**Title**

**Psychological interventions for trauma in individuals who have psychosis: A systematic review and meta-analysis**

**Abstract**

**Background**

Psychological interventions, in particular those derived from cognitive-behavioural therapy (CBT) frameworks and Eye Movement Desensitisation and Reprocessing (EMDR), are effective for reducing post traumatic stress disorder (PTSD) and associated distress. To date, studies have tended to exclude individuals who have psychosis; a clinical population who are known to be at risk of experiencing trauma. Whether people with psychosis also benefit from trauma-focused psychological therapies (TFPT) warrants further investigation.

**Method**

A systematic search for randomised controlled trials (RCTs) was undertaken. Data were synthesised using narrative and meta-analytic approaches.

**Results**

Five studies met the review inclusion criteria. Study findings overall, indicate that TFPT are effective for reducing intrusive thoughts and images, negative beliefs associated with traumatic memories, hypervigilance, and avoidance. Limited data were available about the utility of interventions for improving mood, anxiety and quality of life. Attrition rates were comparable for participants offered active and control conditions.

**Conclusion**

Findings are consistent with those reported for the non-psychosis population. Further studies should establish which specific interventions are more acceptable and glean more favourable outcomes for this clinical population.

**Keywords: psychosis | post-traumatic stress disorder | PTSD | trauma | psychological interventions | EMDR | systematic review**

**Introduction**

Post-traumatic stress disorder (PTSD) is a mental health condition which can develop as a result of witnessing, or experiencing, single or multiple traumatic events, incurring a perceived threat to life or significant risk to physical well-being, and intense fear, horror, or helplessness (APA, 2013). DSM-5 (APA, 2013) outlines four distinct symptom clusters, as follows: re-experiencing (for example intrusive thoughts/ images related to the trauma); avoidance (for example, sites or cues associated with the traumatic event); arousal or hypervigilance (for example, ‘fight or flight’ responses, or panic symptoms); and negative thoughts and beliefs.

PTSD prevalence estimates are reported to fall between 0.4% and 3.5% (Bisson, Roberts, Andrew, Cooper, & Lewis, 2013; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; NICE, 2005). Some populations, however, are at increased risk of experiencing trauma and adversity, in particular, people who have psychosis (Bebbington et al., 2011; Fisher et al., 2013; Morrison, Frame, & Larkin, 2003; Read et al., 2008): PTSD prevalence rates are approximately 30%, including individuals meeting full-blown PTSD diagnostic criteria, or sub-threshold diagnostic presentations (Kilcommons & Morrison, 2005; NICE, 2014). Data from cross-sectional and longitudinal studies indicate that some social factors may predispose individuals to developing both psychosis and PTSD (Read et al., 2008). These include traumatic events occurring during childhood, such as abuse, or sustained bullying (Bebbington et al., 2011; Cunningham, Hoy, & Shannon, 2015); and adulthood, such as vulnerability to exploitation and victimisation (Kilcommons & Morrison, 2005; Mueser, Lu, Rosenberg, & Wolfe, 2010). Additionally, several studies have concluded that positive psychotic symptoms, such as persecutory delusions, can also understandably be perceived as traumatic (Jackson et al., 2009; Mueser et al., 2010). The combination of psychotic symptoms and PTSD likely results in an exacerbation in low mood and anxiety, functional impairment, and reduced quality of life (Mueser, Rosenberg, & Rosenberg, 2009; Read et al., 2008).

UK and Australian Clinical Guidelines pertaining to adults experiencing single event trauma (ACPMH, 2013; NICE, 2005, 2013) recommend a course of eight to 12 individual outpatient sessions of trauma-focused cognitive behavioural therapy (TFCBT including prolonged exposure), and/or eye movement desensitisation and reprocessing (EMDR). TFCBT and EMDR, referred to as ‘trauma-focused psychological therapies’ (TFPT) share several commonalities: both treatments encourage individuals to make sense of, and process traumatic memories, beliefs and attributions about traumatic events, and their impact; and develop more effective strategies for ameliorating symptoms (Bisson et al., 2013; Schnyder et al., 2015).

