Trauma-informed care for adult survivors of developmental trauma with psychotic and dissociative symptoms: a systematic review of intervention studies

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Developmental trauma is associated with an increased risk of psychosis and predicts poor prognosis. Despite this association, little is known about which treatments work best for survivors of developmental trauma with psychosis. We sought to do the first review, to our knowledge, to investigate treatments for people with psychotic and dissociative symptoms who have a history of developmental trauma. We searched MEDLINE, PsychINFO, and Google Scholar for studies reporting psychological and pharmacological treatments of psychotic or dissociative symptoms in adult survivors of developmental trauma. We identified 24 studies, most of which investigated various modalities of psychotherapy with two case reports of pharmacological treatments. There is preliminary evidence in favour of third wave cognitive therapies. However, because of low methodological quality and reporting in most of the studies found, it remains unknown which treatments are most effective in this clinical group. Nonetheless, our findings of potential treatment targets, including emotion regulation, acceptance, interpersonal skills, trauma re-processing, and the integration of dissociated ego states, could guide future work in this area. Methodologically rigorous studies are needed to enable clinicians and patients to collaboratively form evidence-based treatment plans. Our Review is registered with PROSPERO, number CRD42018104533.

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Introduction

Rationale

Psychosis is a leading global cause of disability and mortality.[1] There is growing evidence that developmental trauma is a causal factor for psychotic symptoms in adulthood.[2] Although there is no widely agreed definition of developmental trauma, here we focus on more severe experiences and define developmental trauma as including emotional, sexual, or physical abuse (including bullying), and neglect in childhood or adolescence.[3]

At least one type of developmental trauma is reported in half of individuals with psychosis,[4] and individuals with psychosis report substantially more developmental trauma than those without psychosis, including psychiatric comparison groups.[5] Individuals with first-episode psychosis were twice as likely to report pre-adult bullying than healthy controls.[6] Neglect and emotional abuse have a prevalence of 33–59% in samples of individuals with psychosis.[7] Developmental trauma has been estimated to account for approximately a third of cases of psychotic experiences in children.[2] Importantly, developmental trauma is associated with both positive[8] and negative symptoms.[9] The hypothesis of a causative association between psychosis and developmental trauma is supported by evidence that fulfils the Bradford Hill criteria,[10] including strong and consistent associations between developmental trauma and psychosis,[11] temporal relationships,[2] plausible biological mechanisms,[12] and dose effects.[13] In total, developmental trauma is estimated to be a major contributing factor in approximately one third of cases of psychosis.[2]

Despite these important findings, psychosis in adult survivors of developmental trauma is under-researched. Further, there is a pressing need to improve treatments for this patient group because adult survivors of developmental trauma who experience psychosis (ASDTP) are at a higher risk (than people with psychosis who have not experienced developmental trauma) of poor prognostic outcomes, including more severe illness,[14] increased risk of re-hospitalisation,[15] and poorer response to treatment,[16] including dopamine antagonists.[17] ASDTP are more likely than people with psychosis who have not experienced developmental trauma to be prescribed higher doses of antipsychotic and mood stabilising medications.[18] Possible reasons for this increased dosage are that there could be more severe psychotic symptoms associated with developmental trauma, so clinicians might use escalated doses for symptoms that remain refractory, and dissociative symptoms could be mistaken for psychotic symptoms. There is also evidence that developmental trauma alters emotion regulation[19] and stress reactivity[20] in individuals experiencing psychosis.[21] An as yet unpublished neuroimaging review found that ASDTP, compared with individuals with psychosis without trauma exposure, have alterations in brain structure and function, including deficits in prefrontal cortex volume and a hyper-responsive threat detection system (Bloomfield et al, unpublished). Together with evidence of poorer prognosis and response to treatment, this finding shows that ASDTP might represent a distinct clinical group from idiopathic psychosis,[22] broadly consistent with the traumagenic neurodevelopmental model of psychosis.[23] Furthermore, developmental trauma strongly predicts low service engagement in individuals with psychosis.[24,25] One factor that could be contributing to poor engagement with services might be the patient's dissatisfaction with treatments that ignore subjectively important issues, including trauma history.[26] Many people who use mental health services, especially those with a diagnosis of psychosis, are not asked about developmental trauma histories.[27]

Furthermore, the immediate response to disclosures of developmental trauma, including low referral rates for trauma-related treatments, remains poor.[28]

Guidelines, including those from the UK's National Institute for Health and Care Excellence (NICE), have provided separate treatment recommendations for patients with psychosis or post-traumatic stress disorder (PTSD),[29,30] which include assessing and treating the sequelae of trauma. However, there is a gap in the research literature on treatments for ASDTP. This gap exists because research has typically focused on either studying treatments for psychosis or trauma-related disorders independently,[31] or has studied trauma in the context of psychosis without distinguishing developmental trauma from other experiences of trauma.[32] Given the evidence to support the role of developmental trauma in the causes of psychosis, this interventional research gap represents a barrier to advances in treatment. Furthermore, focusing only on one aspect of the clinical presentation, while neglecting others that are very distressing for the patient, could perpetuate other negative outcomes, such as reducing therapeutic engagement during recovery and colluding with avoidance of processing traumatic memories that could maintain symptoms.

