What are the psychological factors that may mediate the relationship between childhood trauma and later positive symptoms of psychosis?

Doris, Emma Elizabeth

Awarding institution:
King's College London

Volume I

Systematic Review

Empirical Research Project

Service Evaluation Project

Thesis submitted in partial fulfilment for the degree of
Doctorate in Clinical Psychology

Emma Doris

Institute of Psychiatry
King's College London
May 2015

Acknowledgments

Firstly, I would like to thank all the participants who took part in the study for their time and effort; this study would not have been possible without them.

I would like to thank my supervisors, Dr Elaine Hunter, Dr Amy Hardy and Dr Emmanuelle Peters, for their help, support and encouragement over the past few years. I have learnt from you all enormously and I'm grateful for all the guidance and knowledge you have given me. Thank you for patience, commitment and generosity with your time. I would also like to thank Charlotte Sykes for making joint working an enjoyable experience and for your support during data collection.

Finally, I thank my friends and family for their continuing love, encouragement and understanding.

Overview of contents

Systematic Review

What are the psychological factors that may mediate the relationship between childhood trauma and later positive symptoms of psychosis?

Supervised by Dr Emmanuelle Peters, Dr Elaine Hunter & Dr Amy Hardy

Abstract

Aims: Childhood trauma (CT) is increasingly recognised as a potential risk factor for the development of positive symptoms of psychosis. As a result, studies are beginning to investigate potential psychological factors that may mediate this relationship. This review sought to identify, summarise and critically evaluate studies that investigated psychological factors as mediating processes between CT and positive symptoms in people with psychosis.
Method: The following computerised databases were searched up to March 2015; ISI Web of Science, PsychInfo and Pubmed. These were supplemented with manual searches. After screening, papers relevant to the review question were examined in more detail and quality assessment ratings were completed.
Results: A total of 44 papers were identified comprising 10,161 participants. Two papers examined anomalous experiences, 2 attachment, 2 theory of mind (ToM), 9 neurocognitive functioning, 7 post-traumatic stress disorder (PTSD) and 22 dissociation. Quality varied across studies and some frequent methodological limitations were identified.
Conclusion: There is some evidence to support a mediating role of dissociative experiences and attachment anxiety in the relationship between CT and positive symptoms. It is not possible to draw conclusions concerning the other factors under review. Future research should aim to address methodological limitations of existing studies and should consider multiple factors within a single sample.

Table of contents

List of Figures

List of Tables

1 Introduction

1.1 Childhood trauma and psychosis

A significant proportion of individuals with psychosis[1] report adverse childhood experiences, such as emotional and physical abuse. Recent meta-analyses have confirmed a significant relationship between childhood trauma (CT) and positive symptoms in adulthood (Matheson, Shepherd, Pinchbeck, Laurens, & Carr 2013; Varese et al., 2012a). The first of these calculated that those with psychosis were 2.72 times more likely to have been exposed to CT than controls (Varese et al., 2012a). Similarly, the more recent meta-analysis found a medium to large effect of childhood adversity in people with schizophrenia (Matheson et al., 2013).

Whilst some have argued that the association between CT and psychosis has been overstated (e.g. Susser & Widom, 2012), others have begun to consider the psychological mechanisms by which these factors may be related. Several psychological models have been proposed to explain how trauma may influence the development and maintenance of psychotic experiences which focus on the causal role of CT in the development of positive symptoms (e.g. Read, Perry, Moskowitz, & Connolly, 2001). A cognitive-behavioural model of psychosis suggests that emotional changes, for example in response to trauma, may give rise to alterations in sensory perceptual experience, appraisals of which may lead to positive symptoms (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001). Another model proposes that trauma in the context of psycho-social vulnerabilities leads to intrusions which, in combination with dissociative experiences, may then be appraised in culturally unacceptable ways, leading to psychosis (Morrison, Frame, & Larkin, 2003). A compassion-focused model of psychosis suggests that CT may lead to disorganised attachment and emotion regulation difficulties, one consequence of which is increased tendency towards dissociation (Gumley, Braehler, Laithwaite, MacBeth, & Gilbert, 2010). The catastrophic interaction hypothesis proposes that an interaction between difficulties integrating sensory perceptual experiences due to problems with contextual integration (Steel, Fowler, & Holmes, 2005) and emotional reactions to stress or trauma results in vulnerability to intrusive experiences that contribute to hallucinations and delusional beliefs (Fowler et al., 2006). It is clear from these models that there are multiple psychological factors through which CT may be hypothesised to influence the development and maintenance of positive symptoms.

[1] The term 'psychosis' rather than 'schizophrenia' is used here as it is the spectrum of phenomena, rather than a specific diagnostic category, which is of interest.

1.2 Potential mediating factors

Whilst some theories propose that there is a general impact of CT on symptoms (e.g. van Nierop et al., 2014) others argue the opposite view and suggest particular pathways through which specific types of trauma may lead to specific positive symptoms (Bentall, et al., 2014). For example several mediating factors have been implicated in auditory hallucinations following CT including deficits in cognitive processing, (e.g. source-monitoring) (Bentall, 1990) and dissociative responses to trauma (Longden, Madill, & Waterman, 2011). Dissociative experiences arising due to trauma may leave an individual vulnerable to psychotic experiences by undermining their grounding in reality (Allen, Coyne, & Console, 1997). Alternatively, dissociative processes might be, or give rise to, anomalous experiences that form the basis for hallucinations as well as delusion formation (Newman-Taylor & Sambrook, 2013; Sass, Pienkos, Nelson, & Medford, 2013). It is argued that auditory hallucinations may be best understood as dissociated or disowned components of the self, resulting from traumatic experiences (Longden et al., 2012). Substantial evidence indicates a high level of dissociation in those with psychosis (e.g. Moskowitz, Barker-Collo, & Ellson, 2005; Varese, Barkus, & Bentall, 2012b), with highest rates found in those with CT (e.g. Braehler et al., 2013).

Peri-traumatic dissociation is thought to be a key mechanism responsible for post-traumatic stress disorder (PTSD) symptoms through limitated integration of sensory and psychological representations of the trauma (e.g. Brewin & Holmes, 2003), although this theory is contested (Bedard-Gilligan & Zoellner, 2012). Some have argued that PTSD symptoms such as intrusions or 'flashbacks' are similar to hallucinations and highlighted that they often co-occur with paranoia. Extending this argument, it has been hypothesised that psychosis and PTSD are similar phenomena (Morrison et al., 2003) and are part of a spectrum of response to trauma. This theory suggests that PTSD symptoms resulting from CT may be interpreted in such a way as to result in the experiences of positive symptoms.

Similarly, cognitive processes have been implicated in delusions; the jumping-to-conclusion bias (JTC) (Garety & Freeman, 1999), external attribution of negative events (e.g. Janssen et al., 2006), and deficits in theory of mind (ToM) (e.g. Corcoran et al., 2008). Difficulties with attachment have also been implicated in paranoia (Wickham, Sitko, & Bentall, 2015). The attachment-developmental-cognitive (ADC) theory of schizophrenia suggests that disturbances in childhood attachment, including that resulting from neglect/abuse, leads to impaired ToM capacity due to deficits in neural representation of self and others and increased stress sensitivity (Rajkumar, 2014; Read, Fosse, Moskowitz, & Perry, 2014). In addition, attachment difficulties are thought to result in diminished capacity to cope with stress. Some have implicated the role of attachment in the link between trauma and dissociation. It has been proposed that in the presence of CT, disorganised attachment leads to an increased

vulnerability to dissociative reactions, which have been associated with positive symptoms (Liotti, 1992; 2004).

Early childhood maltreatment has also been implicated in the development of maladaptive schemas in those with schizophrenia (Bortolon, Capdevielle, Boulenger, Gely-Nargeot, & Raffard, 2013), which may exert influence by affecting appraisals of anomalous experiences, leading to a 'need for care' (Bentall & Fernyhough, 2008). Linking with this idea is Social-Rank Theory which posits that social schema, or self-esteem, are built through comparisons with others (Gilbert, Price, & Allan, 1995). Negative early life experiences it is argued, leads to social defeat (Selten, van der Ven, Rutten, & Cantor-Graae, 2013) and development of low self-esteem, which in turn may influence attribution biases (e.g. JTC and external attribution) and contribute to the development of positive symptoms.

The neuropsychological impact of CT has also been considered in connection with positive symptoms. It has been argued that CT affects the ability to formulate and communicate clearly, with clinical levels of illogical thinking and thought disorder found in children with adverse experiences (Toth, Stronach, Rogosch, Caplan, & Cicchetti, 2011). Poorer cognitive functioning in adulthood has been demonstrated in a general sample of those with a history of CT across a range of specific abilities (Perez & Widom, 1994) with some evidence to support this association in those with psychosis (e.g. Lysaker, Meyer, Evans, & Marks, 2001).

This summary covers some of the potential psychological factors that may be involved in the relationship between CT and positive symptoms of psychosis. These factors have received differing levels of attention in the literature, however it is unclear to what extent robust evidence exists to support their implication in a mediating role. Reviewing the evidence for the different factors may help to understand where knowledge is lacking and highlight areas for development, which may in turn contribute towards building a comprehensive model of how CT may be related to subsequent positive symptoms.

The aim of this review was to systematically collect and critically evaluate evidence pertaining to psychological factors that have been investigated as potential mediating factors between CT and later positive symptoms of psychosis. Factors that appeared most relevant considering the existing literature and theoretical knowledge of the area were included in the search. It is acknowledged that this list is by no means comprehensive; however the review was completed within the constraints of a doctoral thesis timeframe. Prospective, cohort, case-control and cross-sectional studies were considered which assessed CT, positive symptoms and a psychological mediating factor in adults and adolescent samples with psychosis. In addition, this review conducted a quality assessment of the methodological rigour of the included studies. The aim of this exercise was to help determine the conclusions

that can be reached based on the current literature as well as to highlight the limitations of existing studies that may be addressed in future studies.

2 Method

2.1 Literature search

2.1.1 Inclusion/exclusion criteria

Papers included were prospective, cohort, case-control and cross-sectional studies that included: (a) adult or adolescent samples; (b) participants with reported positive psychosis symptoms; (c) measurement of childhood adversity or trauma.

Papers were excluded for the following reasons: (a) single case-studies or treatment studies; (b) an exclusive focus on negative symptoms; (c) organic, drug-induced or secondary psychosis; (d) investigating physiological causes of psychosis; (e) not written in English.

2.1.2 Search strategy

ISI Web of Science, PsychInfo and Pubmed were searched to March 2015. Manual searches were also completed of reference lists of meta-analyses and reviews. The following search terms were used for positive symptoms and childhood trauma: '["psychosis" OR "psychoti*" OR "hallucinat*" OR "delusion*" OR "voices" OR "voice hearing" OR "auditory hallucinat*" OR "paranoi*" OR "schizo*" OR "thought disorder" OR "disorgani?ed speech" OR "disorgani?ed behaviour" OR "positive symptoms"] AND ["Child* trauma*" OR "trauma*" OR "child* abuse" OR "child* advers*" OR "advers*" OR "neglect*" OR "child* maltreatment" OR "child* molestation" OR "sexual abuse" OR "physical abuse" OR "psychological abuse" OR "emotional abuse" OR "bully*" OR "bullied" OR "emotional trauma" OR "war trauma" OR "antipathy" OR "victim*" OR "re-victimi?ation"]. Potential mediating factors were searched using the terms listed in Table 1.