To date, empirical studies investigating the effectiveness and acceptability of TFPT have often excluded individuals with a concurrent diagnosis of psychosis (Mueser et al., 2010; NICE, 2014).This may be due to: diagnostic overshadowing (Calvert, Larkin, & Jellicoe-Jones, 2008), concerns about engagement and attrition (Callcott, Standart, & Turkington, 2004), or worry that interventions may exacerbate psychotic symptoms (Gairns, Alvarez-Jimenez, Hulbert, McGorry, & Bendall, 2015). Relatively little is known about the effectiveness of TFPT for individuals with psychosis, although considerable evidence indicates that CBT and psychosocial interventions can reduce psychotic symptoms, distress, and co-morbidities, such as depression and anxiety (NICE, 2014; Turkington, Kingdon, & Turner, 2002). Importantly, rates of adverse effects are not increased for this group (NICE, 2014).

This review had three aims: 1) to synthesise evidence about the effectiveness of TFPT for individuals with psychosis who have PTSD or symptoms of trauma; 2) to establish whether any one intervention is more effective; and 3) to outline implications for clinical practice and research. Outcomes of interests were identified *a priori* as follows: PTSD symptoms; quality of life; mental health symptoms; and adverse events.

**Method**

We have previously published a protocol in the Cochrane Library of Systematic Reviews (see Sin, Spain, Furuta, Murrells, & Norman, 2015). This protocol served as a basis for the present review, although we broadened the remit to include individuals experiencing trauma in the absence of a PTSD diagnosis. The review process followed PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009).

***Search strategy***

We searched the Cochrane Schizophrenia Group (CSG)’s study-based register of controlled trials (CENTRAL) – compiled from systematic searches of medical and social sciences databases (including AMED, EMBASE, MEDLINE, PsycINFO, and PubMed), clinical trials registers and sources of grey literature – using the following terms: (\*trauma\* or \*ptsd\*):ti,ab,kw of REFERENCE or (\*trauma\* or \*ptsd\*):sco of STUDY, from the date of inception until 28th September 2015. Reference lists of included studies were also reviewed, and corresponding authors of studies screened were contacted for information regarding unpublished data and ongoing trials.

***Inclusion and exclusion criteria***

No language or publication sources limits were imposed. The inclusion criteria were as follows: 1) randomised controlled trials (RCTs); 2) investigating TFPT for PTSD, traumatic experiences, and/or the impact of these; 3) in adolescents or adults with a diagnosis of a non-organic psychotic disorder, including schizophrenia, psychosis, schizoaffective disorder and type 1 bipolar disorder; and 4) treated in any setting. Studies which recruited individuals diagnosed with a range of mental health disorders, a proportion of whom had psychosis, were included if either 50% of the sample had psychosis or when sub-group data were available. We excluded intervention studies where no specific outcome data pertaining to trauma were reported.

***Data Analysis***

Data were analysed using narrative and meta-analytic approaches (see Sin et al., 2015). Interventions were categorised into four main therapeutic approaches, as described by Bisson et al. (2013): individual TFCBT; group TFCBT; EMDR; and other psychological interventions not fitting into the above categories but which were clearly trauma-focused in their aims and remit. Separate analyses were undertaken to compare therapeutic approaches with inactive control conditions; when sufficient data were available, a head-to-head comparison was conducted between different interventions or active controls.

Handbook

**Results**

***Study selection and search results***

Figure 1 outlines the search process and study selection. The search initially yielded 35 unique titles and abstracts. After examination, two duplicates were removed and two additional references were identified by contacting trial authors and reviewing trials registers. Eighteen references were excluded as their titles and abstracts were clearly irrelevant. Eight studies described in 17 references were assessed for eligibility. Three references were excluded following full-text examination, as one study did not employ an RCT design (de Bont, van Minnen, & de Jongh, 2013); one did not provide trauma-related outcome data (Penn et al., 2011); and one related to an ongoing trial (Marlow, 2015, personal communication).

