as faster and more lasting behavioural change, beyond decreasing PTSD symptoms and promoting addiction-free lifestyle, other treatment goals include mastery of impulsive behaviour, diminished shame, greater self-acceptance, and enhanced self-efficacy)</p> <p>Manualised treatment based on concepts derived from constructivist and dynamic paradigms as well as cognitive-behavioural and 12-step theories</p> <p>All clients complete a primary substance abuse rehab program within 6 months of beginning Transcend – p761-63 quite detailed account of programme</p>
Method	<p>Study investigated reductions in frequency and intensity of PTSD symptoms and alcohol and drug abuse after 12 weeks of treatment in the Transcend Program</p> <p>CAPS completed at pretreatment, discharge and 6- and 12- month follow-up by independent evaluator who was not part of the treatment team</p> <p>ASI data collected prior to primary addiction treatment and at 6- and 12- month follow-up</p> <p>All participants attended all groups unless there was a medical reason why they couldn't attend a group</p> <p>10% did not complete full programme (no reasons given)</p> <p>Follow-up testing at both 6mnths and 1 year completed on 76% of all participants (no reasons given for drop-out) – 91% had at least one follow-up testing, but only those with both 6- and 12-mnth testing included in the analysis</p>

	<p>Explanation of how they used the CAPS to generate scores for intensity and frequency of symptoms</p> <p>Statistical tests described for how they examined program outcomes - p765 in paper</p>
Measures	<p>Patients submit weekly urine specimens to verify they have remained drug-free</p> <p>CAPS used to assess PTSD symptom change</p> <p>Substance abuse symptoms measured by the ASI</p>
Findings	<p>Table provided in paper – compares participants’ CAPS scores at pre-treatment with those at discharge, at 6-mth and 12-mnth follow-ups.</p> <p>Comparisons show significant decrease in overall CAPS scores across each of three time periods, and also for particular symptom clusters, with the exception of arousal intensity at 12-month follow-up</p> <p>Table also showing differences in ASI scores from pre-SA treatment to 6- and 12-mnth follow-up – analysis showed significant decreases in alcohol consumption, drinking alcohol to intoxication and polysubstance drug abuse across the two timeframes.</p> <p>Significant changes revealed by LSD tests (least-significance difference) on all measures at a <i>p</i> value of .001 or less</p> <p>Self-reports of patients who completed the program, authors say, show that statistically significant changes appear to be clinically significant as well</p>
Quality rating	<p>++</p> <p>Level of evidence – 3</p> <p>Authors’ comments:</p> <p>Generalisability limited in a number of ways by 1-group pre-post design:</p> <p>Firstly, not the RCT clinical design that is the ideal in clinical outcome research, rather an evaluation of a program within the constraints of a busy clinical setting. Although treatment was provided in accord with a detailed manual, there was no comparison group to ascertain which components of treatment might have contributed most to change scores.</p> <p>Second, data derived from a relatively small number of veterans from one program – therapists’ idiosyncrasies, institutional differences, and other non-specific factors may have contributed to outcomes in ways not yet ascertained – ideally, authors argue, the program needs to be replicated by different therapists on many more veterans at different facilities</p> <p>Third, analysis to determine differences among those who responded to treatment and those who did not has yet to be conducted</p> <p>Fourth, regression to the mean may have influenced the outcome of the study</p> <p>Fifth, participants had to be substance free for 30 days prior to the study, each also had to complete a primary addiction program prior to entry into Transcend, hence the thrust of SA treatment in Transcend was on relapse prevention, so not possible</p>

	<p>to attribute improvement in ASI scores solely to Transcend program interventions</p> <p>Finally, effectiveness of treatment in reducing other problematic symptoms needs exploring (authors suggest social functioning, quality of life issues such as improved vocational success, improved family relationships and community integration)</p> <p>Authors say that compared to controlled experimental trials, program evaluation is often a less elegant process, with its usually necessary quasi-experimental limitations, multiple and uncontrollable external variables and susceptibility to nonspecific change factors, however these types of studies do provide us with greater ecological or external validity</p>
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APPENDIX 4