These studies were searched, initially by screening titles and abstracts and followed where necessary by the full paper to identify studies that were relevant to the review question.

2.2 Assessment of quality

All selected articles were subjected to evaluation. Two recent systematic reviews of tools for assessing the quality of observational studies demonstrated that there is a lack of consensus in this area (Sanderson et al., 2007; Shamliyan et al., 2010). A review of 86 possible tools concluded that a number of them were appropriate, but did not make specific recommendations for choice of tool (Sanderson et al., 2007). Suggestions were instead made

Potential mediator	Search terms
Anomalous Experiences	"anomal* experience*" OR "perceptual anomal*" OR "anomal* percept*"
Attachment, Social Rank	["attachment" OR "attachment behaviour" OR "attachment disorder" OR "disrupted attachment" OR "attachment theory"] AND ["social rank theory" OR "social exclusion"]
Schema	"schema" OR "early schema" OR "maladaptive schemas"
Theory of Mind	"theory of mind"
Neurocognitive Functioning	"cognit*" OR "cognit* impairment*" OR "cognit* ability" OR "cognitive process*" OR "information process*"
Autobiographical Memory	"autobiograph* memor*"
PTSD	"post traumatic stress disorder" OR "post traumatic stress reaction" OR "trauma response" OR "PTSD"
Dissociation	"dissociation" OR "dissociative experiences" OR "depersonali?ation" OR "dereali?ation" OR "somatoform dissociat*" OR "dissociative disorder" OR "dissociative reaction" OR "fugue" OR "depersonali?ation disorder"

Table 1 Search terms for potential mediating factors examined

for the broad domains that should be included in a tool (i.e. appropriate selection of participants, appropriate measurement of variables and appropriate control of confounding). For this study pertinent features were extracted from previous tools to develop a measure wholly relevant to the current review question, resulting in an 8-item measure covering the following main categories: sample, measurement tools and analysis (Table 2). Study design was not included as the majority were cross-sectional and there was considered to be insufficient variability to include this as an item. Scoring for each item was between 0-2 and scores on each question were summed for each study. A subset (10%) of papers was independently rated and interrater reliability (intraclass correlation coefficient; ICC) calculated for the quality scores.

2.3 Data extraction and analysis

All data extraction was completed by the author. The following variables were extracted and entered into a database: sample characteristics (diagnosis, mean age and standard deviation, proportion of males); study design; measurement instruments (including type, i.e. case review, yes/no categorisation, questionnaire measures, interview); analysis (descriptive statistics, groups comparisons & correlations, mediation analyses); main findings.

Table 2 Quality rating scale

Score	Sample	Measures				Analysis	
	Diagnostic categories	Childhood trauma		Positive symptoms	Factor under consideration	Multiple comparison adjustment	Statistics
		How defined	How measured	How measured	How measured		
0	Mixed sample, no separate analysis by diagnostic category	Lifetime broad trauma score (including adult and child traumas)	Case note review/ yes/no categorisation assessed in research	Case note review/ yes/no categorisation assessed in research	Case note review/ yes/no categorisation assessed in research	No/ not reported	Descriptive statistics
1	Mixed sample, separate analysis by diagnostic category	Childhood trauma non-specific overall (yes/no) or single type of trauma or count of no. types of trauma	Questionnaire measures	Questionnaire measures	Questionnaire measures	Adjusted p value in some way	Group mean comparisons/ correlation
2	Psychosis sample	Childhood trauma overall severity score and/or category scores (and analysed separately)	Interview	Interview	Interview	Bonferroni corrected or similar	Mediation analyses

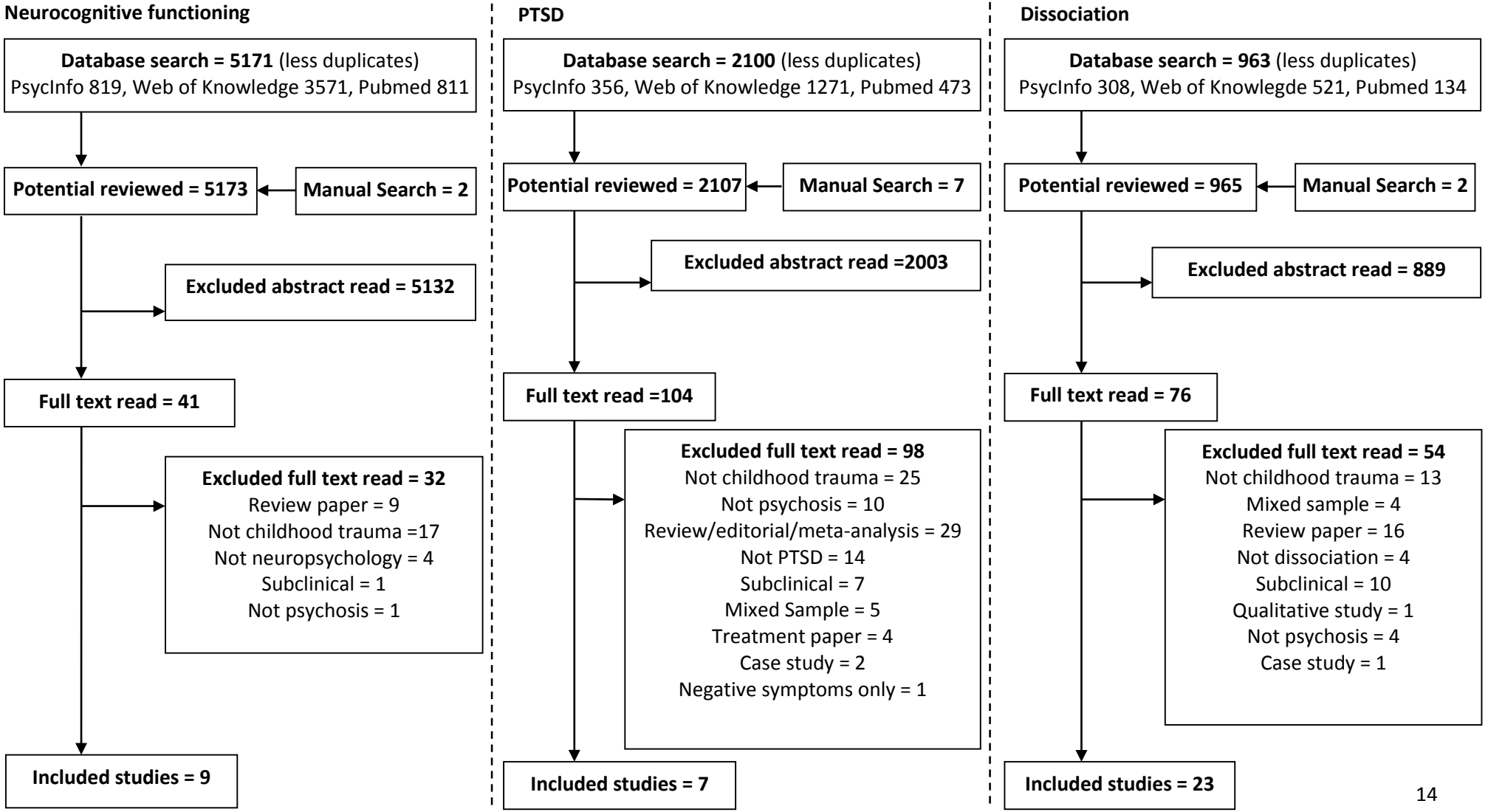
3 Results

3.1 Study characteristics

Across all factors 8710 papers were identified, 44 of which met the inclusion criteria and were included in the review (Figure 1). Some studies investigated more than one factor and study characteristics are included in Table 3. No suitable papers were identified for Schema or Autobiographical Memory and these factors were therefore not included further. Two papers were identified for Anomalous Experiences, two for Attachment, two for ToM, nine for Neurocognitive Functioning, seven for PTSD and 22 for Dissociation. The studies were completed across a range of countries; UK (14); USA (10); Australia (6); Germany (5); Spain (3); Canada (2); Netherlands (2); Turkey (2); Czech Republic (1); Norway (1). Over half of the included studies were cross-sectional in design (57%); the remainder were case-control (39%) and cohort studies (5%).

Sample characteristics varied across the studies. Based on 41 studies the mean age of the participants was 52.7 years. No data were provided on the age of participants in three studies (Bozkurt-Zincir et al., 2014; Evans et al., 2015; Sitko et al., 2014). As the study by Sitko and colleagues used data from the National Comorbidity Study (N=5877) data concerning age is missing for 58% of participants across all studies in the review. Based on the data of 43 studies (excluding Sitko et al., 2014) 53.8% of the participants across all studies were male. For the largest proportion of studies participants were mixed inpatient and outpatient samples (39%), 53% of which were FEP participants, some recruited exclusively from outpatient clinics (34%) and others from inpatient wards (20%). For one study the recruitment setting was unclear and two studies were general population samples (5%). The majority of studies (70%) did not include a non-psychosis control sample; of those that did 11 studies (25%) recruited non-clinical controls, one used a non-psychosis clinical sample and one a sibling control group. Perhaps reflecting differences in diagnostic practices across settings and countries, inclusion criteria based on diagnostic criteria varied across studies. Of those targeting psychosis samples, inclusion criteria typically covered the range of schizophrenia spectrum disorders, including affective and non-affective schizophrenia.