**FIGURE 1 HERE.**

***Overview of studies***

Five studies, comprising 366 participants, met the review inclusion criteria (Jackson et al., 2009; Mueser et al., 2015; Mueser et al., 2008; Steel, 2010; van den Berg et al., 2015). (See Table 1). Studies were undertaken in the UK (Jackson et al., 2009; Steel, 2010), the Netherlands (van den Berg et al., 2015), and North America (Mueser et al., 2015; Mueser et al., 2008). Two studies investigated the effectiveness of TFCBT compared with usual care, using the same treatment protocol (Mueser et al., 2008; Steel 2010), one compared TFCBT with psychoeducation (Mueser et al., 2015), one investigated EMDR compared with prolonged exposure and a waitlist control (van den Berg et al., 2015), and one evaluated a cognitive therapy-based intervention (Cognitive Recovery Intervention, CRI) compared with usual care for people experiencing first episode psychosis (FEP) (Jackson et al., 2009).

**TABLE 1 HERE.**

***Quality assessment of studies***

Each study was independently assessed for risk of bias, according to criteria described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins & Green, 2011). See [Figure 2](file:///F:\Jacqui_work\publication\PTSD%20and%20psychosis\02). The trial designs and conduct were generally clearly reported, albeit that one study is as yet unpublished ([Steel,](file:///F:\Jacqui_work\publication\PTSD%20and%20psychosis\Steel%202010) 2015, personal communication). Of note, failure to recruit in one study (n = 66 (27% of 320 planned), Jackson et al., 2009) meant that trial analysis was significantly under-powered.

**FIGURE 2 HERE**

***Trauma symptoms***

Four studies included adults with a diagnosis of PTSD (n = 300) (Mueser et al., 2015; Mueser et al., 2008; Steel, 2010; van den Berg et al., 2015), confirmed with the Clinician Administered PTSD Scale (CAPS by Blake et al., 1995). Jackson and colleagues (2009) used the Impact of Events Scale (IES by Sundin & Horowitz, 2002) to measure post-traumatic phenomena in relation to FEP.

In two studies, it was reported that most participants had experienced multiple childhood traumas, including sexual, emotional and physical abuse (Mueser et al., 2008; van den Berg et al., 2015). v[an den Berg and colleagues](file:///F:\Jacqui_work\publication\PTSD%20and%20psychosis\van%20den%20Berg%202015) also identified that 28 participants (18% of the sample) developed PTSD as a consequence of traumatic psychosis experiences. Two studies did not describe the nature of traumatic events in detail (Mueser et al., 2015; Steel, 2010).