Objectives

Within this context, and in light of progress in our understanding of psychological trauma,[33] some clinicians and researchers have called for a greater emphasis on so-called trauma-informed care in psychosis. Although there is a lack of consensus on a definition of trauma-informed care, broadly speaking this definition should incorporate an understanding of the effects of trauma in service delivery.[34] However, little is known about which treatments are effective for ASDTP. Given that psychosis following developmental trauma is likely to be a transdiagnostic phenomenon, in that it does not seem specific to any single diagnosis,[35] we have not framed our inclusion criteria in terms of clinical diagnosis. Additionally, there is a large body of literature on the association between dissociation and trauma, and developmental trauma in particular.[36] For almost a century, dissociation has been proposed to be involved in the development of psychotic symptoms following developmental trauma[37] and there is growing evidence in support of this (Bloomfield and colleagues, unpublished). Furthermore, dissociation frequently co-occurs with hallucinations across disorders[38] and can be very distressing for patients. We have therefore included dissociative symptoms in this Review for both pragmatic and theoretical reasons because these symptoms warrant appropriate treatments and there is conceptual overlap between these domains. Thus, we sought to do the first Review, to our knowledge, on the effectiveness of treatments for ASDTP to inform clinical recommendations and guide future research.

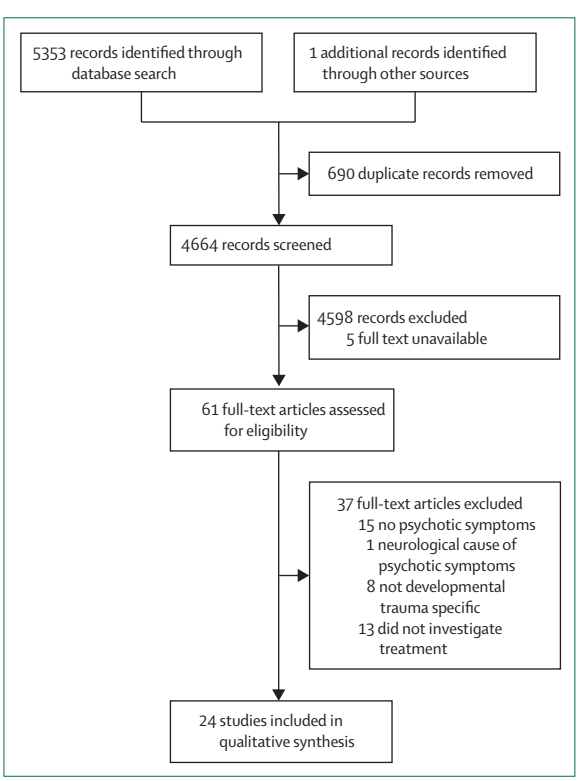

Figure: **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart**

Methods

Protocol and registration

We registered our Review protocol at PROSPERO (registration number CRD42018104533). We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement[39] and Consolidated Standards of Reporting Trials (CONSORT) Statement.[40]

Eligibility criteria

Because of a shortage of research in this area, we used broad inclusion criteria to ensure that all relevant studies would be captured (figure). Our inclusion criteria included any psychological or pharmacological treatment study for adult survivors of developmental trauma in childhood or adolescence (aged younger than 18 years) in which developmental trauma was identified either through the use of structured assessment tools or through being described as trauma in the report. Participants were adults with a history of developmental trauma experiencing psychotic symptoms, including having a diagnosis of schizophrenia, schizoaffective and bipolar disorder, psychotic depression, and at-risk mental states. In the absence of evidence of different psychobiological mechanisms giving rise to psychotic symptoms in different clinical diagnoses, we also included psychotic symptoms in the context of other diagnoses, such as borderline personality disorder and dissociative identity

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disorder. Studies of survivors of developmental trauma with dissociative symptoms were also included given the association between dissociative and psychotic symptoms following developmental trauma.[41] Any study design that offered a treatment was included, including randomised controlled trials (RCTs), open trials, non-controlled studies, case series, and case reports. Our exclusion criteria included were studies investigating non-clinical samples and those not offering any treatment.

Outcome measure

We defined the primary outcome a priori as a reduction in positive psychotic or dissociative symptoms, as measured by any validated psychometric tool or qualitative description of change. We included any measures that were relevant to mental wellbeing and that functioned as secondary outcomes.

Study selection

We did a preliminary search using the agreed search strategy and terms on the specified databases. Any duplicates were cross-checked and removed before the record titles and abstracts were screened by one reviewer for inclusion. The full-text records and their respective reference lists were assessed independently with regard to suitability for inclusion. Any discrepancies were resolved in discussion with a second reviewer.

Data collection process

We developed a pro forma based on the CONSORT criteria.[40] For each study, the following data were extracted: study design, participant characteristics, type of treatment and control or comparison, mode and length of treatment, outcome measures, relevant findings, and adverse effects. Treatments were classified according to the use and type of intervention. Within psychotherapies, interventions were classified according to their theoretical orientations. Within cognitive-behavioural therapies (CBT), we classified interventions as third wave CBT interventions if their methods emphasised targets, including mindfulness, emotion and emotion-regulation skills, acceptance, interpersonal relationship, values, and meta-cognition.[42]

Risk of bias assessment

For RCTs, the risk of bias was assessed using the Cochrane Risk of Bias tool.[43] The eligible studies were assessed against seven key criteria: (1) random sequence generation for allocation; (2) allocation concealment; (3) blinding of participants; (4) outcomes; (5) extent of incomplete outcome data; (6) selective outcome reporting; and (7) other sources of bias. With each of these criteria, the risk of bias in each study was rated as low, high, or unclear (because of ambiguity or insufficient information). Any discrepancies were resolved by discussion with a second reviewer and remaining issues were resolved by consensus (between authors MAPB, FNIBY, and RS).

Quality assessment

The CONSORT Statement[40] was used as the framework for assessing and reporting the quality of the trials included in this Review. The CONSORT Statement[40] comprises a checklist of 25 items that focus on how trials were designed, analysed, and interpreted, as well as a flow diagram that shows how the participants progressed through the trials. For case series and case reports, we used a newly developed eight item checklist[44] that covered selection, ascertainment, causality, and reporting domains to assess their quality, separately from the CONSORT criteria.[40]

Strength of evidence

The Oxford Centre for Evidence-based Medicine–Levels of Evidence guideline[45] was used to assign a level of evidence to each study to facilitate the development of overall clinical recommendations.