Methodological checklists used to assess quality of studies reviewed

Downs & Black (1998):

1. Is the hypothesis/aim/objective of the study clearly described? (yes/no)
2. Are the main outcomes to be measured clearly described in the Introduction or Methods section? (yes/no)
3. Are the characteristics of the patients included in the study clearly described? (yes/no)
4. Are the interventions of interest clearly described? (yes/no)
5. Are the distributions of principal confounders in each group of subjects to be compared clearly described? (yes/partially/no)
6. Are the main findings of the study clearly described? (yes/no)
7. Does the study provide estimates of the random variability in the data for the main outcomes? (yes/no)
8. Have all important adverse events that may be a consequence of the intervention been reported? (yes/no)
9. Have the characteristics of patients lost to follow-up been described? (yes/no)
10. Have actual probability values been reported (eg 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001? (yes/no)
11. Were the subjects asked to participate in the study representative of the entire population from which they were recruited? (yes/no/unable to determine)
12. Were those subjects who were prepared to participate representative of the entire population from which they were recruited? (yes/no/unable to determine)
13. Were the staff, places and facilities where the patients were treated, representative of the treatment the majority of patients receive? (yes/no/unable to determine)
14. Was an attempt made to blind study subjects to the intervention they have received? (yes/no/unable to determine)
15. Was an attempt made to blind those measuring the main outcomes of the intervention? (yes/no/unable to determine)
16. If any of the results of the study were based on 'data dredging', was this made clear? (yes/no/unable to determine)
17. In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls? (yes/no/unable to determine)
18. Were the statistical tests used to assess the main outcomes appropriate? (yes/no/unable to determine)
19. Was compliance with the intervention/s reliable? (yes/no/unable to determine)

20. Were the main outcome measures used accurate (valid and reliable)?
(yes/no/unable to determine)
21. Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population?
(yes/no/unable to determine)
22. Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time? (yes/no/unable to determine)
23. Were study subjects randomised to intervention groups? (yes/no/unable to determine)
24. Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable? (yes/no/unable to determine)
25. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn? (yes/no/unable to determine)
26. Were losses of patients to follow-up taken into account? (yes/no/unable to determine)
27. Did the study have sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%?
(yes/no/unable to determine)

Tate *et al.* (2008):

1. Clinical history

The study provides critical information regarding demographic and injury characteristics of the research subject that allows the reader to determine the applicability of the treatment to another individual.

2. Target behaviours

The paper identifies a precise, repeatable and operationally defined target behaviour that can be used to measure treatment success.

3. Inter-rater reliability

To determine if the target behaviour measure is reliable and collected in a consistent manner.

4. Independence of assessors

To reduce assessment bias by employing a person who is otherwise uninvolved in the study, to provide an evaluation of the patients.

5. Statistical analysis

To demonstrate the effectiveness of the treatment of interest by statistically comparing the results over the study phases.

6. Replication

To demonstrate that the application and results of the therapy are not limited to a specific individual or situation (ie that the results are reproduced in other circumstances – replicated across subjects, therapists or settings).

7. Generalisation

To demonstrate the functional utility of the treatment in extending beyond the target behaviours or therapy environment into other areas of the individual's life.

APPENDIX 5

Narrative details of participants

Vince was in his 50s at the time of interview and had served as a soldier in the Army. He joined at the age of 17 and believed that he had been living with undiagnosed PTSD following a number of incidents that he had been involved with early in his Army career. Vince left the Army in his 30s and was diagnosed with PTSD over 10 years later.

John was in his 40s. He joined the Army aged 16. His Forces career lasted 4½ years. He believed that his difficulties with post-traumatic stress began within one or two years of joining. He received a diagnosis of PTSD over 20 years later.