***TFPT modalities***

Across studies, four manualised TFPTs were delivered, on an individual basis. Three studies ([Mueser et al., 2008](file:///C:\Users\Jacqueline%20Sin\Documents\Jacqui_work\var\folders\lv\Jacqueline%20Sin\AppData\Local\Microsoft\Jacqueline%20Sin\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\679AY0BF\PTSDPsychosis%20review_151012.doc#_ENREF_36), [Mueser et al., 2015](file:///C:\Users\Jacqueline%20Sin\Documents\Jacqui_work\var\folders\lv\Jacqueline%20Sin\AppData\Local\Microsoft\Jacqueline%20Sin\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\679AY0BF\PTSDPsychosis%20review_151012.doc#_ENREF_34); Steel, 2010) investigated the effectiveness of TFCBT based on cognitive models of PTSD (Ehlers, Clark, Hackmann, McManus, & Fennell, 2005; Horowitz, Wilner, & Alvarez, 1979). The intervention comprised psychoeducation about PTSD; breathing exercises; exposure-based sessions; and cognitive restructuring. Treatment was offered for 12-16 sessions, and participants were required to attend six or more sessions. One study ([van den Berg et al., 2015](file:///C:\Users\Jacqueline%20Sin\Documents\Jacqui_work\var\folders\lv\Jacqueline%20Sin\AppData\Local\Microsoft\Jacqueline%20Sin\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\679AY0BF\PTSDPsychosis%20review_151012.doc#_ENREF_49)) tested the effectiveness of an eight-session prolonged exposure therapy (PE), based upon an existing PTSD protocol (Foa, Hembree, & Rothbaum, 2007), comprising case conceptualisation, and imaginal and *in vivo* exposure to a hierachy of trauma-related situations and cues. Jackson and colleagues (2009) investigated the utility of CRI, designed to enhance coping and adjustment following a FEP (which was deemed to be the index traumatic experience), and reduce the impact and distress associated with this. Participants were offered a maximum of 26 sessions, which involved three main facets: engagement and formulation; trauma processing; and appraisal of psychotic symptoms and experiences. An eight weekly 90-minute EMDR intervention, based on a Dutch translation of the standard EMDR protocol (de Jongh & ten Broeke, 2003; Shapiro, 2001) was evaluated against TFCBT and waitlist control in the study based in the Netherlands (van den Berg et al., 2015). The intervention involved case formulation, identification of a hierarchy of traumatic experiences, and bilateral eye movements which were applied as the dual-attention stimuli to aid processing of traumatic memories. Lastly, one study (Mueser et al., 2015) offered a three session PTSD psychoeducation intervention, adapted from one used in a previous study about SMI and PTSD (Pratt et al., 2005), which included discussion about the causes and nature of PTSD, breathing exercises, and anxiety management.

***Intervention effectiveness***

Following statistical advice, we used a fixed-effect model for meta-analyses, given the small number of studies (using RevMan 5.3) (Higgins & Green, 2011; Kontopantelis, Springate, & Reeves, 2013). We examined five comparisons: TFCBT versus usual care/waitlist; EMDR versus waitlist; EMDR versus TFCBT; PTSD psychoeducation versus TFCBT; and CRI versus usual care.

**TFCBT versus usual care/waitlist**

Three studies investigated the effectiveness of TFCBT (n = 160) (Mueser et al., 2008; Steel, 2010; van den Berg et al., 2015). Measures of treatment effect were calculated for CAPS (Blake et al., 1995; Weathers et al., 2001), and self-reported trauma-related cognitions (measured by Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). There was moderate quality evidence that TFCBT was associated with improved outcomes compared with usual care or waitlist groups, in terms of reducing CAPS scores (mean difference (MD) -13.78, 95% confidence interval (CI) = -23.67 to -3.89), as well as PTCI scores (MD -19.46, 95% CI = -35.05 to -3.88) post-intervention, and at three to six-month follow up (see Figure 3a). Meta-analyses of pooled data from two studies (n = 113) (Mueser et al., 2008; van den Berg et al., 2015) provided some evidence that TFCBT was more effective in reducing PTSD symptoms to the extent that participants no longer met diagnostic criteria in the short and medium term (Risk Ratio (RR) 1.76, 95% CI = 1.13 to 2.76) (see Figure 3b). As only one study provided data on outcomes of participants' self-reported PTSD symptoms and regarding full remission from PTSD (van den Berg, 2015), meta-analysis was precluded. Nonetheless, there is some limited evidence favouring TFCBT in these two outcomes, compared to a waitlist control.

It was not possible to pool data for mental health and wellbeing outcomes: it was not clear whether TFCBT gleaned more favourable outcomes, compared with inactive controls.

One study provided data about rates of adverse events, and there were no differences between the two groups (van den Berg et al., 2015).

**INSERT FIGURES 3a**

**INSERT FIGURE 3b**

**EMDR versus waitlist**

One study compared EMDR with TFCBT and a waitlist control (van den Berg et al., 2015). Meta-analysis was precluded. However, compared to the waitlist group (n = 102), EMDR was more effective in reducing clinician-rated (CAPS) and self-reported PTSD symptoms (PTCI and Posttraumatic Stress Symptom Scale Self-Report (PSS-SR) by Foa, Riggs, Dancu, & Rothbaum, 1993). A statistically significant number of participants receiving EMDR attained sub-threshold PTSD symptoms (i.e. loss of PTSD diagnosis) post-treatment and at six-month follow up. There were no significant differences, between groups, in terms of rates of unspecified adverse events and loss to follow up.