Results

Search results

Despite the broad search criteria, we identified 24 studies that investigated treatments for ASDTP. Details of the selection process are presented in our PRISMA flowchart (figure).[39]

Study characteristics

The 24 studies included in this Review were published between 1977 and 2018. All studies included clinical samples with diagnoses of schizophrenia, including schizophrenia, bipolar disorder, psychotic disorder, and dissociative psychosis. We identified two reports describing so-called hysterical psychosis[46,47] and, although this is an outdated diagnosis, the authors of these reports described individuals experiencing psychotic symptoms, including hallucinations and delusions, and so these were therefore included.

Overall, we identified only one RCT,[48] four case series[26,49–51] and 19 case reports.[46–48,52–67] All studies described psychological treatments, apart from two case reports that described pharmacological treatments.[66,67] The one RCT[68] investigated a psychological treatment for ASDTP, with follow-up at 3 months after treatment, and was the only study with a comparison group. One case series investigated whether insecure attachment and dissociation both reduced during outpatient therapy.[49] A separate case series[26] was a qualitative study that investigated the experiences of young people with first-episode psychosis receiving trauma-focused treatment for PTSD. This reported quantitative data as its primary outcome and so was included. Given the low number of quantitative studies and the small sample sizes of most studies, it was not possible to include the results in a meta-analytic synthesis. A detailed summary of the study characteristics is presented in table 1.

Appraisal of studies included

The sole RCT showed some biases[43,68] (table 2) and did not fully meet CONSORT criteria.[40] None of the case reports or case series fully met criteria for quality assessment for case series and reports[44] (Cohen's κ=0·96). The detailed description of methodological qualities of the case series and reports included are presented in table 3. The case reports and series especially constitute weak evidence due to the scarcity of outcome measures, poor reporting of results, studies of a single participant, and scarcity of placebo controlled groups or comparison groups. The quality of the findings could be affected because of the discrepancies in outcome measures and the heterogeneity between studies.

The only study that had a comparison group used treatment as usual as the control,[68] which did not provide an active comparison. There was therefore a high risk of

	Design	Evidence level	Sample size, n	Diagnoses	Treatment and setting	Treatment length and dose	Comparison	Measures	Primary outcome (psychosis)	Primary outcome (dissociation)	Secondary outcomes	Adverse effects
Third wave CBT approaches												
Spidel et al (2018)[68]	RCT	2b	30 M-ACT 20 TAU	Schizophrenia, bipolar disorder, psychosis not otherwise specified	Groups of 8 individuals, outpatient mindfulness-based ACT; Canada	8×90 min sessions	TAU	Psychiatric (BPRS-E), trauma (TSC-40), emotion regulation (CERQ), anxiety (GAD-7), engagement (SES)	Reduced overall positive and negative symptom severity (BPRS-E, Cohen's *d*=0·39)	NA	Reduced anxiety (GAD-7, Cohen's *d*=0·60), improved acceptance (CERQ, Cohen's d=0·37) and help-seeking domain of service engagement (SES, Cohen's *d*=0·43)	Not reported
Lahav and Elklit (2016)[49]	Case series	4	376	Dissociation	Individual outpatient affect and interpersonal regulation treatment; Denmark	1·5 years (frequency not reported)	NA	Trauma (TSC-33), attachment (RAAS)	NA	Reduced dissociation (TSC-33)	Improved attachment (RAAS)	Not reported
Tong et al (2017)[26]	Case series	4	8	Schizophrenia, schizoaffective disorder, psychotic disorder, bipolar I disorder with psychotic features	Individual outpatient trauma-focused cognitive therapy; Australia	18 months–2 years (frequency not reported)	NA	Psychiatric (BPRS), PTSD (CAPS)	Reduced psychotic symptoms (BPRS)	NA	Reduced trauma symptoms (CAPS)	Increased hallucinations, self-harming, suicidal ideation, distress, anxiety, insomnia, fatigue, and weight loss
Hardy et al (2013)[52]	Case report	3b	1	PTSD, schizoaffective disorder	Individual outpatient CBT; England	12–16 sessions (length not reported)	NA	PTSD (CAPS), depression (BDI-II), trauma cognition (PTCI)	Not reported	NA	Reduced CAPS score (from 76 to 39), reduced BDI-II score (from 32 to 9), reduced PTCI score (from 176 to 102)	Increased distress, anxiety, and irritability
Sharpe et al (1994)[53]	Case report	3b	1	PTSD, dissociation	Individual outpatient CBT, exposure based therapy; location not specified	5 months (frequency not reported)	NA	NA	NA	Reduced dissociation	Reduced memory absences and intrusive thoughts, improved sleep	Not reported
Cognitive-analytic approaches												
Graham (1995)[54]	Case report	3b	1	Dissociative psychosis	Individual outpatient CAT; location not specified	More than 5 sessions (length not reported)	NA	Dissociation (DES)	Reduced hallucinations	Reduced dissociation (DES score from 63 to 15)	Improved social life, able to go to work and study	Not reported

(Table 1 continues on next page)