Figure 1 Flowchart of article selection process



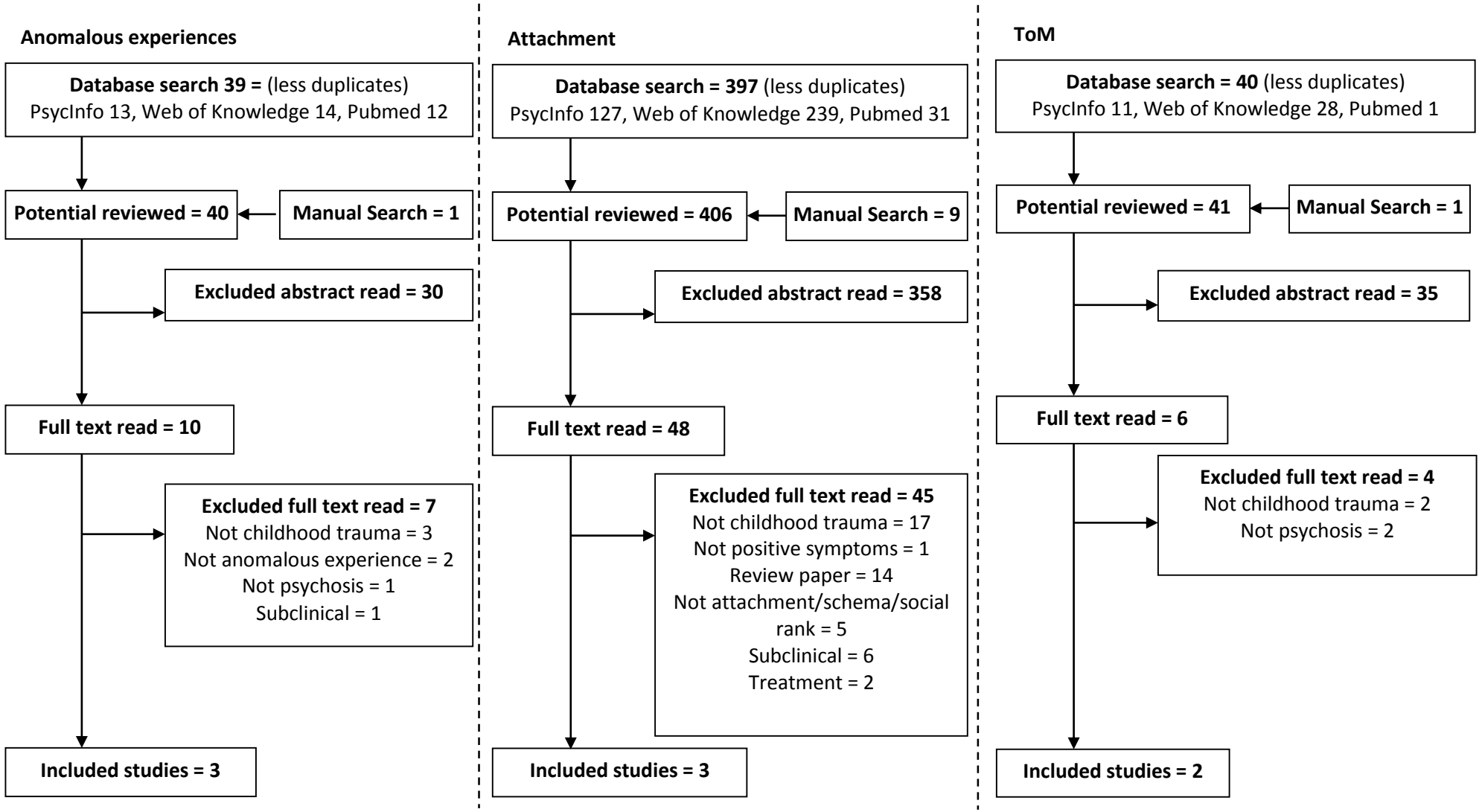

Anomalous experiences
Database search 39 = (less duplicates)
PsycInfo 13, Web of Knowledge 14, Pubmed 12
Potential reviewed = 40
Manual Search = 1
Excluded abstract read = 30
Full text read = 10
Excluded full text read = 7
Not childhood trauma = 3
Not anomalous experience = 2
Not psychosis = 1
Subclinical = 1
Included studies = 3
Attachment
Database search = 397 (less duplicates)
PsycInfo 127, Web of Knowledge 239, Pubmed 31
Potential reviewed = 406
Manual Search = 9
Excluded abstract read = 358
Full text read = 48
Excluded full text read = 45
Not childhood trauma = 17
Not positive symptoms = 1
Review paper = 14
Not attachment/schema/social rank = 5
Subclinical = 6
Treatment = 2
Included studies = 3
ToM
Database search = 40 (less duplicates)
PsycInfo 11, Web of Knowledge 28, Pubmed 1
Potential reviewed = 41
Manual Search = 1
Excluded abstract read = 35
Full text read = 6
Excluded full text read = 4
Not childhood trauma = 2
Not psychosis = 2
Included studies = 2

Table 3 Characteristics of studies included in the systematic review

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
Anom Exp	Bak et al., 2005 Netherlands	To what degree does CT predict dysfunctional responses to early psychotic experiences?	Psychosis sample (from a general population study), n=36	15 (42%)	32.9 [9.8]	Cohort longitu-dinal	CIDI psychosis section SCID BPRS	YES/NO questions (emotional, physical, psychological or sexual trauma before 16 plus frequency)	MACS (subjective experience of distress associated with psychotic experience and level of control)	Descriptive statistics, Logistic and multiple regression,	Exposure to CT predisposes an individual to suffer more emotional distress associated with psychotic experiences and less perceived control over those experiences compared to those without CT. CT did not affect the severity of psychotic experiences.
Anom Exp	Haug et al., 2015 Norway	To explore relationships between CT and anomalous self-experiences in early treated phases of schizophrenia.	FEP Schizophrenia Spectrum Disorder n=55 (Schizophrenia, Schizophreniform, SAD)	28 (51%)	25.2 [7.3]	Cross-sectional	PANSS	CTQ-SF	EASE	Descriptive statistics, Correlation, ANOVA, multiple regression	Significant association between CTQ and depression and between EASE and depression. Trend-level effect of EN on EASE total score with significant interaction between gender and EN on EASE total (in women). When depression entered as a covariate association between EASE total score and CTQ no longer significant. No associations found in men. Did not consider association with positive symptoms.
Anom Exp	Lovatt et al., 2010 UK	To investigate the relationship between appraisals of anomalous experiences, trauma and a 'need for care'	Clinical sample, n=27 (affective and non-affective schizophrenia spectrum disorders) Non-clinical sample, n=27	18 (66%) 9 (33%)	36.7 [9.5] 41.4 [10.2]	Case control	Diagnosis only	THQ CT reported but not analysed separately	AANEX	Chi-square, Mann-Whitney U, t-tests, correlation, binary logistic regression	Groups did not differ on overall experiences or trauma but distinct types of experiences, appraisal and response to experiences characterised each group. Interpersonal traumas specifically related to more personalising and fewer normalising/psychological appraisals. Suggests an association between trauma and development of anomalous experiences, but not between trauma and psychotic disorder or "need for care".

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
Attach-ment schema, social rank	Berry et al., 2009 UK	To investigate specific predictions about the relationship between attachment and perceived early experience of care and trauma in a psychosis sample	Schizophrenia, n = 66 SAD, n = 13 Non-specified psychotic episode, n=1	55 (69%)	44 [13.3]	Cross-sectional	PANSS	THQ, Parental Bonding Instrument	PAM	Descriptive statistics, Spearman correlation, ANOVA, regression analyses	Higher levels of attachment anxiety in CT group relative to other trauma groups. Failed to find a significant association between attachment anxiety and CT when depression and other confounds controlled for. Did not assess relationship between attachment and symptom severity.
Attach-ment schema, social rank	Sitko et al., 2014 UK/USA	To test specific associations between CT types and psychotic symptoms and to explore the degree to which attachment styles mediate the relationship between CT and psychotic symptoms	n=5877 National Comorbidity Survey Part II	NR	NR	Cohort, longi-tudinal	Paranoia severity (0-3 scale) Halluci-nation severity (0-4 scale)	Life Event History	AAQ	Descriptive statistics, mediation analysis	Relationship between neglect and paranoid beliefs fully mediated via anxious and avoidant attachment. Relationship between sexual molestation and hallucinations independent of attachment style. Relationship between rape and hallucinations partially mediated by anxious attachment, but NS when depression included as mediating variable.
Attach-ment schema, social rank	van Dam et al., 2014 Netherlands	To investigate the relationship between CT and positive and negative symptoms in patients, siblings and controls and to investigate whether attachment style mediates the relationship between CT and positive and negative symptoms.	Psychotic disorder, n=131 Siblings, n=123 Controls, n=72	110 (84%) 58 (47%) 46 (64%)	31.19 [10.58] 30.89 [8.12] 30.89 [7.47]	Case-control	CASH, SAPS & SANS CAPE	CTQ-SF	PAM	Descriptive statistics, chi-square, ANOVA, multiple regression	In both patients and siblings CT predicted positive symptoms and this was partly mediated by attachment style. In the patient sample attachment style did not mediate the relationship between CT and negative symptoms, but was a mediator in the sibling sample. Attachment style may play a more prominent role at a subclinical level.
ToM	Lysaker, 2011 USA	To examine ToM and whether those with different emotion recognition profiles (in self and other) would differ in	Schizophrenia, n=67 SAD, n=34	86 (85%)	46.26 [9.66]	Cross-sectional	PANSS	"Did you ever have sexual contact with anyone who	MAS Bell-Lysaker emotional	Correlation, ANOVA, MANCOVA, Chi-square	Those less aware of their own emotions and those of others had poorer cognitive functioning and higher levels of disorganisation symptoms. The group aware of their own emotions but not those of

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
		neurocognitive function, symptom severity and CSA.						was at least 5 years older than you before you reached the age of 13?"	recognition task		others has a significantly higher report of CSA.
ToM	Renard, 2012 USA	To explore whether dissociation is uniquely related to affect recognition	Schizophrenia & SAD, n=49	45	51.82 [9.75]	Cross-sectional	PANSS	PCL: y/n for list of traumatic experiences but did not state nature of traumas reported	Bell-Lysaker emotional recognition task	Descriptive statistics, Linear regression	Greater levels of dissociative symptoms predicted poorer recognition of negative emotions over and above that of positive, negative, cognitive and PTSD symptoms. Results are consistent with the possibility that dissociation represents a unique dimension of psychopathology in schizophrenia which may be linked to function
Neuro-cognitive	Aas et al., 2011 UK	To investigate whether there is a relationship between CT and cognitive function in FEP.	FEP, n=138 (Of which Schizophrenia, n=83 Mania, n=29 Depression, n=26) Non-clinical controls, n=138	73 (53%) 67 (49%)	30.6 [10.9] 32.2 [9.3]	Case-control	SCAN - diagnosis	CECA	Learning & memory (RAVLT, VR of WMS) EF (TMT-B, LNST, RCPM) Attention, concen-tration and PS (TMT-A, DS, LF) Visual-spatial perception (WAIS)	Descriptive statistics, chi-square, ANCOVA	A history of CT was associated with poorer cognitive performance, predominantly in affective psychoses and male patients. No association between CT and cognitive functioning found in female patients or controls.