**EMDR versus TFCBT**

When comparing EMDR with TFCBT (n = 108), participants in both groups derived comparable benefits in self-rated and clinician-administered PTSD outcome measures (van den Berg et al., 2015).

**PTSD psychoeducation versus TFCBT**

One trial (n = 67) compared TFCBT with PTSD psychoeducation (Mueser et al., 2015). Analyses of subgroup data did not provide evidence that this brief intervention gleaned greater improvement, compared with TFCBT on CAPS and PTCI. There were no significant differences between groups in measures of quality of life, psychotic, and affective symptoms.

**CRI versus usual care**

One study evaluated the effectiveness of CRI compared to usual care, for reducing trauma, depression and low self-esteem in young adults following a FEP (n = 66) (Jackson et al., 2009). Participants who received CRI tended to have lower levels of post-intervention trauma symptoms, a finding which remained at six month follow up, particularly for those individuals who had high pre-treatment levels of trauma. Depression and self-esteem scores, however, were not significantly improved following the active intervention.

**Discussion**

Individuals who have psychosis often experience trauma and PTSD. This review summarised the effectiveness of TFPT for this comorbid population. Five studies met the pre-specified inclusion criteria. Overall, the review findings provide some good quality, albeit limited, evidence to support the use of TFPT, particularly those derived from cognitive-behavioural frameworks (TFCBT and CRI), and EMDR: active interventions were associated with improvement in clinician-rated and self-reported trauma symptoms. Benefits of interventions for low mood, anxiety and self-esteem, were equivocal. These findings are consistent with existing reviews about TFPT for non-psychosis population (e.g. Bisson et al., 2013; Bradley et al., 2005); but additionally, provide preliminary support for interventions designed to address the experience, distress and impact of having psychosis.

Several factors potentially affect the generalisability of study findings. Although participants were recruited from clinical services, fairly stringent exclusion criteria were in place, including no recent inpatient admissions, changes to medication regime, and no coexisting substance dependence. The degree to which these criteria render a significant proportion of service users ineligible, is questionable. All bar one study (van den Berg et al., 2015) modified standard TFPT protocols so as to accommodate psychotic symptoms and associated cognitive processing difficulties (see Implications for practice below). Service constraints (for example, resources and staffing) and clinical complexity may imply that it is difficult to follow a protocol-derived treatment in routine care, as well as offering an extended course of sessions. Furthermore, as study participants also received usual care during the trial, this highlights the importance of continuous multi-disciplinary team input to address the often complex clinical needs and presentation.

***Limitations***

While the search strategy was rigorous, it is possible that studies which included a small proportion of individuals with psychosis may not have been retrieved, e.g. because trial authors subsumed psychosis under the umbrella term of severe mental illness (SMI). Also, despite delineating between different intervention modalities, and analysing the data separately, there was some unexplained heterogeneity evident when comparing TFCBT with usual care. Consequently, the quality of evidence in several analyses was downgraded.

## Practice implications

Although assessment and intervention for psychotic symptoms often takes precedence, clinicians should be aware of the possibility that service users may have concurrent PTSD, or may previously or currently be experiencing trauma. Hence, assessment of PTSD symptoms is pragmatic when working with this clinical population, but decisions about when and how to do so, relies on individual need. This is particularly the case when working with people who have florid symptoms and high levels of distress. Assessment is likely to be enhanced if there is a strong therapeutic relationship between the clinician and service user.