	Design	Evidence level	Sample size, n	Diagnoses	Treatment and setting	Treatment length and dose	Comparison	Measures	Primary outcome (psychosis)	Primary outcome (dissociation)	Secondary outcomes	Adverse effects
(Continued from previous page)												
Psychoanalysis and psychodynamic approaches												
Knafo (2016)[55]	Case report	3b	1	Schizophrenia	Individual outpatient psychoanalysis; location not specified	Daily over 6 months for each psychosis regressions	NA	NA	Reduced psychotic symptoms	NA	Improved self-acceptance and emotional expressions	Increased guilt and mistrust
Jackson (1994)[56]	Case report	3b	1	Psychosis	Individual outpatient psychodynamic psychotherapy; location not specified	Weekly for 2 years	NA	NA	Reduced delusional thoughts and paranoia	NA	Improved self-esteem, self-care, and intimacy	Not reported
Small (2002)[57]	Case report	3b	1	PTSD, dissociation	Individual outpatient transactional analysis psychoanalytic psychotherapy; France	Weekly for 14 years	NA	NA	Reduced paranoia	Not reported	Improved quality of life and social relationships	Not reported
Auerbach (2014)[58]	Case report	3b	1	Dissociation	Individual outpatient psychoanalysis; location not specified	11 years (frequency not reported)	NA	NA	Not reported	Not reported	Enjoying job, started to go dating, better quality of life, more in control	Not reported
Williams (1998)[46]	Case report	3b	1	Hysterical psychosis	Individual outpatient psychoanalysis; England	Not reported	NA	NA	Reduced paranoia	NA	Improved outward appearance, social life, sleeping schedule, eating habits, and capacity to think and reflect	Increased self-harm and suicidal ideation, unhappier, and confused
Lerner (1994)[59]	Case report	3b	1	Dissociation	Individual outpatient psychoanalysis; USA	90 mins weekly session for 2·5 years	NA	NA	NA	Not reported	More coherent, more active in day-to-day life, reduced despair, overall improved life	Not reported
Alpher (1992)[60]	Case report	3b	1	Multiple personality disorder	Individual inpatient psychoanalysis and hypnosis; location not specified	4 months (frequency not reported)	NA	Ego functioning (BORRTI), positive symptoms (SCL-90-R), personality (MMPI)	Not reported	Not reported	Decreased scores on BORRTI, reduced passive influence, improved treatment motivation and capacity to think and reflect	Increased depression and anxiety on MMPI (76 to 92), increase in positive symptom total (38 to 52)
Baker (2010)[61]	Case report	3b	1	DID	Individual outpatient psychoanalysis; USA	6 years (frequency not reported)	NA	NA	NA	Improved personality integration	Lives more cohesively, participates in community activities, starting to think about the future (graduate school)	Increased self-harming, suicidal ideation, anger

(Table 1 continues on next page)

	Design	Evidence level	Sample size, n	Diagnoses	Treatment and setting	Treatment length and dose	Comparison	Measures	Primary outcome (psychosis)	Primary outcome (dissociation)	Secondary outcomes	Adverse effects
(Continued from previous page)												
Sar and Tutkun 1997[47]	Case report	3b	1	Hysterical psychosis, DID	Inpatient and outpatient individual psychodynamic therapy; Turkey	6 months inpatient and 27 months' outpatient (1·5–hour session 2 or 3 times a week)	NA	NA	Reduced psychotic episodes	Improved personality integration	Reduced PTSD symptoms and psychiatric admissions, increased interest to participate in social activities	Not reported
Brent (2009)[62]	Case report	3b	1	Schizophrenia	Individual outpatient mentalisation-based therapy; USA	Weekly 50 min session for 1 year	NA	NA	Not reported	NA	Improved treatment engagement, reduced distress	Not reported
Sugiyama (2018)[63]	Case report	3b	1	Schizophrenia, multiple personality disorder	Individual outpatient ego-state therapy; Japan	1 year (frequency not reported)	NA	NA	Not reported	Improved personality integration	Reduced abuse flashback	Not reported
Humanistic approaches												
Ellerman (1998)[64]	Case report	3b	1	Paranoid schizophrenia, DID	Individual outpatient phenomenological treatment; location not specified	3·5 years (frequency not reported)	NA	Patient self-report	Not reported	Reduced dissociation	Increased confidence and control of life	Not reported
Systemic approaches												
Gold et al (2001)[50]	Case series	4	3	DID, PTSD	Contextual therapy; USA	30 individual outpatient sessions; 8 months–2·5 years	NA	Dissociation (DES), trauma (IES), depression (BDI)	NA	Reduced dissociation (DES)	Reduced trauma and depression (IES, BDI), increased self-esteem, improved social life and intimacy, reduced anxiety, gained employment	Not reported
Other approaches												
Somer (1997)[48]	Case report	3b	1	DID, PTSD	Individual outpatient art psychotherapy; Israel	3 years (frequency not reported)	NA	NA	NA	Improved personality integration	Improved self-acceptance, self-confidence, social function, capacity to feel emotions, sense of hope, and artistic expressions	Not reported
Muenzenmaier (2015)[51]	Case series	4	2	Schizophrenia, schizoaffective disorder	Multimodal treatment approach (creative art, family, group therapy, etc); USA	Not reported	NA	NA	Reduced paranoia	Improved personality integration	Able to recognise triggers, improved relationship and social functioning	Not reported
Fisher et al (2016)[65]	Case report	3b	1	PTSD, dissociation	Individual outpatient EEG NFB and psychotherapy; location not specified	1 h weekly sessions for 10 months+ (15–30 mins NFB)	NA	NA	NA	Reduced dissociation	Improved emotional regulation and social life, fewer nightmares, improved sleep, reduced anxiety	Not reported

(Table 1 continues on next page)

	Design	Evidence level	Sample size, n	Diagnoses	Treatment and setting	Treatment length and dose	Comparison	Measures	Primary outcome (psychosis)	Primary outcome (dissociation)	Secondary outcomes	Adverse effects
(Continued from previous page)												
Pharmacological approaches												
Panter (1977)[66]	Case report	3b	1	Schizophrenia	Lithium monotherapy; USA	2 years+ (1·3–1·5 mEq/L for 1800 mg/per day)	NA	Reports from patient and husband	Reduced delusions	NA	Reduced rage, assaultiveness, self-injurious behaviour, and hospitalisations	Not reported
Okugawa et al (2005)[67]	Case report	3b	1	DID, hallucinations	Perospirone monotherapy; Japan	9 months (24 mg per day, slowly tapered to 0 mg per day)	NA	NA	Reduced auditory hallucinations	Reduced dissociations	Reduced anxiety	Not reported