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
Neuro-cognitive	Aas et al., 2012a UK	To investigate the association between early life stress and cognition; - General vs specific deficits - Bipolar vs schizophrenia differences	Schizophrenia Spectrum Disorders, n=239 (schizophrenia, n=145, SAD, n=29 Psychosis NOS, n=65) BPD, n=167 (Bipolar I, n=107 Bipolar II, n=11 Bipolar NOS, n=30 MDD, n=19)	244 (60%)	30.07 [3.00]	Cross-sectional	SCID - diagnosis PANSS	CTQ	Memory, WM, EF, Perception and visuospatial Verbal General cognitive function (WASI)	Descriptive statistics, ANCOVA, linear regression, multiple regression	PA, SA and PN were significantly associated with reduced scored on WM & EF and verbal and performance tasks. Schizophrenia group was significant but clear indications of a stronger association in the bipolar group (especially for PA).
Neuro-cognitive	Aas et al., 2012b UK	To investigate the impact of CT on cognitive function and whether this is mediated by changes in brain structures.	FEP, n=83 Controls, n=63	52 (63%) 26 (41%)	27.4 [7.9] 28.0 [7.7]	Case-control	SCID - diagnosis	CECA	Learning and memory (RAVLT, VR of WMS) EF (TMT-B, LNST, RCPM) Attention, concent-ration PS (TMT-A, DS) Visual-spatial perception Verbal (WAIS)	Descriptive statistics, chi-square, ANOVA, Spearman correlation, multiple regression	CT negatively correlated with performance in EF, WM, attention and concentration, language, verbal intelligence. This is mediated by amygdala volume.
Neuro-cognitive	Campbell et al., 2013	To examine the overlap between neurocognitive deficits in adult survivors	FEP, n=30 (Schizophrenia, n=13, BPD, n=4	Trauma = 11 (52%)	Trauma 37.76 [9.26]	Case-control	PANSS (DES)	TEC, TREQ	WASI; NART, DS, Hayling &	Descriptive statistics, ANOVA,	Participants with a history of CT had significantly higher premorbid IQ than those without and experienced a significant

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
	UK	of CT and individuals with psychosis in a FEP population.	Psychotic depression, n=4 Other, n=9) Trauma, n=21 No trauma, n=9	No trauma = 7 (78%)	No trauma 39.44 [11.56]				Brixton, COWAT	Fisher's exact test, ANCOVA	decline in IQ. CT associated with significantly poorer performance on sematic fluency, delayed visual recall and visuospatial WM.
Neuro-cognitive	Dorahy et al., 2004 UK, Australia	To assess cognitive inhibitory functioning in DID compared to other psychiatric samples. To assess the role of dissociation in cognitive inhibitory functioning in DID.	DID, n=20 Depression, n=10 PTSD, n=10 Psychosis, n=9	0 (0%) 2 (20%) 3 (30%) 6 (67%)	37.7 [12.4] 46.3 [12.39] 45.9 [9.29] 30.0 [14.32]	Case-control	Diagnosis, Schizotypal Personality Scale	STCE	Flanker Task (to assess cognitive inhibition)	Descriptive statistics, ANOVA, Mann-Whitney U, MANOVA, Spearman correlation	The psychosis sample (and no other) showed a reduced capacity to engage in cognitive inhibition. Cognitive inhibitory status was not related to dissociation, CT or schizotypy.
Neuro-cognitive	Lysaker et al., 2001 USA	To compare cognitive functioning in individuals with psychosis with and without CSA.	Schizophrenia, n=31 SAD, n=12	43 (100%)	45	Cross-sectional	PANSS	Questions assessing CSA	WCST, Vocabulary, LNST & DS of the WAIS III, CVLT	Descriptive statistics, MANOVA, ANOVA, MANCOVA	CSA group had significantly higher levels of positive and cognitive symptoms than the non-abuse group. NS difference for negative symptoms. CSA group performed more poorly on the WCST, DS and LNS. CVLT did not differ.
Neuro-cognitive	McCabe et al., 2012 Australia	To assess rate of CT in individuals with schizophrenia and to investigate the association between CT and cognitive functioning.	Schizophrenia participants, n=408 Controls, n=267	268 (66%) 116 (43%)	40.72 [11.07] 37.27 [13.70]	Case-control	Diagnostic Interview for Psychosis; SANS; GAF	CAQ	WTAR, WASI	Descriptive statistics, chi-square, t-test, principle component analysis, logistic regression, linear regression	Positive symptoms associated with number of CTs and higher rates of 'Loss, Poverty and Sexual Abuse' and 'Dysfunctional Parenting' factors. NS with negative symptoms. Among controls 5 or more CT associated with sig decrease in WTAR and WASI. NS in schizophrenia participants.

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
Neuro-cognitive	Schenkel et al., 2005 USA	To examine CT in inpatients with schizophrenia or schizoaffective disorder in relation to cognitive functioning, anxiety and depression, psychosis severity and premorbid functioning.	Schizophrenia, n=21 SAD, n=19	25 (63%)	41.9 [10.7]	Cross-sectional	BPRS	Screening questions about PA, SA and neglect in interview and from chart review.	SILS Vocabulary Subtest Hayling & Brixton COWAT, Contour Integration Test	Descriptive statistics, t-test, chi-square, factor analysis, MANOVA, linear trend analysis	History of CT associated with greater academic difficulties, lower attainment, poorer peer relationships and earlier age on onset. Evidence of a link between CT and perceptual dysfunction. No association between CT and EF, verbal fluency or verbal processing speed.
Neuro-cognitive	Sideli et al., 2014 UK	To investigate the relationship between severe CT and cognitive functions in FEP individuals and matched controls.	FEP, n=134 Controls, n=127	87 (65%) 72 (57%)	29.4 [8.92] 27.9 [8.97]	Case control	OPCRIT	CECA	NART, WMS-II, WAIS-III	Descriptive statistics, chi-square, t-test,	Abused patients did not significantly differ from non-abused patients in any measure of intellectual ability or functioning. In contrast abused controls performed worse than non-abused controls in EF and WM.
PTSD	Andrew et al., 2008 UK	To compare the prevalence of trauma and trauma symptoms in clinical and non-clinical voice hearers and to investigate the extent to which trauma variables account for variance in beliefs about voices.	Psychiatric voice hearers (PVH), n=22 Non-psychiatric voice hearers, n=21	13 (59%) 6 26%)	39.55 [12.3] 50.67 [11.3]	Case control	PSYRATS-AH BAVQ-R	PDS	IES, PDS	Descriptive statistics, chi-square, linear multiple regression,	PVH more frequent voices, more negative content, less control and more distress and resistant coping behaviours. NS difference in number of people with trauma between groups. PVH more events and more CSA. PVH had a high rate of PTSD diagnosis. Current trauma symptoms significantly predicted beliefs about voices. Distress (BDI & BAI) – BDI predicted by beliefs about malevolence and BAI by IES total score.
PTSD	Bendall et al., 2012 Australia	To investigate whether: - those with CT more likely to develop PTSD in response to FEP than those without - those with PTSD for CT were at greater risk of developing PTSD	FEP, n=36	22 (61%)	21.42 [3.43]	Cross-sectional	PANSS	CTQ	IES-R	Descriptive statistics, logistic regression	The rate of clinical-level PTSD in reaction to childhood trauma was 39%. CT and PTSD in relation to CT significantly raised the risk of developing post-psychotic PTSD (and this could not be explained by other factors such as DUP, sx severity and age at onset).

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
PTSD	Bendall et al., 2013 Australia	To investigate whether: - Those with FEP and CSA have more severe positive symptoms - If intrusions of CSA these are associated with positive symptoms - Those with FEP and CSA have greater selective attention to CSA words than controls.	FEP (schizophrenia spectrum), n=40 with CT, n=25 Without CT, n=15 Non-clinical controls, N=21	 12 (48%) 9 (60%) 9 (43%)	 20.62 [3.10] 22.07 [3.20] 21.19 [2.52]	Case control	PANSS	CTQ	NART, Stroop IES-R	Descriptive statistics, ANOVA, Kruskal-Wallis, t-test, Mann-Whitney U Chi-square	Those with CSA had more severe delusions and hallucinations. The posttraumatic intrusion score was correlated with hallucinations (trend) and significantly correlated with delusions. Those with CSA showed significantly longer Stroop interference for CSA words than control group but not FEP without CT. Those with CSA had posttraumatic intrusions at a clinical level and significantly higher depression
PTSD	Gearon et al., 2003 USA	To investigate the link between traumatic life events and PTSD in women with schizophrenia, schizoaffective disorder and drug use/dependence.	Schizophrenia, n=33 SAD, n=21 All had current illicit-drug abuse or dependence	0 (0%)	40.6 [6.8]	Cross-sectional	SCID	TLEQ	CAPS	Descriptive statistics, fisher's exact, t-test	SA and PA (Y/N) associated with current PTSD symptoms severity and PTSD diagnosis.
PTSD/ disso-ciation	Vogel et al., 2011 Germany	To investigate differences in experiences of dissociation, psychotic features and posttraumatic stress symptoms as potential responses to trauma in psychotic vs. non-psychotic disorders.	Paranoid schizophrenia, n=25 Non schizophrenia control, n=35 (depressive disorder, n=15 Agoraphobia, n=2 Agoraphobia and panic, n=2 Panic disorder, n=3 Social phobia, n=2 Adjustment disorder, n=2	18 (72%) 10 (29%)	36.0 [12.4] 37.43 [10.28]	Case control	SAPS SANS	CTQ	PDS	Descriptive statistics, MANOVA, chi-square, binary logistic regression	CT predicted PTSD symptoms and negative symptoms. Neglect associated with schizophrenia (negative symptoms), abuse with non-psychosis disorders. Dissociation predicted high score on the SAPS. Positive symptoms were more closely related to dissociation than to PTSD and were not specific to schizophrenia. Dissociation was significant predictor of PTSD.

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
			Somatoform disorder, n=9)								
PTSD Disso-ciation	Kilcommons & Morrison, 2005 UK	To examine whether cognitive factors and responses to trauma (e.g. dissociation) are implicated in the development of PTSD and positive psychotic symptoms.	Schizophrenia spectrum disorder, n=32	25 (78%)	34.5 [9.96]	Cross-sectional	PANSS	THQ (child, <16, & adulthood)	PSS-SR, PCTI DES	Descriptive statistics, t-test, chi-square, correlation ANOVA, multiple regression	Severity of trauma (lifetime) was associated with severity of PTSD and psychotic experiences. CT total not associated with delusions, hallucinations or PTSD frequency or total. PTSD (freq & distress) sig associated with hallucinations but not delusions. Dissociative symptoms associated with psychotic experiences; depersonalisation significantly predicted hallucinations.
PTSD Disso-ciation	Lysaker, 2005 USA	To investigate whether CSA in schizophrenia is a predictor of key symptoms of PTSD the relation to anxiety and social anxiety.	Schizophrenia, n=28 SAD, n=17 PTSD, n=11	56 (100%)	49.67 [7.91]	Case control	SCID-I	TAA; Two items related to CSA	TSI	Descriptive statistics, ANOVA, chi-square, correlation, discriminat e function analysis	Patients with schizophrenia and CSA had significantly higher levels of dissociation, intrusive experiences and state and trait anxiety than those without CSA. NS diff on anxious arousal, defensive avoidance or social anxiety. Compared to patients with PTSD, those with CSA had significantly lower levels of state anxiety, anxious arousal and intrusive experience and lower levels of fearful social avoidance.
Disso-ciation	Alvarez et al., 2015 Spain	To assess prevalence of CT and polyvictimisation in healthy population and psychotic spectrum disorders To test the relationship of dissociation, types of CT and polyvictimisation	Schizophrenia, SAD, n=45 Healthy controls, n=78	25 (56%) 34 (44%)	37.9 (95% C.I. = 35.9-40.4)	Case-control	Diagnosis confirmed	CTQ-SF	DES-II	Descriptive statistics, Chi-square, t-test, Mann-Whitney U ANOVA, Kruskal-Wallis	Patients had more history of physical neglect, physical abuse and CSA than controls. Polyvictimisation leads to increased risk of developing schizophrenia. Patients presented with more dissociative symptoms. Relationship between CT and dissociation found across groups. EA, PA and SA closely related to dissociation in schizophrenia patients. Increase in intensity of dissociative symptoms in those with polyvictimisation. This link between CT and