TFCBT and EMDR both appear to have clinical utility, augmented by concurrent MDT input. Study findings indicate that modifications are needed, in order to accommodate the unique needs of this group. Service users likely benefit from an extended course of treatment, with emphasis on engagement, therapeutic trust, and a focus on relapse prevention. The duration of sessions should be based on individual need, i.e. depending on whether service users are able to sustain attention for an hour, or whether shorter sessions are better tolerated. Use of written and visual materials, that are simply laid out, concise, and focused, may be important for accommodating cognitive processing difficulties (Mueser et al., 2015; Mueser et al., 2008). To avoid overwhelming service users and to promote sequential hypothesis testing, it is important for clinicians to decide when to target PTSD symptoms, i.e. before or after other presenting difficulties. In general terms, clinicians should strive to integrate traumatic experiences and associated distress within the treatment formulation, in order to inform goals. This is crucial because firstly, traumatic experiences are likely to influence, and be influenced by, the individual’s symptom presentation, but also as this may indirectly encourage concern or ambivalence about engaging with clinicians (Mueser et al., 2009; Read et al., 2008).

**Research Implications**

Building on the existing studies, we suggest further research endeavours are needed and could include: RCTs that compare different treatment modalities; consideration as to the optimal dose, i.e. number of sessions required to maximise treatment gains; assessment of acceptability and satisfaction with interventions; investigation into factors that mediate compliance, as well as treatment response (or lack thereof); and validation of PTSD self-report measures for individuals with psychosis (de Bont et al., 2015). Future research should also focus on establishing how best to provide therapists with training, so as to facilitate larger-scale implementation of TFPT.

**Conclusion**

The findings of this review provides preliminary support for the use of TFPT, specifically TFCBT and EMDR for adults who have psychosis. Study results are comparable to non-psychosis samples. The clinical implication is clear: assessment and treatment for PTSD and trauma symptoms are necessary in routine practice. Further research is needed to establish 1) which intervention modalities glean more favourable outcomes; 2) the optimum number of sessions required; and 3) how best to ensure that interventions are acceptable for service users.

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**Table 1: Summary of included studies**

| **Study** | **Participants** | **Interventions** | **Outcomes** | | **Results** | |
| --- | --- | --- | --- | --- | --- | --- |
| Jackson et al., 2009  UK | * Total n=66 * Male=74% * Mean age=23.3, SD=4.6 * Ethnicity: 73% Caucasian; 5% Black; 15% South Asian; 7% Mixed race | * CRI (n=36) vs. TAU (n=30) | * Trauma: IES * Mood/anxiety: CDSS * Self-esteem: SCQ | * CRI participants had marginally better scores on the IES compared to controls; this finding held true at 6 month follow up for participants who had high pre-treatment trauma symptoms * No significant differences between groups on the CDSS and SCQ * Similar rates of attrition between groups; total attrition rates at 12 month follow were 32% | |
| Mueser et al., 2008\*  USA | * Psychosis sub-sample n=17\* (demographic data unavailable) * Total study n=108\*\* * Male=21% * Mean age=44.2, SD=10.6 * Ethnicity: 84% Caucasian; 16% other | * TFCBT (n=10) vs. TAU (n=7) | * Trauma: CAPS; PTCI * Mood/anxiety: BDI-II; BAI * Psychotic symptoms: BPRS * Functioning: SF-12 | * No significant differences between groups for all outcomes * Loss to follow up was similar for both groups; total attrition rates between groups at 12 month follow up were 47% | |
| Mueser et al., 2015\*  USA | * Psychosis sub-sample n=67\* * Male=39%, * Mean age=43.4, SD=12.0 * Ethnicity: 21% Caucasian; 15% Hispanic; 64% non-White * (Total study n=201\*\*) | * TFCBT (n=32) vs. BPPP (n=35) | * Trauma: CAPS; PTCI * Mood/anxiety: BDI-II; BAI * Psychotic symptoms: PANSS * Functioning: GAF; CAPS-social functioning sub-scale * Quality of life: QoLI | * No significant differences between groups for all outcomes * Comparable attrition rates for both groups; total attrition rates at 18 month follow up were 28% | |
| Steel, 2010\*  UK | * Total n=61\* * No demographic data available | * TFCBT (n=30) vs. TAU (n=31) | * Trauma: CAPS; PTCI * Mood/anxiety: BDI-II; BAI * Psychotic symptoms: PANSS; PSYRATS * Functioning: GAF * Quality of life: QOLS | * No significant differences between groups for all outcomes * Similar rates of attrition across groups was similar; total attrition rates were 23% | |
| van den Berg et al., 2015  Netherlands | * Total n=155 * Male=46% * Mean age=41.2, SD=10.5 * Nationality: 63% Dutch; 31% non-Western; 6% Western, not Dutch | * PE (n=53) vs. EMDR (n=55) vs. TAU (waitlist) (n=47) | * Trauma: CAPS; PSS-SR; PTCI * Severe adverse events | * PE and EMDR participants had fewer PTSD symptoms compared to controls post-intervention, as measured by the CAPS, PSS-SR and PTCI * PE and EMDR participants were statistically more likely to achieve loss of PTSD diagnosis compared to controls, measured post-intervention and at 9 month follow up * PE participants were more likely to gain full remission from PTSD * Comparable rates of severe adverse events between groups: 1 in PE; 2 in EMDR; and 4 in waitlist * Comparable rates of attrition between groups; total attrition rates at 9 month follow up were 17% | |