ACT=Acceptance and commitment therapy. BDI=Beck depression inventory. BDI-II=Beck Depression Inventory (2nd edition). BORRTI=Bell Object Relations And Reality Testing Inventory. BPRS=Brief Psychiatric Rating Scale. BPRS-E=Brief Psychiatric Rating Scale expanded. CAPS=Clinician Administered PTSD Scale. CAT=cognitive analytic therapy. CBT=cognitive behavioural therapy. CERQ=Cognitive Emotion Regulation Questionnaire. DES=Dissociative Experiences Scale. DID=dissociative identity disorder. EEG=electroencephalogram. GAD-7=Generalised Anxiety Disorder Assessment. IES=Impact Of Events Scale. M-ACT=mindfulness-based acceptance and commitment therapy. MMPI=Minnesota Multiphasic Personality Inventory. NA=not available. NFB=neuro-feedback. PTCI=Post Traumatic Cognitions Inventory. PTSD=post-traumatic stress disorder. RAAS=Revised Adult Attachment Scale. RCT=randomised controlled trial. SCL-90-R=Symptom Checklist 90 revised. SES=Service Engagement Scale. TAU=treatment as usual. TSC-33=Trauma Symptom Checklist (33 item). TSC-40=Trauma Symptom Checklist (40 item).

Table 1: **Characteristics of studies included in this Review**

bias due to poorly done research and poor reporting of findings. Moreover, because of insufficient data to do meta-analyses, it was not possible to determine the relative superiority of any treatment approaches. There was a scarcity of clear reporting on the pre-treatment to post-treatment change in primary outcomes as most studies did not use validated outcome measures. Most studies, however, reported on outcomes that were considered as secondary, such as improved mental wellbeing, quality-of-life, and social relationships, but without the use of validated measures. With the exception of six studies,[26,52,55,57,60,61] there was an absence of reporting of adverse effects and tolerability of treatments in identified studies. This absence of information was a concern given the interest in addressing the past tendency for trials not to report the negative effects of psychological interventions.[69] These limitations call into question the generalisability of the findings to clinical practice. Nonetheless, all of these studies were still included in this Review because they offer insights into current practice in this patient group and provide a starting point for higher quality research in the future.

	Random sequence generation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessments	Incomplete outcome data	Selective reporting	Other bias
Spidel et al[68] (2018)	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	Low risk	High risk

Biases associated with the sole randomised controlled trial included in our Review.

Table 2: **Risk of bias assessment**

Psychological treatments

Third wave cognitive-behavioural approaches

An RCT[68] published in 2018 investigated the effectiveness of eight sessions of mindfulness-based acceptance and commitment therapy for ASDTP. The RCT did not have a placebo treatment group and comparison was made with treatment as usual. The treatment focused on acceptance of present experiences as a tool to regulate emotion, understanding of self, defusion (the meta-cognitive process of separating internal experiences, including thoughts and emotions, referred to as de-centring in the CBT literature), self-compassion, and mindfulness meditation. 30 participants received the treatment and 20 participants received treatment as usual. Outcomes were measured with validated tools, including the Brief Psychiatric Rating Scale-expanded,[70] the Trauma Symptom Checklist–40,[71] the Cognitive Emotion Regulation Questionnaire,[72] the Generalized Anxiety Disorder scale–7,[73] and the Service Engagement Scale.[74] Compared with baseline, the mindfulness-based acceptance and commitment therapy group showed an increase in emotion regulation and acceptance, a decrease in psychotic symptoms, reduced anxiety, and better engagement with services, which were all maintained at 3-month follow-up. However, there was no significant decrease in PTSD symptoms. Positive quantitative outcomes were supported by the qualitative component of the study, which found that the treatment group had a positive experience. However, the participants described feeling that more sessions were required and that the treatment duration was too short. Evidence of treatment efficacy from this study warrants a further placebo-controlled RCT with a longer follow-up period and work to examine which treatment components are most effective. Further qualitative evidence of the acceptability of the intervention to patients would also inform implementation.

	Clear selection method?	Exposure adequately ascertained?	Outcome adequately ascertained?	Alternative causes ruled out?	Challenge or re-challenge phenomenon?*	Dose response effect?	Follow-up long enough?	Sufficient reporting?
Lahav and Elkit (2016)[49]	Low	Low	Low	High	High	High	Low	High
Tong et al (2017)[26]	High	Low	Low	High	High	High	High	High
Hardy et al (2013)[52]	High	Low	Low	High	High	High	High	High
Sharpe et al (1994)[53]	High	Low	High	High	High	High	High	High
Graham (1995)[54]	High	Low	Low	High	High	High	High	High
Knafo (2016)[55]	High	Low	High	High	High	High	High	High
Jackson (1994)[56]	High	High	High	High	High	High	High	High
Small (2002)[57]	High	Low	High	High	High	High	High	High
Auerbach (2014)[58]	High	Low	High	High	High	High	High	High
Williams (1998)[46]	High	Low	High	High	High	High	High	High
Lerner (1994)[59]	High	Low	High	High	High	High	High	High
Alpher (1992)[60]	High	High	Low	High	High	High	High	High
Baker (2010)[61]	High	High	High	High	High	High	High	High
Sar and Tutkun (1997)[47]	High	Low	High	High	High	High	High	High
Brent (2009)[62]	High	Low	High	High	High	High	High	High
Sugiyama (2018)[63]	High	Low	High	High	High	High	High	High
Ellerman (1998)[64]	High	Low	High	High	High	High	High	High
Gold et al (2001)[50]	High	Low	High	High	High	High	High	High
Somer (1997)[48]	High	Low	High	High	High	High	High	High
Muenzenmaier (2015)[51]	High	High	High	High	High	High	High	High
Fisher et al (2016)[65]	High	Low	High	High	High	High	High	High
Panter (1977)[66]	High	Low	High	High	High	High	High	High
Okugawa et al (2005)[67]	High	Low	High	High	High	High	High	High

*The administration or re-administration of a treatment either to assess clinical response or, if suspected of causing an adverse reaction, to assess causality.