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
											dissociation could be mediated by polyvictimisation.
Disso-ciation	Braehler et al., 2013 Canada	To investigate the link between CSA and dissociation in a FEP sample	FEP, n=62 Chronic psychotic patients, n=43 Community controls, n=66	46 (74%) 32 (74%) 38 (58%)	23.2 [3.3] 31.5 [7.9] 27.9 [7.4]	Case-control	SCID	CTQ	DES	Descriptive statistics, correlation, ANCOVA	Chronic patients reported highest levels of dissociation. More severe trauma associated with greater dissociative symptoms in all groups, most strongly in chronic group. Emotional abuse strongest association with dissociation. Significant interaction between group and trauma; association between CT and DES differed between chronic and control participants and a trend between chronic and FEP groups.
Disso-ciation	Bozkurt Zincir et al., 2014 Turkey	To investigate the link between psychosis and CT in a group of female patients with psychotic disorders and a group with non-psychotic disorders.	Patients with psychotic disorders, n=54 Patients with non-psychotic disorders, n=24	0 (0%)	NR	Cross-sectional	PANSS	CTQ	DES	Descriptive statistics t-test, Mann-Whitney U, chi-square, spearman correlation	Dissociation linked with greater levels of delusions, hallucinations, disturbance of volition and depression. No correlations between PANSS and DES.
Disso-ciation	Dorahy et al., 2009 Northern Ireland & Australia	To investigate phenomenological differences in VH experiences in those with schizophrenia ±CT and those with DID	Schizophrenia +CT, n=16 Schizophrenia -CT, n=18 DID, n=30	27 (42%)	41.61 [11.2]	Case-control	MUPS	CTQ	DES-T	Descriptive statistics, MANOVA, logistic regression	VH more pervasive in DID compared with schizophrenia and phenomenologically different. CT and the interaction between CT and dissociation significantly improved the prediction of voices starting before 18 and having more than 2 voices (across groups)
Disso-ciation	Evans et al., 2015 UK	To investigate CT, dissociation and self-concept clarity (SCC) in clinical and non-clinical sample	FEP, n=29 Control, n=31	19 (66%) 19 (61%)	NR	Cross-sectional	PANSS (collected clinically, not for research)	CTQ	DES-II	Descriptive statistics, Mann-Whitney U, mediation	Dissociation positively mediated the relationship between PN and psychosis group membership. Large but NS effects also found for PA and SA. SCC significantly negatively associated with DES and CT. SCC

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
							PSQ (non-clinical only)			analyses using Preacher & Hayes' model	mediated relationship between psychosis group membership and all CTs.
Disso-ciation	Glaslova et al., 2004 Czech Republic	To investigate relationship between CT, traumatic stress and dissociation in patients with schizophrenia and healthy controls	Schizophrenia, n=50 Healthy controls, n=50	30 (60%) 20 (40%)	28.4 39.2	Case-control	Diagnosis only	TSC	DES	Descriptive statistics, correlation	Marked number of patients with schizophrenia met criteria for dissociative disorders, had significantly higher traumatisation and subjectively experienced post traumatic stress and dissociation. Significant correlations found between traumatic stress and dissociation in patients.
Disso-ciation	Goff et al., 1991 USA	To clarify whether CT influences the age of onset, symptomatology and medication response of chronic psychotic patients	Schizophrenia, n=33 SAD, n=18 Major affective disorder, n=7 Delusional disorder, n=2 Psychotic disorder NOS, n=1	40 (66%)	With abuse 40.5 [13.5] Without abuse 43.1 [9.6]	Cross-sectional	SCID Questions about specific psychosis symptoms	LEQ	DES	Descriptive statistics, Chi-square, t-test	Those with CT had significantly earlier age of onset (of illness), higher DES score, more amnesia and relapses. More likely to report sexual delusions or visual hallucinations. Stimulant abuse and CSA predicted 25% of the variance in dissociation scores. When controlling for stimulant use DES score still predicted by DES.
Disso-ciation	Goren et al., 2012 Australia	To investigate the overlap between psychotic and dissociative symptoms in adolescent inpatients and whether experiences of CT account for the relationship between trauma and dissociation.	Borderline personality traits, n=7 Psychotic disorder, n=5 Major depressive disorder, n=12 PTSD, n=3 Other, n=4	3 (10%)	16.3 [1.1]	Cross-sectional	O-LIFE	Patient notes	A-DES	Descriptive statistics, correlation, partial correlation	Significant positive correlations between psychosis symptoms and dissociation. When history of abuse was controlled for the correlations remained significant suggesting that abuse does not fully explain the relationship between dissociative and psychotic experiences
Disso-ciation	Greenfield et al., 1994	To examine prospectively the relationship between FEP, CT and dissociative	FEP, n=38 (BPD, n=18 Psychotic	19 (50%)	32.1 [13.1]	Cross-sectional	BPRS; CGI	LEQ	QED	Descriptive statistics chi-square,	Patients with histories of CT had significantly more dissociative symptoms but not more severe psychiatric symptoms. Those abused

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
	USA	symptoms	depression, n=6 Mixed bipolar disorder, n=5 Psychosis NOS, n=3 Schizophreniform disorder, n=2 Delusional disorder, n=2 SAD, n=1 Bipolar NOS, n=1							Wilcoxon rank sum, ANOVA, correlation	by a parent had significantly higher QED scores than those abused by a non-parent. Those with combined PA and SA had higher dissociation scores.
Disso-ciation	Holowka et al., 2003 Canada	To investigate the relationship between CT and dissociation in schizophrenia, considering a wider range of CT than previous studies.	Schizophrenia, n=26	19 (73%)	30.8 [8.1]	Cross-sectional	SCID-III	CTQ	DES	Descriptive statistics correlation, partial correlation	Emotional abuse most strongly correlated with dissociation symptoms in adult schizophrenia patients.
Disso-ciation	Laddis et al., 2012 USA	To assess phenomenological differences in dissociation and first-rank symptoms between individuals with DID and schizophrenia	Schizophrenia, n=40 DID, n=40	26 (65%) 3 (8%)	42.1 [10.0] 40.1 [8.0]	Case-control	SCID; MID	TEQ	MID SCID-D-R	Descriptive statistics, ANOVA, Descriptive statistics, correlation	DID patients had higher dissociation scores, passive-influence scores and scores on child voices, angry voices, persecutory voices, voices arguing and voices commenting. Schizophrenia patients obtained significantly higher delusion scores than DID patients. Dissociation scores of schizophrenia patients were unrelated to reports of CT.
Disso-ciation	Offen et al., 2003 UK	To examine whether CSA is related to psychopathology in patients with auditory hallucinations.	Schizophrenia, n=21 Psychosis, n=1 Manic depression, n=1 Psychotic depression, n=1	19 (73%)	34	Cross-sectional	BAVQ	"Did you have any frightening experiences of a sexual nature as you were	DES-II	Descriptive statistics, Mann-Whitney U, spearman correlation	Sexually abused group reported significantly higher levels of dissociation and depression. Scores on BAVQ also higher but NS. Negative correlation between dissociation and age of first abuse and higher BAVQ.

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
			Schizoid, n=1 No formal diagnosis, n=1					growing up, such as childhood sexual abuse or sexual assault?"			
Disso-ciation	Perona-Garcelán, et al. 2010 Spain	A preliminary study of the relationships between trauma (child and adult), positive symptoms and dissociation.	Schizophrenia disorder, n=34 SAD, n=3	31 (84%)	36.46 [8.09]	Cross-sectional	PANSS	TQ (before 15)	DES-II	Descriptive statistics, Mann-Whitney U, t-test	Those with hallucinations had significantly more CT experiences than those without any. No association with delusions. Those who scores over 25 on DES sig more traumas in childhood (no difference in adulthood). Those with higher DES scores for those with hallucinations and those with delusions compared to those without.
Disso-ciation	Perona-Garcelán et al., 2012 Spain	To investigate the relationships between CT and positive psychotic symptoms and the role of dissociation in this relationship.	Patients with psychosis, n=71 Patients with paranoid schizophrenia, n=66 SAD, n=3	54 (76%)	39.08 [8.98]	Cross-sectional	PANSS	TQ (before 15)	DES-II	Descriptive statistics, mediation analyses using Preacher & Hayes' model	CT positively correlated with hallucinations and delusions and with DES-II scores. Depersonalisation acted as a mediator between CT and hallucinations (not delusions).
Disso-ciation	Sar et al., 2010 Turkey	Investigation of the relationships between CT, dissociative experiences and the clinical phenomenology of chronic schizophrenia.	Schizophrenia disorder, n=70	32 (46%)	38.8 [11.3]	Cross-sectional	SAPS, SANS	CTQ	DES; DDIS	Descriptive statistics, T-test, correlation, linear regression, k-means cluster analysis	CT scores correlated with dissociation scores but not with core symptoms of schizophrenia disorder. Cluster analysis revealed subgroup with high dissociation and CT. Only physical abuse and physical neglect predicted dissociation.

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
Disso-ciation	Schäfer et al., 2006 Germany	To examine the relationship between CT and dissociation, taking into account the severity of psychotic symptoms	Schizophrenia, n=20 Schizophreniform, n=2 SAD, n=8	0 (0%)	34.6 [5.5]	Cross-sectional	PANSS	CTQ	DES	Descriptive statistics spearman correlation, ANOVA	PN and EA significantly correlated with DES at admission; after a month, EA remained significant. DES scores not stable over time. At admission global and total PANSS score was significantly correlated with PN. No correlations between DES and PANSS at either time point.
Disso-ciation	Schäfer et al., 2012 Germany	To examine relationships between CT, dissociation and psychotic symptoms in patients with schizophrenia spectrum disorder in a more stable phase of illness.	Schizophrenia, n=104 SAD, n=32 Other schizophrenia spectrum disorders, n=9	97 (67%)	34 [11.5]	Cross-sectional	PANSS	CTQ	DES	Descriptive statistics ANOVA, Spearman correlation, multiple regression,	Significant decrease in dissociation over time (after admission). At admission positive symptoms between predictor of dissociation. When unstable, CT best predictor of dissociative symptoms but no relationship between dissociation and positive symptoms when stable.
Disso-ciation	Swett & Halpert, 1993 USA	To compare rates of abuse, DES scores and SCL 90-R scores among women inpatients and women outpatients	88 inpatients, variety of diagnoses. No breakdown of diagnosis provided.	0 (0%)	37.7 [10.6]	Cross-sectional	SCL-90-R	LEQ Experiences of physical or sexual abuse including age at first abuse and most recent abuse, no. episodes, relationship to perpetrator.	DES	Descriptive statistics t-tests, chi-square, ANOVA, Kruskal-Wallis, principal component analysis, multiple regression, probit regression	DES scores for those with a reported history of PA and SA&PAonly were higher than those with SA only or no abuse. The scores on anxiety, hostility and psychoticism scales were higher for abuse categories than no abuse history. SA related to psychoticism. PA and SA were significant factors in predicting dissociation and symptom severity scores (DES and GSI (SCL)).
Disso-ciation	Tschoeke et al., 2014 Germany	To compare patients with BPD and schizophrenia with AVHs by comparing phenomenology of voices	Schizophrenia, n=21 BPD, n=23	0 (0%) 0 (0%)	37.1 [11.1] 24.1	Cross-sectional	SCID, PANSS, 32 questions about	CTQ	DES (FDS)	Descriptive statistics correlation t-test,	In the schizophrenia group only the correlations between PANSS guilt feelings and DES reached significance. Correlations' between CTQ total and PANSS items were