Derek was in his 60s at the time of being interviewed and had joined the Army when he was in his 20s. He served for just over 20 years. He believed that his first symptoms of post-traumatic stress had appeared early in his Army career. He was diagnosed with PTSD when he was in his 50s.

Lofty was in his 50s at the time of interview. He had had a brief career in the Army, during his late teens. Lofty was medically discharged with a diagnosis of 'Immature Personality', following his repeated victimisation by other members of the regiment where he was serving. He received a diagnosis of PTSD within the past decade.

Mark was in his 40s when interviewed. He served as a soldier. His problems with post-traumatic stress began early in his career. Mark was diagnosed with PTSD in the early 1990s and continued to serve for several more years, thanks, he maintained, to alcohol.

Steve was in his 30s. He had joined the RAF in his 20s and retired from the Armed Forces after 4 years' service, following an accident to fellow crew members. He was given a diagnosis of PTSD over 2 years after having initially been diagnosed with 'Prolonged Adjustment Disorder'.

APPENDIX 6

Participant information sheet

“The relationship between post-traumatic stress and alcohol use: perspectives from ex-servicemen and ex-servicewomen”

You have been invited to take part in a research study. Before you decide whether to participate it is important that you understand why the research is being carried out and what taking part will involve. Please take time to read the following information carefully. Talk to other members of staff or clients of *name of centre* about the study if you wish.

Please feel free to ask if there is anything which is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

A number of ex-servicemen and ex-servicewomen see a link between their experiences of post-traumatic stress and their use of alcohol. Finding out more about ex-servicemen's and ex-servicewomen's experiences with alcohol will help to improve our understanding of the relationship between post-traumatic stress and alcohol use, so that health care professionals will be better placed to provide effective help in future.

The study is being carried out by a Trainee Clinical Psychologist, *name of trainee*, as part of his post-graduate training programme at The University of Birmingham.

Why have I been chosen?

You have been invited to take part because it is felt that you are in a good position to be able to comment on any possible links between post-traumatic stress and alcohol use. It is important to stress that you have not been approached because of *how much* you may or may not drink, either now or in the past. Rather, you have been approached because of the insights you may have regarding alcohol use amongst ex-servicemen and ex-servicewomen with post-traumatic stress.

A number of other clients of *name of centre* have been approached for the same reason. It is hoped that between 6 and 10 people will take part in the study in total.

Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep and will be asked to sign a consent form. You are free to

withdraw at any time up until a point two weeks following the research interview and you do not have to give a reason why. If you decide to withdraw, or not to take part in the first place, this will not affect the care that you receive at *name of centre* in any way.

What will happen to me if I take part?

If you express an interest in taking part, the researcher, *name of researcher*, will hold an informal meeting with you to explain the project in more detail and to answer any questions you may have. If you still wish to take part, he will arrange a time that is convenient to meet for the research interview.

What do I have to do?

The interview itself is likely to last up to one hour. Although there will be a few key topic areas which the interview will cover, it is designed to allow *you* to talk about what *you* think is important. The interview should allow for a conversation to develop between you and the researcher.

With your consent, the interview will be recorded so that it can be typed up later and then the original recording will be destroyed.

Are there any risks to taking part?

You may find that the interview leads you to think about past events, times in your life or feelings which you find troubling or upsetting. However, you will not be pressured into talking about anything that you do not wish to talk about. At different times during the interview, the researcher will check that you are feeling OK and that you wish to continue. Staff will be notified that you are taking part and will be on hand to provide support if you feel you need it.

What are the benefits of taking part?

Taking part may not benefit you directly, but the information you provide might help to improve the treatment of people experiencing post-traumatic stress.

What happens after the interview?

The recording of the interview will be typed up, as a transcript. However, your name and the names of anybody else mentioned will be changed. This will ensure that the information you provide in the interview remains anonymous. Both the recording of the interview and the transcript will be kept in a locked cabinet. Once fully transcribed, the

recording of the interview will be destroyed. The transcript will be kept for 10 years and will then be destroyed.