Table 3: **Methodological quality assessment for case reports and case series (by likelihood of high or low potential for bias)[44]**

We identified one case series and two case reports on the use of cognitive therapy. One study[26] reported the efficacy of trauma-focused CBT in patients with first-episode psychosis. Although the treatment was described as trauma-focused, beyond constructing a timeline of major life events and formulation, the intervention did not deploy the typical elements of trauma-focused CBT, including formal memory reprocessing and cognitive restructuring through therapist-assisted imaginal exposure.[75] All seven participants completed the treatment and six participants had reduced psychotic and PTSD symptoms as measured by the Brief Psychiatric Rating Scale[70] and Clinician Administered PTSD Scale,[76] respectively. All except one participant reported having increased distress during the session, and four participants described experiencing symptoms, including flashbacks, distress, insomnia, weight loss, suicidal ideation, and hallucinations as reactions to talking about trauma in therapy sessions. Experience of distress would be expected during trauma-focused treatment through exposure and habituation. All participants reported treatment to be useful and worthwhile. However, further qualitative work is warranted on the acceptability of experiencing distress in response to talking about trauma during therapy sessions.

In terms of the two case reports, one of these was of an individual with diagnoses of PTSD and schizoaffective disorder[52] and the other was of an individual with diagnoses of PTSD and dissociative symptoms.[53] The former report[52] focused on cognitive restructuring of mistrust. At the end of treatment, the patient no longer met criteria for PTSD on the Clinician Administered PTSD Scale, had reduced scores on both Beck Depression Inventory[77] and the Post-Traumatic Cognitions Inventory.[78] These improvements increased at 6-month follow-up. The second study[53] treated depersonalisation and dissociative states with CBT. Treatment addressed insomnia, interpersonal skills, and cognitive restructuring of distrust attributions towards others, and shifting blame from the patient to the perpetrator. After dissociative symptoms improved, exposure-based therapy was used to treat intrusive thoughts of re-victimisation. At treatment termination, the patient reported having reduced dissociative symptoms. Despite the sub-optimal quality of evidence, taken together there is some support for trauma-focused CBT being a potential treatment for this patient group. However, more research is needed to further examine its efficacy using RCTs.

In a case series of a phase-based treatment[49] using Skills Training in Affective and Interpersonal Regulation

(STAIR), patients were women with dissociative symptoms who had been sexually abused. Treatment comprised aspects of both CBT and dialectical behavioural therapy[79] and consisted of two phases. The first phase focused on affect and interpersonal regulation. The second phase focused on emotional processing of trauma memories through modified prolonged exposure. At the end of treatment, participants reported a reduced dissociation and improved attachment based on the Trauma Symptom Checklist[80] and the Revised Adult Attachment Scale.[81,82] The findings also show that dissociation and attachment might have a reciprocal relationship. However, this study did not have a comparison group, did not measure psychotic symptoms, and did not provide a common treatment manual used by the clinicians at the different treatment centres involved.

Cognitive-analytic approaches

We found one case report of cognitive analytic therapy for an individual with dissociation and hallucinations.[54] The treatment focused on developing a cognitive-analytic formulation to improve sense of control over the individual's internal mental state and reduce anxiety.[83] Treatment was associated with reduced hallucinatory and dissociative symptoms (measured by the dissociative experiences scale),[84] likelihood of return to work, and reduced hospital admissions.

Psychoanalytic and psychodynamic approaches

There were nine case reports of psychoanalytic and psychodynamic therapy,[46,47,55–61] all with poor outcome measure reporting. Although these reports represent weak evidence, we have identified themes of suggested therapeutic targets. We include them here to aid the development of treatment components that can be empirically tested. Every case reported the importance of the therapeutic relationship, setting, and transference—countertransference processes,[46,47,55–61] particularly in light of the interpersonal or attachment difficulties experienced by individuals with psychotic symptoms.[46,55,60,61,67] This finding could be particularly pertinent in the context of developmental trauma, in which an individual's capacity to be in a therapeutic relationship that is not dominated by fear and sadomasochism could potentially be targeted.[74] The generalisation of more adaptive interpersonal attachment styles could attenuate paranoia via reduced interpersonal threat anticipation. These processes were proposed to enable reintegration of dissociated ego states,[47,58,59] which could then facilitate memory and emotional re-processing.[84] Another common therapeutic target identified in three of these case reports was emotion regulation.[55,58,61]

There was a report of mentalisation-based therapy for an individual diagnosed with schizophrenia.[62] During therapy, the patient was prescribed a dopamine antagonist (risperidone, 3 mg daily). Mentalisation refers to one's capacity to psychologically represent and process mental states in oneself and in others, and is proposed to be crucial in emotional regulation and the organisation of self-experience.[85] Following treatment, the participant was reported to have remission of psychotic symptoms and improved distress tolerance. However, no outcome measures were reported.

There was a report from 2018 of ego-state therapy[63] for an individual with diagnoses of schizophrenia and multiple personality disorder. The therapy's reported aims included accessing and understanding the so-called self-state and "discussing and negotiating between ego states". After 1 year of treatment, the patient was reported to have had remission of abuse flashbacks and had developed ego-integration (a more unified sense of self).[86] However, psychotic symptoms were not clearly reported and no structured outcome measures were used.