Factor	Study & Country	Aims	Sample	No. of males	Age[a]	Design	Psychosis measure	CT measure	Factor measure	Statistical analysis	Findings
		hearing, positive & negative symptoms and dissociative comorbidity.			[7.5]		psychotic symptoms adapted from OPCRIT			Mann-Whitney U Chi-square	NS.
Disso-ciation	Vogel et al., 2009 Germany	Investigation of the relationship between CT and adult dissociative and general psychopathology in patients with schizophrenia.	Paranoid schizophrenia, n=63 RS, n=1 Disorganised schizophrenia, n=1 CS, n=1 PPD, n=4 SAD, n=9	53 (67%)	Male, 32.3 [12.7] Female, 38.3 [11.9]	Cross-sectional	SCL 90-R	CTQ	DES (FDS)	Descriptive statistics chi-square, MANOVA	EA and PN were most strongly associated with dissociation, the total score and other forms of CT lacked this association. PN correlated with all subscales of the SCL. Dissociation alone may not explain the effects of CT on psychopathology in schizophrenia.

[a] Age in years (mean [SD])

Note: AANEX, Appraisals of Anomalous Experiences Interview Brief Form; AAQ, Adult Attachment Questionnaire; A-DES, Adolescent Dissociative Experiences Questionnaire; BAI, Beck Anxiety Inventory; BAVQ-R, Beliefs About Voices Questionnaire; BDI, Beck Depression Inventory; BPD, Bipolar Disorder; BPRS, Brief Psychiatric Rating Scale; CAPE, Community assessment of psychic experiences; CAPS, Clinical Administered PTSD Scale; CAQ, Childhood Adversity Questionnaire; CASH, Comprehensive assessment of symptoms and history; CECA, Childhood Experience of Care and Abuse Questionnaire; CIDI, World Health Organization *Composite International Diagnostic Interview;* COWAT, Controlled Oral Word Association Test; CS, catatonic schizophrenia; CSA, Childhood Sexual Abuse; CT, childhood trauma; CTES, Childhood Trauma Events Scale; CTQ, Childhood Trauma Questionnaire; CTQ-SF, Childhood Trauma Questionnaire – Short Form; CVLT, California Verbal Learning Test; DDIS, Dissociative Disorders Interview Schedule; DID, Dissociative Identity Disorder; DES, Dissociative Experiences Questionnaire; DES-T, short form of Dissociative Experiences Scale; DS, Digit Span; EA, Emotional Abuse; EASE, Examination of Anomalous Self Experience; EF, executive function; EN, emotional neglect; FEP, First Episode Psychosis; FDS, Fragebogen für Dissoziative Symtpome; GAF, Global Assessment of Functioning; IES-R, Impact of Events Scale Revised; LEQ, Life Experiences Questionnaire; LNST, Letter Number Span Test; MACS, Maastricht Assessment of Coping Strategies; MAS, Metacognition Assessment Scale; MID, Multidimensional Inventory of Dissociation; MUPS, Mental Health Research Institute Unusual Perceptions Schedule; NART, National Adult Reading Test; NR, not reported; O-LIFE, Oxford-Liverpool Inventory of Feelings and Experiences; OPCRIT, Operational Criteria Checklist; PA, Physical Abuse; PANSS, The Positive and Negative Symptom Scale; PAM, Psychosis Attachment Measure; PCL, PTSD Trauma Checklist; PCTI, Post Traumatic Cognitions Inventory; PDS, Posttraumatic Stress Diagnostic Scale; PN, Physical Neglect; PPD, Polymorphic psychotic disorder; PS, Processing Speed; PSS-SR, Post-traumatic Stress Disorder Symptom Scale – Self Report; **PSQ,** Psychosis Screening Questionnaire; PSYRATS-AH, Psychotic Symptom Rating Scales – Auditory Hallucinations Subscale; QED, Questionnaire of Experiences of Dissociation; RCPM, Raven's Coloured Progressive Matrices; RAVLT, Rey Auditory Verbal Learning Test; SA, Sexual Abuse; SAD, Schizoaffective disorder; SANS, Scale for the Assessment of Negative Symptoms; SAPS, Scale for the Assessment of Positive Symptoms; SCAN, WHO Schedules for Clinical Assessment in Neuropsychiatry; SCID, Structured Clinical Interview for the DSM-IV; SCID-D-R, Structure Clinical Interview for the DSM-IV Dissociative Disorders; SCL-90-R, Symptom Check List 90-R; SILS, Shipley Institute of Living Scale; STCE, Survey of Traumatic Childhood Experiences; TAA, Trauma Assessment for Adults; TEC, Traumatic Experiences Checklist; TEQ, Traumatic Experiences Questionnaire; THQ, Trauma History Questionnaire; TMT –A/B, Trail Making Test A/B; TLEQ, Traumatic Life Events Questionnaire; ToM, Theory of Mind; TQ, Trauma Questionnaire; TREQ, Troubles Related Experiences Questionnaire; TSI, Trauma Symptom Inventory; TSC, Trauma Symptom Checklist; VR, Visual Reproduction; WAIS-R, Wechsler Adult Intelligence Scale; WASI, Wechsler Abbreviated Scale of Intelligence; WCST, Wisconsin Card Sorting Test; WM, Working Memory; WMS, Wechsler Memory Scale; WTAR, Wechsler Test of Adult Reading

3.2 Methodological quality of reviewed studies

The quality scores for each study are presented in Table 4. The range of quality scores across all studies was 4-11 and for interpretation studies were divided into 'low' (4-7), 'medium (8-9), and 'high' (10-11) quality categories. Seventeen studies (38%) fell in the low quality category, 17 (38%) in the medium category and 10 (23%) in the high category. The ICC indicated a high level of agreement between researchers (.982).

The majority of studies (75%) used psychosis-only samples; however 10 studies (23%) used mixed samples without performing separate analyses for diagnostic categories. None of the 44 studies reported a priori or post-hoc power analyses to assess whether the sample size was sufficient to detect an effect.

Across all studies included the most common psychosis measure was the Positive and Negative Symptom Scale (PANSS) used in 39% of studies. The Childhood Trauma Questionnaire (CTQ) was most frequently used to assess CT experiences (36% of studies). The second most common method (14%) to assess CT was yes/no questions about different categories of abuse. Dissociation was assessed using the Dissociative Experiences Scale (DES; DES-II) in the majority of studies (41%). For the other factors under review, no measure emerged as being most frequently used across studies. When considering the quality of measurement tools used, for CT most studies used questionnaire measures (75%), only four studies (9%) used case-note review or simple yes/no categorisation and 7 (16%) used an interview. To assess positive symptoms 10 studies (23%) used case-note review or yes/no categorisation, 11 (25%) used questionnaires and 23 (52%) used interview measures. Studies typically used questionnaire measures to assess mediating factors (75%); 10 (23%) used interview measures and one study used case-note review only.

Quality assessment of study analyses revealed that for multiple comparisons nine studies (20%) used Bonferroni correction or adjusted the alpha level in some way, whilst the remaining 35 (80%) studies made no correction. The majority of studies used correlation or group mean comparison statistics (82%) and the remaining seven studies (16%) used regression/mediation analyses.

Table 4 Quality scores of reviewed studies

Factor	Study	Sample	Measures				Analysis		Total score
		Diagnostic categories	Childhood trauma		Positive symptoms	Factor	Multiple comparison adjustment	Statistics	
			Definition	Measurement	Measurement	Measurement			
Anomalous Experiences	Haug et al., 2015	2	2	1	2	1	2	1	11
	Bak et al., 2005	2	2	0	2	1	0	1	8
	Lovatt et al., 2012	2	0	1	0	2	1	1	7
Attachment	Sitko et al., 2014	2	2	2	1	1	0	2	10
	Berry et al., 2009	2	1	1	2	1	0	2	9
	van Dam et al., 2014	2	1	1	2	1	0	2	9
ToM	Lysaker et al., 2011	2	1	0	2	1	0	1	7
	Renard et al., 2012	2	0	1	2	1	0	1	7
Neurocognitive functioning	Aas et al., 2012a	2	2	1	2	2	1	1	11
	McCabe et al., 2012	2	2	1	2	2	0	1	10
	Sideli et al., 2014	2	1	2	0	2	2	1	10
	Lysaker et al., 2001	2	1	1	2	2	0	1	9
	Schenkel et al., 2005	2	2	1	1	2	0	1	9
	Aas et al., 2012b	2	1	2	0	2	0	1	8
	Dorahy et al., 2004	2	1	1	0	1	2	1	8
	Campbell et al., 2013	0	1	1	2	2	0	1	7
	Aas et al., 2011	0	1	2	0	2	0	1	6
PTSD	Bendall et al., 2012	2	2	1	2	1	1	1	10
	Bendall et al., 2013	2	2	1	2	1	0	1	9
	Gearon et al., 2003	2	1	1	1	2	1	1	9
	Andrew et al., 2008	0	1	1	1	1	0	1	5
PTSD/Dissociation	Kilcommons & Morrison, 2005	2	2	2	2	1	0	1	10
	Vogel et al., 2011	2	1	1	2	1	0	2	9
	Lysaker et al., 2005	2	1	1	0	1	0	1	6

Factor	Study	Sample	Measures				Analysis		Total score
		Diagnostic categories	Childhood trauma		Positive symptoms	Factor	Multiple comparison adjustment	Statistics	
			Definition	Measurement	Measurement	Measurement			
Dissociation	Evans et al., 2015	2	2	1	1	1	2	2	11
	Perona-Garcelán, et al., 2012	2	2	1	2	1	0	2	10
	Schafer et al., 2012	2	2	1	2	1	0	2	10
	Sar et al., 2010	2	2	1	2	1	0	1	9
	Swett et al., 1993	0	2	2	1	1	2	1	9
	Tschoeke et al., 2014	2	2	1	2	1	0	1	9
	Vogel et al., 2009	2	2	1	2	1	0	1	9
	Holowka et al., 2003	2	2	1	1	1	0	1	8
	Perona-Garcelán, et al., 2010	2	0	2	2	1	0	1	8
	Schafer et al., 2006	2	2	1	2	0	0	1	8
	Alvarez et al., 2015	2	2	1	0	1	0	1	7
	Braehler et al., 2013	2	2	1	0	1	0	1	7
	Dorahy et al., 2009	0	2	1	1	1	0	2	7
	Glaslova et al., 2004	2	2	1	0	1	0	1	7
	Greenfield et al., 1994	0	2	1	2	1	0	1	7
	Bozkurt Zincir et al., 2014	0	1	1	2	1	0	1	6
	Goren et al., 2012	0	2	0	1	1	0	1	5
	Laddis et al., 2012	1	0	1	1	1	0	1	5
	Goff et al., 1991	0	2	1	0	1	0	1	5
	Offen et al., 2003	0	1	0	1	1	0	1	4

3.3 Findings of reviewed studies

The results of the studies are considered below, organised according to the different potential mediating factors. Those with small numbers of studies are briefly examined first followed by those with a more substantial evidence base.