Once everybody who takes part in the study has been interviewed, the information provided will be used to write up a report of the study for publication. Members of the Department of Clinical Psychology at Birmingham University will be consulted to help with this, but your identity will not be disclosed to them.

Before writing up a final version of the report, and before it is published, you will be contacted to find out your opinion on how the information you have provided has been interpreted. This is to make sure that the research team do not misinterpret what you have said. It is also an opportunity for the research team to check out with you their understanding of the issues raised by the interviews.

Once the report has been finalised, you will be sent a copy or a summary of the report to keep, if you wish to have one.

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak with the researcher, *name of researcher*, who can try to solve the problem in the first instance, by calling *name of centre* on *tel no*, or e-mailing the researcher at *researcher's e-mail address*. If you remain unhappy and wish to complain formally, the researcher is a trainee clinical psychologist at the University of Birmingham, so any complaint should be addressed to the research supervisor in the first instance – contact details below:

Name of research supervisor

Address line 1

Address line 2

Address line 3

Tel. Telephone number

Email of research supervisor

Who has reviewed the study?

This study has been reviewed and given favourable opinion by the Science, Technology, Engineering and Mathematics Ethical Review Committee.

Further information and contact details

Name of researcher

Email: *researcher's e-mail address*

Names and contact details of research supervisors

APPENDIX 7

UNIVERSITY OF
BIRMINGHAM

CONSENT FORM

Research site: *name and address of research site*

Study Number & Title: ERN_11-0116 “The relationship between post-traumatic stress and alcohol use: perspectives from ex-servicemen and ex-servicewomen”

Participant Identification Number:.....

CONSENT FORM

Title of Project: “The relationship between post-traumatic stress and alcohol use: perspectives from ex-servicemen and ex-servicewomen”

Researcher: David Hinkly

Please initial box

1. I confirm that I have understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time during the research interview, without giving any reason, and this will not affect the care, treatment or support I receive from *name of centre*, or my legal rights, in any way. ☐
☐
3. I understand that the research interview will be audio-recorded
4. I understand that following the research interview I will have a two-week period for reflection. The researcher will then contact me at which point I may withdraw my interview entirely or in part, without giving any reason. If I choose to withdraw, this will not affect the care, treatment or support I receive from *name of centre*, or my legal rights, in any way. ☐
5. I understand that the data collected during this study will be looked at by the researcher and relevant others at the University of Birmingham to ensure that the analysis is a fair and reasonable representation of the data. Parts of the data may also be made available to *name of centre* clinical staff responsible for my care, but only if any previously undisclosed issues of risk to me or the safety of other people should be disclosed. ☐

6. I understand that direct quotes from my interview may be published in any write-up of the data, but that my name will not be attributed to any such quotes and that I will not be identifiable by my comments.

☐

7. I agree to take part in the above study.

☐

.....
Name of participant

.....
Date

.....
Signature

.....
Name of researcher

.....
Date

.....
Signature

APPENDIX 8

Copy of e-mails from Birmingham University and Treatment Centre granting ethical approval for study – *removed from library thesis to preserve anonymity*

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APPENDIX 9

Interview structure and questions

Introduction

The interview begins with me reiterating who I am, what my role is at name of centre and how I 'fit in' with the organisation, and what the project is about.

The interview process is then explained. The participant is advised that, although they may previously have agreed to participate, having listened to the explanation of the interview process, should they change their mind and wish to withdraw that is fine, and their decision shall not in any way affect their treatment at the Centre.

Interview schedule

The opening questions are intended to clarify the participant's current employment/home situation and their involvement with name of centre. These questions appear early on in the interview as it is felt that they may be less challenging or intrusive for participants to answer, and thereby help with 'easing' the participant into the interview and general engagement. Moreover, by allowing the participant to talk about their 'journey' to the treatment centre, it gets across the impression that the emphasis of the interview shall be about THEIR experience.