Humanistic approaches

There was a report from 1998 on phenomenological treatment for an individual who had been diagnosed with paranoid schizophrenia and dissociative identity disorder, and who had experienced incest.[64] The treatment involved the therapist adopting a so-called as if position when relating to dissociated ego states. Psychotic symptoms were not clearly reported and there was an absence of reporting of outcome measures. The individual reported a reduction in the frequency and intensity of dissociation experienced and improved self-esteem. Moreover, reliving of traumatic memories triggered behaviours such as binge drinking, self-injury, and treatment absences.

Systemic approaches

A case series[50] from 2001 reported that contextual therapy was helpful for ASDTP. The treatment focused on developing effective emotional coping skills. All three participants reported decreased dissociative, PTSD, and depressive symptoms on the Dissociative Experiences Scale,[84] Impact Of Events Scale,[87] and the Beck Depression Inventory.[88] All participants also reported reduced panic and improved self-esteem, social life, and motivation to gain employment in the community. However, the study did not use a psychotic symptoms scale.

Other approaches

There was one case report from 1997 that used art therapy[48] for an individual with dissociative identity disorder and PTSD. The treatment, lasting 3 years and comprising 250 artworks, focused on understanding the meaning of each artwork and proposed to help symbolise pre-verbal imagery. No quantitative outcome measures were reported. There was a narrative report of improvement in symptoms, self-acceptance and self-confidence, and integration of dissociated ego states.

There was a report from 2015 of an eclectic inpatient treatment[51] programme approach that was used to treat two women diagnosed with schizophrenia and schizoaffective disorder. The first patient underwent intensive

individual so-called trauma-informed therapy (whereby paranoid delusions are connected to past trauma and hallucinations are understood as memory fragments), while the second patient received a multimodal approach that included individual, group, and family therapy, as well as art therapy with an emphasis on music. Both patients were reported to have benefited from the treatment, which was associated with a sense of safety and becoming more assertive in their communication of their thoughts and feelings. However, no outcome measures were reported.

A case study[65] from 2016 described the treatment of an individual with complex developmental trauma and dissociative symptoms who was unresponsive to various medicines and psychotherapies. The study targetted affect regulation through electroencephalography (EEG) neurofeedback assisted psychotherapy. This study relied on the supposition that EEG frequency bands are associated with cognitive-affective processes. The treatment involved presenting the individual with a visual or auditory feedback of targeted EEG amplitudes in real time, whereby the individual learned to increase or decrease their EEG amplitudes in the right temporal and parietal lobes at EEG frequencies that are associated with subjective calm (ie, the patient's own experience of calm). No outcome measures were reported. The authors described the patient as having experienced reduced dissociation, anxiety, nightmares, and improved sleep, emotional regulation, and social functioning.

See Online for appendix

Pharmacological treatments

We identified two case studies of pharmacological treatments.[66,67] In one study,[66] lithium monotherapy was used to treat an individual diagnosed with schizophrenia. No clear outcome measures were reported, but the case described reports from the patient and their spouse of reduced psychotic and dissociative symptoms and violent behaviours. The second study treated an individual with dissociative identity disorder and hallucinations with perospirone hydrochloride over the period of 9 months. This treatment was reported to be associated with reduced auditory hallucinations, identity dissociation, and anxiety. There were no outcome measures.

Sex and gender effects in response to interventions

The RCT[55] and case series,[36,56,57] did not report whether there were differences in response to interventions related to sex or gender.

Discussion

In the first systematic review, to our knowledge, of interventions for ASDTP, we found that most of the literature is of low quality due to an absence of controls, use of unvalidated or subjective outcomes, and small sample sizes. We identified only one controlled study (an RCT) out of the 24 identified studies. This trial of therapy—acceptance and commitment therapy[68]—therefore represented the highest level of evidence among all treatments. There was poor evidence for pharmacotherapy used in this group, represented by two case reports.[66,67] This Review therefore identifies no evidence to support specific pharmacotherapy for ASDTP beyond existing trials that do not differentiate between patients who have experienced developmental trauma and patients who have not. Taken together, there is very little in the way of an existing evidence base for trauma-informed care.

Although progress has been made in treating PTSD symptoms in patients with psychosis,[89] our Review shows that this area is vastly under-researched. There are several possible reasons for insufficient research in this area, which include the exclusion of individuals with psychosis from trauma research (and vice versa),[89,90] a lack of confidence in treatment utility in individuals with psychosis,[91] and ongoing concerns regarding the reliability of abuse reports from individuals with psychosis despite evidence of reliability.[92] Although the level and quality of evidence for treating psychotic and dissociative symptoms in adults who have experienced developmental trauma is scarce at the moment, our Review nonetheless does find some evidence of effectiveness that warrants future research (see extended discussion, appendix pp 1–4).

Strengths and limitations

A major strength of this Review is the use of broad search criteria to ensure all relevant studies were included. The studies included were not excluded on the basis of language, location, or year of publication. Although transdiagnostic approaches that suggest that psychotic symptoms are on a continuum are controversial (because of the potential for confusion in understanding the nature of psychosis),[93] we chose to include individuals with a developmental trauma history with psychotic or dissociative symptoms regardless of their psychiatric diagnoses. A major limitation of our Review resides in clinical diagnostic difficulties and problems in classification of symptoms (dissociative *vs* psychotic), especially given the scarcity of phenomenological rigour in many of the included studies.