3.3.1 Anomalous experiences

Three studies considered the impact of anomalous experiences in relation to CT in those with psychosis, one of low quality (Lovatt, Mason, Brett, & Peters, 2010), one medium (Bak et al., 2005;) and one high (Haug et al., 2015). The study by Bak and colleagues (2005) did not focus on the link between CT and the development of anomalous experiences; rather they considered whether CT affects response to psychotic-like experiences. They concluded that CT increases the chance that an individual will suffer more emotional distress and less perceived control over those experiences. Similarly, Lovatt et al., (2010) found that higher levels of interpersonal trauma were linked to fewer normalising appraisals of anomalous experiences. As CT was not specifically related to a need for care, the authors concluded that whilst CT in general may be related to the development of anomalous experiences, it is interpersonal trauma specifically which influences appraisal of these experiences leading to a need for care. Finally the most recent study (Haug et al., 2015) reported that CT, particularly emotional neglect (EN), was significantly associated with increased anomalous self-experience (ASE) in women but not men. This study did not consider the impact of CT or ASE on severity of positive symptoms and therefore whether CT is related to positive symptoms through anomalous experiences.

Whilst three studies is too small a sample to draw any firm conclusions, these studies are of an acceptable quality and their results are largely concordant. The specific analyses conducted in these studies do not allow for any conclusions concerning the possible role of anomalous experiences as a mediating factor between CT and positive symptoms. They do, however, suggest that this is an area that warrants further investigation.

3.3.2 Attachment

Of the three studies which considered attachment, two were of medium quality (Berry, Barrowclough, & Wearden, 2009; van Dam, et al., 2014) and one high (Sitko, Bentall, Shevlin, O'Sullivan, & Sellwood, 2014). Attachment anxiety, but not attachment avoidance, was found to be associated with CT (Berry et al., 2009) although in this study attachment anxiety and CT were not considered in relation to positive symptom severity. Parental care was moderately negatively correlated with attachment anxiety. The other two studies both conducted mediation analyses and report evidence for either full or partial mediation of the

relationship between CT and positive symptoms by attachment style. Van Dam and colleagues (2014) similarly found a moderate association between attachment anxiety and CT in those with psychosis. The mediation analysis in this study indicated that attachment style partially mediated the relationship between CT and positive symptoms. More specific relationships were considered in the third study (Sitko et al., 2014), which found that avoidant and anxious attachment fully mediated the relationship between parental neglect and paranoia, and partially mediated the relationship between threat/assault and paranoia, and CSA and paranoia. In addition anxious attachment also partially mediated the relationship between CSA and hallucinations.

The two mediation analyses provide tentative initial support for the role of attachment style as a mediator between CT and positive symptoms. However, although the studies are of good quality, it is not possible to draw any firm conclusions.

3.3.3 Theory of mind

The search returned two papers which considered ToM in relation to CT and positive symptoms (Lysaker et al., 2011; Renard, Pijnenborg, & Lysaker, 2012), both of which were of low quality and neither paper examined ToM as a mediating factor. It was reported that in a psychosis sample those aware of their own emotions, but not those of others, had experienced significantly more CSA than those who were able to read others' emotions (Lysaker et al., 2011). Those unaware of both their own emotions and those of others in contrast were characterised by specific neurocognitive deficits. The group able to read their own emotions but not others' had the highest score on positive symptoms, although this was not significant. CSA was not examined in relation to symptom severity in this study and only CSA was considered and no other categories of CT. In contrast, Renard and colleagues (2012) found trauma history in a psychosis sample was not significantly related to emotion recognition which was instead predicted by dissociative experiences. There appears to be a significant lack of research for this variable and the findings from these two studies are inconsistent.

3.3.4 Neurocognitive functioning

Of the nine papers identified for this factor three were of high quality, four medium and two low. None of the papers conducted a mediation analysis to consider the impact of cognitive functioning as a mediating factor between CT and psychosis. Nevertheless, examination of the studies is informative as results concerning the impact of CT on neurocognitive functioning vary between studies. Five of the studies reported finding a significant impact of CT on cognitive ability, with more severe trauma related to poorer functioning (Aas et al., 2011; Aas et al., 2012a; Aas et al., 2012b; Campbell et al., 2013; Lysaker

et al., 2001). Of these studies one was high quality, two medium and two low. All studies except one (Campbell et al., 2013) reported an impact on working memory whilst information processing was impacted in one study (Lysaker et al., 2001), and semantic fluency and delayed visual recall in another (Campbell et al., 2013). Executive functioning (EF) was related to CT in a third (Aas et al., 2012a), however this was in contrast to another study which found the Hayling and Brixton tasks unaffected (Campbell et al., 2013). Aas and colleagues (2012a) considered whether neuropsychological deficits were general or specific. They concluded that specific weaknesses were underpinned by a more general cognitive deficit. These studies did not examine the relationship between cognitive functioning and the severity of positive symptoms.

In contrast to the above, four studies reported no association between CT and cognitive functioning in psychosis samples (Dorahy, Middleton, & Irwin, 2004; McCabe, Maloney, Stain, Loughland, & Carr, 2012; Schenkel, Spaulding, DiLillo, & Silverstein et al., 2005; Sideli et al., 2014). Two of these studies were of high quality and 2 medium. Two studies reported an association between CT and cognitive ability in their control samples but not clinical participants (McCabe et al., 2012; Sideli et al., 2014). Deficits in cognitive inhibition were reported in one study, but these were not related to CT experiences (Dorahy et al., 2004). Finally, Sideli and colleagues (2014) reported no association between CT and EF, verbal fluency or processing speed, however they did find evidence of perceptual dysfunction in participants with schizophrenia.

Differences in the type of trauma investigated (for example Lysaker et al., 2001 considered only CSA), aspects of cognitive function considered and measurement tools may account for this variation in results. The mixed findings from the examined studies do not allow for any conclusions to be reached concerning the role of neurocognitive deficits in mediating the association between CT and positive symptoms.

3.3.5 PTSD

Seven papers were returned for PTSD, of which two were high quality (Bendall, Alvarez-Jiminez, McGorry, & Jackson, 2012; Kilcommons & Morrison, 2005;), three medium (Bendall et al., 2013; Gearon, Kaltman, Brown, & Bellack, 2003; Vogel et al., 2011) and two low quality (Andrew, Gray, & Snowden, 2008; Lysaker, Davis, Gatton, & Herman, 2005;). Three studies reported a positive association between CT and development/severity of PTSD symptoms in psychosis samples (Gearon et al., 2003; Lysaker et al., 2005; Vogel et al., 2011) and one found no association between CT and PTSD frequency/distress, although PTSD symptoms were related to lifetime trauma (Kilcommons & Morrison, 2005).

Two studies examined the impact of PTSD on positive symptoms. Intrusions were found to be positively correlated with hallucinations and delusions (Bendall et al., 2013) and PTSD symptoms predicted more negative beliefs about voices in a psychiatric voice hearing group (Andrew et al., 2008). These papers provide tentative support for a role of PTSD in the relationship between CT and positive symptoms. However, one paper instead reported that positive symptoms appear more closely related to dissociative experiences than PTSD (Vogel et al., 2011) and suggested that dissociation predicted PTSD symptoms. No studies considered PTSD symptoms as a mediating factor between CT and positive symptoms and conflicting results mean it is not possible to draw a conclusion about the role of PTSD.

3.3.6 Dissociation

The 23 papers which examine dissociation in individuals with CT and psychosis can be divided into those that consider; the link between CT and dissociation; the link between dissociation and positive symptoms; dissociation as a mediating factor. The evidence for each of these associations will be considered separately.

3.3.6.1 CT and dissociation

Fifteen papers considered the link between CT and dissociative experiences in those with psychosis. Of these eight were low quality (Alvarez et al., 2015; Braehler et al., 2013; Glaslova, Bob, Jasova, Bratkova, & Ptacek, 2004; Greenfield, Strakowski, Tohen, Batson, & Kolbrener, 1994; Laddis & Dell, 2012; Lysaker et al., 2005; Goff, Brotman, Kindlon, Waites, & Amico, 1991; Offen, Waller & Thomas, 2003), six medium (Holowka, King, Saheb, Pikall, & Brunet, 2003; Perona-Garcelán et al., 2010; Sar et al., 2010; Schäfer et al., 2006; Swett & Halpert, 1993; Vogel et al., 2009) and one high (Schäfer et al., 2012).

Fourteen of these studies reported an association between CT and dissociation in participants with psychosis. Some studies compared those with CT to those without and found significantly higher dissociation scores in those with trauma (Goff et al., 1991; Greenfield et al., 1994; Lysaker et al., 2005; Offen et al., 2003; Perona-Garcelán et al., 2010; Swett & Halpert, 1993; Vogel et al., 2009). Others conducted correlations between CT scores and dissociation scores (Alvarez et al., 2015; Braehler et al., 2013; Glaslova et al., 2004; Holowka et al., 2003; Sar et al., 2010; Schäfer et al., 2006; 2012) and typically reported correlations in the moderate range. Whilst some studies only considered total trauma and dissociation scores, others examined different types of CT and dissociation, with mixed findings. Those that investigated different trauma categories unanimously reported a strong association with EA and no association at all with EN (Alvarez et al., 2015; Braehler et al., 2013; Holowka et al., 2003; Schäfer et al., 2006; 2012). Some also found significant correlations with PN (Alvarez et al.,

2015; Braehler et al., 2013; Holowka et al., 2003), PA (Braehler et al., 2013; Holowka et al., 2003; Schäfer et al., 2012), SA (Braehler et al., 2013; Glaslova et al., 2004; Holowka et al., 2003; Schäfer et al., 2012) although these were not universally reported. Only one group has examined different dissociative experiences and reported that EA and PN were significantly correlated with the Amnesia subscale of the DES (Schäfer et al., 2006) and SA with the Absorption, Depersonalisation and Amnesia subscales and EA and PA with Absorption (Schäfer et al., 2012). It is important to note that these latter two studies also reported that DES scores appeared to be unstable over time, with correlations changing over the course of the study, which may help to account for differences between studies.

One study reported that dissociation scores in patients with schizophrenia were unrelated to CT reports (Laddis & Dell, 2012) and the authors suggest that measures of dissociation, validated on those with a dissociative disorder, are unable to detect subtle differences in phenomenology that may point to a different aetiology of dissociation in those with schizophrenia.