1. **"Can you tell me how you became involved with name of centre?"** – possible prompts: *How they heard about it; what led them to contact the organisation; what was going on in their life prior to contacting the organisation; what they'd hoped name of centre might be able to help them with; how long they've been going there; what sort of input they receive; how they find the experience*
2. **"Can you tell me a little about your current life circumstances?"** – possible prompts: *Where they live; do they have a partner/spouse?; what they do for a living; how they like to spend their spare time; how they feel about their life at the moment*

The theme of alcohol is then introduced into the interview. The intention is to focus the participant towards thinking about their experiences with alcohol in terms of fluctuating drinking patterns (or their drinking 'career') over time. The participant shall be asked to think about their early experiences of alcohol use, and as part of this process shall be guided towards describing their drinking in terms of their own perceptions/definitions of 'mild', 'moderate' and 'heavy' drinking – involving units to help with this definition (a unit calculator can be used here). Some lead-in comments shall be required – eg "As this

research is interested in finding out more about ex-servicemen and ex-servicewomen's experiences with alcohol, I'm now going to ask some questions about your early memories of drinking."

3. **"Can you tell me how you started drinking?"** – possible prompts: *how long ago? Can you describe how you felt about alcohol at that time? Would you say that your drinking at that time was mild, moderate or heavy (at this point introduce the idea of units and allow the participant to explain their definition using a unit calculator to assist – use the idea of a typical day/week/month to facilitate this)? What did alcohol do for you?*

The interview moves towards the participant's experiences in the Military. The primary focus of this section of the interview is on asking them to think about their alcohol use as they entered the Military and during their progression through the Military.

4. **"How did you come to join the Army/Navy/RAF?"** – possible prompts: *Can you tell me what you did before? How did you arrive at your decision?*
5. **"Could you describe to me your drinking once you joined the Army/Navy/RAF?"** – possible prompts: *How did joining the Army/Navy/RAF influence your drinking? Would you say your drinking at that time was mild, moderate or heavy (re-introducing their earlier definition using the unit calculator)? Describe a typical week's drinking in the Army/Navy/RAF?*

The intention of the following questions is to allow the participant to describe their drinking as their Military career progressed. It is also intended that any notable experiences whilst in the Military should begin to be picked up, and explored in relation to the participant's use of alcohol.

6. **"Can you tell me more about your drinking as you moved through your Military career?"** – possible prompts: *What else was going on when you were drinking like that (making use of 'mild', 'moderate', 'severe' categories)? Where were you serving at the time? What connection do you see between your drinking at that time and any other experiences that you'd been having in the Army/Navy/RAF? How did you feel about alcohol at that time? What did alcohol do for you at the time? What do you think the other people you were serving with would have said about your drinking at that time?*

The aim of the next section is to start to shift the participant's focus onto specific, trauma-related issues, rather than 'Military life as a whole'.

Lead-in comments might be something along the lines of: "When we were talking earlier about what had led you to get in touch with name of centre in the first place, you mentioned If you feel OK to do so, could we now talk a little more about that? Please don't feel under any pressure to talk about things which you would rather not talk

about. And if you are OK to talk about some of these things, do feel free to give as much or as little detail as you feel comfortable with. Let me know if you're finding things difficult at any point." [caution – it might be a good idea to think about the participant's use of 'grounding' techniques, which are widely used by many clients at the Centre, and to be ready to encourage them to make use of these if they do start to find things difficult]

7. **"What effect do you think your experience of serving in had on your drinking?"**

or

"What effect do you think a particular incident which they may have described had on your drinking?"

or

"How do you think the difficulties you've said you were having after affected your drinking?"

possible prompts: In your opinion, was your drinking at this time mild, moderate or severe? How did you feel about alcohol at the time? What did alcohol do for you at the time? What effects did alcohol have on you at the time? Were there any ways in particular in which alcohol seemed to help you? Did you feel that you were experiencing signs of PTS at the time? Do you see any link between these experiences of PTS and your drinking? Were you still serving at the time, or had you left the Military? Have you changed the way in which you drink since?