The limitations of this Review are that, despite our best efforts, our search for unpublished studies might be incomplete, thereby reflecting publication bias. We acknowledge the possibility of inductive bias in our conceptual approach to this Review by assuming a direct association between childhood trauma and adult psychosis, and therefore we could be assuming a construct that might not be valid. Although concepts such as developmental trauma, childhood trauma, or similar are often used in the literature, research is needed to assess whether or not they are useful categories for guiding treatment in of themselves. Some studies[94] on childhood trauma in psychosis use scales that have an even wider scope and therefore include a range of adverse events, including

types of emotional distress or hardship, that could raise the risk of mental health problems but might not be regarded as traumatic in the generally accepted sense. Nevertheless, we felt that a broad review was warranted because of the importance of recognising the diversity of difficulties that occur during and after developmental trauma, particularly as many people survive potentially traumatic events without any adverse effects on their mental health and for those that do experience poor mental health, the effects are far wider-ranging than PTSD.[95]

Future directions

Our research highlights that, despite strong associations between developmental trauma and psychosis, there is a marked scarcity of high-quality research on treatments. It remains unknown whether targeting dissociation could reduce psychotic symptoms or be effective in its own right for treating dissociation if the two symptoms co-exist. It is also essential that we reach a precise understanding of the biopsychosocial mechanisms that underly psychotic symptoms in ASDTP. We also call on the field to develop more effective interventions. Studies that provide a higher strength of evidence are needed first before head-to-head trials are done. We need more RCTs of trauma-focused cognitive therapy in psychosis following developmental trauma that use validated measures, including adverse effects. In most psychoanalytic research, substantial increases in the strength of evidence are required, addressing bias and improving reporting of outcomes. Furthermore, research is needed to address which pharmacological treatments are most effective in ASDTP, as well as research that investigates the efficacy of combinations of medications and psychotherapies in treatments.

The studies we identified used diverse jargon that reflected different schools of psychotherapy, including that which often described the same or similar concepts. These differences in language can function as a barrier to understanding these mechanisms from an integrated neurocognitive perspective. Therefore, consensus is needed in psychotherapy nomenclature. We must also improve our understanding of the effects of moving between inpatient and outpatient settings during treatment, as this reflects clinical reality (ie, it is often extremely difficult for inpatients to access therapy that they can continue as outpatients, and vice versa). Given that we have found some evidence that trauma-focussed interventions can reduce psychotic symptoms,[68] there is also a need to develop trauma-informed services for these patients, evaluate their clinical and cost-effectiveness,[26] and use qualitative approaches to assess acceptability. Future studies should look at whether this group of individuals might need a longer duration of treatment or a higher frequency of treatment sessions. Because our Review was concerned with interventions for adult survivors, we did not include paediatric patients and future research is encouraged in children and young people. Additionally, it is important to explore potential adverse effects of having intense psychotic or dissociative symptoms while meditating during mindfulness-based treatments.[68,96] Future studies should have longer follow-up periods with adequate reporting of the therapeutic and adverse effects, the tolerability of treatments, as well as the inclusion of adequate placebo-controlled groups[68] to examine which components of the treatment are responsible for the effect. Finally, future avenues of research should explore drug-assisted psychotherapy.

Clinical recommendation

Because of the scarcity and low quality of evidence, including insufficient knowledge on tolerability, it is not possible to determine the comparative effectiveness of the treatments in this Review and we are therefore unable to recommend substantial changes to current clinical practice. Clinicians should follow best practice and existing clinical guidelines, essentially extrapolating guidance from NICE guidelines on PTSD[29] and psychosis.[30] Doing so will include screening for symptoms of PTSD and therefore, importantly, obtaining trauma histories. Nonetheless, our Review shows that it could be helpful for clinicians to assess and incorporate the following areas into treatment plans: emotion regulation, psychological acceptance, interpersonal skills, attachment, dissociation, and trauma memory reprocessing. In view of the weak evidence, our recommendation should be considered a grade C recommendation.[45] Given this grading, and high levels of risk in ASDTP, patients will be likely to benefit from additional symptom and side-effect monitoring during treatment in specialist settings. There is also a need for appropriate clinical supervision in trauma services,[97] especially given the risk of vicarious trauma in therapists.[98]

Conclusions

There is insufficient evidence to answer the question of what good trauma-informed psychosis care actually is. It

Search strategy and selection criteria

MEDLINE and PsycINFO were searched using the OVID interface to find relevant studies. Google Scholar, unpublished journals, and grey literature were hand-searched to identify relevant articles not available on these databases. The reference lists of relevant eligible studies were examined for additional relevant studies. We used search terms that were related to developmental trauma and psychotic or dissociative symptoms and diagnoses. We applied no limit to the search terms to ensure all relevant studies were retrieved. Each search term within each concept was linked using the Boolean operator "OR" and each concept was combined together with the Boolean operator "AND". The search string was as follows: (child OR childhood OR young OR young people OR young person OR adolescen* OR development) *AND (trauma OR abuse OR maltreatment OR neglect OR bully) *AND (psychotic OR psychosis OR hallucination OR delusion OR schizophrenia OR schizoaffective OR dissociat) *AND (treatment OR intervention OR therapy OR efficacy). We did the search on Oct 17, 2018. We also did an additional key word search on PubMed for the years 2017–18. We tested our search strategy by ascertaining whether these terms captured key papers known to us in this field.

is imperative to move beyond simply acknowledging the importance of trauma as a risk factor for psychosis and build an evidence base to help ASDTP. Our findings might be helpful for the design of future observational (mechanistic) and interventional research. It remains unclear which treatment works best for ASDTP and research is needed to establish which elements are most effective for whom. It is also important to understand patients' experiences in their developmental and systemic context to enable clinicians to have a more comprehensive and holistic view of their patient's presentation. This Review highlights the urgent need for methodologically sound, high-quality research to enable shared, evidence-based decision making between clinicians and patients.

Contributors

MAPB conceptualised and designed the study. The literature search was done by MAPB, FNIBY, and RS. All authors contributed intellectually to the study and the writing of the manuscript.

Declaration of interests

We declare no competing interests.

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