\*Un-published data, including sub-group sample, were obtained from the first author; \*\*total original sample size and characteristics reported by the paper; TAU = treatment as usual; CRI – Cognitive Recovery Intervention; IES – Impact of Events Scale; CDSS – Calgary Depression Scale; SCQ – Robson Self Esteem Questionnaire; CAPS - Clinician Administered PTSD; PTCI - Posttraumatic Cognitions Inventory; BDI- Beck Depression Inventory-II; BAI - Beck Anxiety Inventory; BPRS - expanded version of the Brief Psychiatric Rating Scale; SF-12 – 12-Item Short Form Survey; PANSS - Positive and Negative Syndrome Scale; GAF - Global Assessment of Functioning Scale; QOLI - Brief Quality of Life interview; PSYRATS - Psychotic Symptom Rating Scale; QOLS - Quality of Life Scale; E – Prolonged exposure; EMDR – Eye Movement Desensitisation and Reprocessing; PSS-SR - Posttraumatic Stress Symptom Scale Self Report

**Figure 1: PRISMA flowchart**

**References initially identified**

**(n = 35)**

**References retrieved for initial screening**

**(n = 35)**

**References retrieved for full**

**text review**

**(n = 17)**

**References included in the review**

**(n = 14 of 5 studies)**

\*TFCBT vs usual care

\*EMDR vs usual care

\*TFCBT vs EMDR

TFCBT vs Psychoeducation

CRI vs usual care

**Full text references excluded**

**(n = 3 of 3 studies)**

Not reporting trauma/PTSD symptoms (n = 1)

Not using RCT design (n = 1)

Ongoing study (n = 1)

**References excluded**

**as titles & abstracts irrelevant**

**(n = 18)**

**Duplicate references excluded**

**(n = 2)**

**Additional**

**r**

**eferences**

**identified**

**(n = 2)**

From

contacting authors (n = 1)

From updated trial registration (n = 1)

\*One study (3 papers) reported a three-arm trial comparing TFCBT, EMDR and waitlist control.

**Figure 2: Risk of bias assessment summary**

E:\Jacqui_work\publication\PTSD and psychosis\Psychosis\Figure 2.tif

E:\Jacqui_work\publication\PTSD and psychosis\Psychosis\Figure 3a Forest plot.tiff.tif

E:\Jacqui_work\publication\PTSD and psychosis\Psychosis\Figure 3b Forest plot.tiff.tif

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**DECLARATION OF INTEREST**

Both authors declared no conflict of interests. JS was involved in the “Cognitive behaviour therapy for post-traumatic stress disorder and schizophrenia (ISRCTN67096137)” (Steel, 2010) in the capacity of a trial therapist from 2009 to 2010.

Both authors have contributed to the writing of the paper and approved this manuscript.