The following questions are intended to focus the participant on life after the Military.

8. **"Could you tell me more about your drinking since leaving the**

Army/Navy/RAF?" – *possible prompts: Have you changed the way in which you drink since leaving the Army/Navy/RAF? Has your drinking been mild, moderate or severe? If your drinking has fluctuated, why do you think that has been the case? What link do you see between your life since leaving the Military and your drinking? What part has post-traumatic stress played in your drinking? What part has returning to civilian life played in your drinking?*

The following questions are intended to concentrate more on the specific links which the participant may draw between their experience of alcohol use and their experience of PTS.

9. **"How do you think your experience of post-traumatic stress affects (or, if no longer drinks, "affected") your drinking?"** – *possible prompts: Do you ever (or have you ever) drunk to help you to cope with some of the ways in which PTS affects you? If 'yes', in what ways has drinking alcohol helped you to cope with/deal with PTS?*

10. **“How do you think your drinking affects (or, if no longer drinks, “affected”) your experience of post-traumatic stress?”** – possible prompts: *How were your experiences of PTS in any way different when you drank alcohol? How are your experiences of PTS in any way different when you drink alcohol?*

APPENDIX 10

Sample passage of notated text (overleaf)

<u>Emergent themes</u>	<u>Interview extract</u>	<u>Initial noting</u>
Compulsive use	Interviewer: And what were you feeling?	'Feelings' were about getting drunk, desire to get drunk... ...determination in his drinking
Alcohol as a mask	Participant: Errr, <u>I just wanted to get fuckin' drunk</u> , I just wanted to get <i>drunk</i> , and get through, you know, drinkin' with my <u>mask</u> to say, " <u>Look at fuckin' me</u> " – I could get drunk, <u>I could cry</u> ,	"Mask"...and yet...there's a sense in which he wishes to be noticed?
Intoxication legitimising feelings	everyone blamed it on the drink, "Fuckin' 'ell he can't take 'is drink", whereas drink allowed me to	Passage different from earlier account in <i>name of place</i> where it seemed that he needed to show happy/lighter side to himself...now there appears to be a sense in which alcohol is being used to allow him to show/display his pain?
Alcohol facilitating expression of identity	<u>fuckin' be myself</u> ...when I was sober I couldn't be	"fuckin' be myself" – like an assertion of identity – This is who I am!!
Lack of acceptance by others	myself, because people couldn't react to me bein' myself, as <u>what was goin' on inside me</u> .	Didn't believe people knew how to/were able or willing (?) to deal with or respond to him being himself when he was sober Sense in which he feels that what's going on inside him is detectable by others?
Mixed up emotions	Interviewer: So what was your idea of who you were – yourself?	
Anger	Participant: <i>Myself</i> was I was <u>fuckin' so upset</u>	Use of language suggests, emotionally, <i>combination</i> of anger and upset/vulnerability

<p>Vulnerability</p> <p>Isolation</p> <p>Lack of recognition for what he'd been through</p> <p>Not cared about Ignored Problems minimised by others Alcohol the only option</p> <p>Unacceptability to others</p>	<p><u>and I was vulnerable</u> and why didn't <u>someone</u> do something about the fuckin' madness? Why didn't <u>someone</u> realise that allowing people to work with dead bodies for that long, it was gonna fuckin' make...you were gonna be 'urt, you were gonna be extremely 'urt, but then when you go sick no one gives a fuck about it, no one fuckin', you know, it was like <u>brush it under the carpet</u> and <u>don't give a fuck</u>...so <u>the only thing I could do</u> was keep my head down and drink...but I <u>couldn't</u> <u>socialise</u>, I'd drink and fuckin' be a nuisance...but not, not aggressive, but <u>just be a nuisance, like be meself</u>, "Ah he's drunk that's why he's cryin'"..."ooh look, he's fuckin'..." you know, it was like havin' a, the <u>clown</u>, and <i>name of wife</i> 'ad</p>	<p>Who is 'someone'? Conveys sense of isolation, powerlessness – 'someone', 'anyone'?</p> <p>First real sense in interview that anger at not being acknowledged, or having been put in the position he was put in, is growing and being directed towards outside forces – why didn't someone realise??</p> <p>Wanted questions answering? Had questions – how was it allowed to happen? And then denied? Trivialised? Ignored? Lack of care – ignored and also didn't care about him Drink seemed to him the <i>only</i> option</p> <p>Couldn't, or <i>unable</i>, to socialise?</p> <p>Being himself he considers is being a nuisance Sense that having feelings that weren't socially acceptable marked him out as a nuisance</p> <p>Feelings of distress/crying seen as him being a clown – odd juxtaposition – contradiction? Tears of a clown hiding true feelings?</p>
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Dead inside	<p>seen it, <i>name of wife</i>, I think <i>name of wife</i> realised <u>what I was doin'</u>.</p> <p>Interviewer: You used the word 'mask'. Can you explain that a bit more?</p> <p>Participant: A mask. I just felt dead on the inside, like I was...<u>there's something deep inside me what felt <i>dead</i> for a long time.</u> I</p>	<p>Sense that his behaviour is intentional</p> <p>Deadness was deep inside him, core of his being</p>
Emotions ripped out	<p>couldn't...what I'd 'ave was <u>my emotions'd been ripped out</u>, and that's what the alcohol was, I 'ad</p>	<p>What was left in the place where the emotions used to be? Emotions 'ripped' out – for all to see? Violence in imagery, as if his emotions have been grabbed a hold of and pulled out of him</p>
Drinking to 'hit the spot' Emotional numbing	<p>to drink it...<u>it 'ad to get in there...it 'ad to get to this certain spot</u>, to fuckin' get...you know, and I think that's where the drinkin'...once it got to <u>the spot</u> it didn't really matter after that, <u>it just seemed</u></p>	<p>The spot had to be reached, sense of a 'mission' to reach it with alcohol Sense of separation (disembodiment?) of himself and the part of himself that was the problem (ie the spot)?</p>
Compartmentalisation of feelings Levels of intoxication	<p><u>to fuckin' shut that spot up</u>, and <u>it was like it was dead...once <i>that</i> was drunk</u>, I was fuckin' twatted</p>	<p>'Shut up the spot' – silence it? Alcohol would kill it (the spot)? 'Once <i>that</i> was drunk' – idea of different parts of him being reached through alcohol? Or different levels of intoxication?</p>

<p>Phase in experience of post-traumatic stress</p> <p>Compulsive use</p>	<p>by then, anyway.</p> <p>Interviewer: Once that spot was drunk?</p> <p>Participant: Yeah...<u>it was there for a long time</u>, and <u>'ad to</u>...and I <u>'ad to</u>, and that's what I <u>'ad to reach...the alcohol had to reach that, and by then I was fuckin' mortalled anyway.</u></p>	<p>Sense of there being a phase in his life where that spot was there, transition</p> <p>Repetition (I 'ad to) – sense of importance/compulsion in the necessity of reaching the spot</p> <p>'I 'ad to'... 'the alcohol had to'...conveys sense in which it was him who had to reach the spot, with alcohol as his tool/device?</p> <p>Once the mission was accomplished, so drunk that the very mission itself didn't seem to matter any more anyway?</p>
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APPENDIX 11

Instructions for authors for nominated journal for research paper

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APPENDIX 12

Instructions for authors for nominated journal for literature review

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