3.3.6.2 Dissociation and positive symptoms

Nine papers considered whether dissociative experiences were related to positive symptoms, of which two were low quality (Bozkurt Zincir, Yanartas, Zincir, & Semiz, 2014; Goren, Phillips, Chapman, & Salo et al., 2014), five medium (Perona-Garcelán et al., 2010; Sar et al., 2010; Schäfer et al., 2006; Tschoeke, Steinert, Flammer, & Uhlmann, 2014; Vogel et al., 2011) and two high (Kilcommons & Morrison, 2005; Schäfer et al., 2012;). Six studies reported a significant association between dissociative experiences and positive symptoms (Goren et al., 2014; Kilcommons & Morrison, 2005; Perona-Garcelán et al., 2010; Sar et al., 2010; Tschoeke et al., 2014; Vogel et al., 2011). These studies all report slightly different results concerning the positive symptoms associated with dissociation. One found a significant correlation between DES score and Unusual Experiences and Impulsive Nonconformity subscale scores of the O-LIFE (Goren et al., 2014), another reported moderate correlation between DES total score and SAPS score (Sar et al., 2010) and a third between DES score and the PANSS guilt subscale only (Tschoeke et al., 2014). Others have considered hallucinations and delusions separately and reported that high dissociation is associated with significantly higher hallucination, but not delusion, scores (Perona-Garcelán et al., 2010). Those with delusions did score more highly on dissociation than those without delusions; however this may be due to higher hallucination scores in those with delusions. One study examined different aspects of dissociation and found that depersonalisation appeared to be a significant predictor of hallucinations but not delusions (Kilcommons & Morrison, 2005).

Two studies reported no association between positive symptoms and dissociation (Bozkurt Zincir et al., 2014; Schäfer et al., 2006) and these were of low and medium quality. Finally, one study reported different associations over time, with positive symptoms predicting dissociation at admission, but this association disappeared over time as participants became stabilised in hospital (Schäfer et al., 2012).

3.3.6.3 Dissociation as a mediating factor

Three studies conducted analyses considering dissociation as a mediating factor between CT and positive symptoms, one of which was low quality (Dorahy et al., 2009) and two high (Evans, Reid, Reston, Palmier-Claus, & Selwood, 2015; Perona-Garcelán et al., 2012). The low quality study reported that CT and the interaction between CT and dissociation improved the prediction of voices starting before 18 years, however this was in a mixed sample of patients with schizophrenia and dissociative identity disorder. Another study found that depersonalisation acted as a mediator between CT and hallucinations but not delusions (Perona-Garcelán et al., 2012), although trauma categories were not considered separately. Finally, total dissociation has been found to positively mediate the relationship between PN and psychosis vs. control group membership with large but non-significant effects also reported for PA and SA (Evans et al., 2015).

On balance, the evidence from all studies examining dissociation suggests that it may play a role in the relationship between CT and positive symptoms. What it less clear is the precise nature of this role, with evidence pointing towards a greater involvement of dissociation in hallucinations rather than delusions and that EA is most likely to lead to dissociative experiences.

4 Discussion

This review aimed to identify, summarise and critically evaluate studies that have investigated the mediating role of different psychological factors in the relationship between CT and positive symptoms of psychosis. Forty-four papers were identified covering six broad factors. Whilst tentative conclusions can be drawn for some of the factors, low methodological quality and a small number of studies limit the conclusions that can be drawn.

The most robust findings concern the roles of dissociation and attachment. There is reasonably strong evidence that CT is related to dissociation in those with psychosis and more tentative evidence (3 studies) that it plays a mediating role between CT and positive symptoms. Similarly, reasonable evidence for the mediating role of attachment was found (2 studies). In contrast, no conclusion can be reached concerning the other factors investigated;

although studies highlighted a link, often between CT and the specific factor in a psychosis sample, this was often not related to symptom severity or 'psychosis-group' membership.

Interpretation is hampered by the interconnection of different variables, especially given that studies frequently examined one factor in isolation. For example, anomalous experiences may arise as a result of dissociation, while dissociation may also account for PTSD intrusions/re-experiencing, PTSD numbing, and difficulties with emotion recognition. In addition, disrupted attachment patterns may affect internal working models, impacting on affect regulation and making dissociation a more likely response to trauma. They may also impact on the development of ToM skills. Attachment is thought to be related to the development of schemas and difficulties with attachment may give rise to negative schemas about the self, world and others, which in turn makes appraisals of anomalous experiences more likely to be negative. It has been proposed that there are two routes between CT and development of positive symptoms; one is through negative beliefs about self and others and one due to a direct association between re-experiencing symptoms and hallucinations (Gracie et al., 2007). It is possible that some factors (e.g. attachment) may be implicated in both routes, whilst others play a more limited role.

Whilst acknowledging practical difficulties of gaining a sufficient sample size to assess multiple factors in one study and not over-taxing participants, understanding the relationships between factors may help with a more complete understanding of this association. Whilst assessing all factors in one study may not be plausible, the current review provides some indication for where future research may be most usefully focused. As noted, there are potentially strong phenomenological overlaps between anomalous experiences, dissociation and PTSD symptoms. Studies investigating these experiences within a single sample would help to further explore the interrelation of these factors and their contribution to positive symptoms following CT. Similarly, given that evidence exists to support a mediating role of both dissociation and attachment difficulties, plus the purported link between these two factors, investigating these within a single study may also help to further unpick the nature of the relationship between CT and positive symptoms.

4.1 Methodological limitations

The quality assessment tool developed for use in this study proved useful in helping to identify a number of important methodological shortcomings in the current literature. In many papers diagnostic categories were the only means used to assess positive symptoms, and some papers grouped together individuals with a range of diagnoses. Few papers corrected for multiple statistical comparisons. Many studies had fairly small sample sizes, leading to a potential lack of statistical power and no studies reported a power analysis. Most of the studies reviewed were not sufficiently powered to detect small to medium effects and null findings should

therefore be interpreted cautiously. Studies with a sufficient sample size to detect small-medium effects should be conducted before null results can be confidently accepted.

The majority of studies were cross-sectional in nature, limiting the conclusions that can be drawn. The collection of data for each participant at a single time point makes it difficult to infer a temporal association between CT and positive symptoms, hence association, but not causation, may be inferred from cross-sectional studies. For example it is not possible to distinguish the direction of the association; it is possible that those with more severe positive symptoms may reflect on and report childhood experiences more negatively. Similarly, with cross-sectional studies it is difficult to establish the nature of the association between two variables, for example whether there is a linear or non-linear relationship.

Furthermore, most studies relied on retrospective measures on CT. Retrospective measurement is open to bias, however research suggests that trauma histories obtained from those with severe mental difficulties are reliable (Fisher et al., 2009). In addition, it is thought that individuals tend to under-report trauma experiences rather than providing false-positives (Greenfield et al., 1994; Goodman et al., 1999).

None of the studies included information about other potentially causal factors, such as family history of psychosis or cannabis use (Matheson, Shepherd, Laurens, & Carr, 2011). In addition, whilst a few studies did assess later experiences of trauma (e.g. Kilcommons & Morrison, 2005), many failed to consider the impact of re-victimisation (Morgan et al., 2014).

With regard to cognitive functioning, some argue that both neurocognitive deficits (e.g. Kahn & Keefe, 2013) and social cognition difficulties (e.g. Bellack, Morrison, Wixted, & Mueser, 1990) are inherent to schizophrenia itself. The lack of control groups (without CT) in studies of neurocognitive deficits and ToM problems therefore makes interpretation difficult. McCabe and colleagues (2012) suggested that the impact of CT on cognitive functioning may be masked by the general deficits attributable to schizophrenia, and others agree that the measures may not be sensitive enough to detect differences caused by CT (Schenkel et al., 2005). Given that the decline in ability associated with schizophrenia is thought to begin prior to the onset of psychosis (Reichenberg et al., 2010), longitudinal studies will be important in understanding the impact of CT on neuropsychological functioning in this population.

Finally, this review has highlighted other factors that should be considered in a mediating role. In particular it would be helpful for future studies to consider the impact of emotion and schemas as these are the main factors implicated in generic cognitive-behavioural models to explain the relationship between CT and psychosis.

4.2 Study limitations

One of the main limitations of this review was the unfeasibility of investigating all potential mediating factors in the literature. One main variable not considered, but which

emerged as important in the review is the impact of emotion. Several studies reported that depression, in particular, appeared to subsume any relationship between CT and the psychological factor being examined. For example the relationship between CT and anomalous experiences became non-significant when depression was entered as a covariate (Haug et al., 2015). Similarly CT was no longer found to significantly predict attachment anxiety when depression was entered into the model (Berry et al., 2009) and CT and depression together were reported to increase the risk of dissociation (Vogel et al., 2011). Finally, depression has been linked to poorer cognitive functioning in general (e.g. Austin, Mitchell, & Goodwin, 2001) and in a psychosis sample depression scores were highest in those with CT and the poorer psychological functioning in this group may reflect the impact of depression (Campbell et al., 2013). The impact of anxiety is also likely to be significant in those with a history of trauma and may be related to some of the factors considered here, particularly PTSD and dissociation (Baker et al., 2003). Better understanding of the evidence concerning the role of emotion in the link between CT and positive symptoms would help to address some of these concerns.

Another limitation is the inclusion of studies published only in English, which may account for the majority of studies being conducted in the USA and Europe. In addition, excluding unpublished studies may have biased the review towards those which reported a significant effect of the variable under investigation. The limitations of the quality assessment tool must be acknowledged; other tools incorporate an assessment of potential sources of bias within studies, which was not included in the current tool. Representativeness of the sample population was also not considered.

4.3 Research implications

This appears to be a growing area of investigation and continuing studies will help further understanding of the mechanisms by which CT appears to influence the development of positive symptoms. As discussed, from the current review it is apparent that studies investigating several factors in the same sample will be important. In addition, for studies investigating dissociation it is desirable for this to be assessed longitudinally as research indicates that this is not stable during an acute phase of a psychotic illness (Schäfer et al., 2012). This may also be the case for other factors. Reporting on other non-psychological factors in the sample (e.g. cannabis use) is also an important consideration for future studies in addition to integrating both psychological and biological variables where possible.

Studies should ensure an in-depth measurement of all variables (i.e. CT, positive symptoms and mediating factors) as this will help to resolve differences in the existing literature. Consensus on definition of different trauma factors and measurement tools would also help to gain clarification in this area.

This review highlights the need for larger and more representative samples, and for replication of studies, particularly where the existing literature is not in agreement. Some of the studies point towards an impact of gender as a moderating variable, with differences found in the role of mediating factors between males and females (e.g. Haug et al., 2015), as well as the prevalence of different forms of CT (e.g. Radford et al., 2011). This should be further considered in the analyses of future research.

Finally, future studies will need to examine whether any of the variables identified as being important in the link between CT and psychosis are suitable treatment targets for psychological therapy and whether change in these factors is possible and/or effective.

4.4 Clinical implications

The studies reviewed in this paper reflect an important shift in the understanding of psychosis, with increasing recognition of the impact of social environment as well as psychological and biological variables. It is important that these results are translated into clinical practice, with assessment of potentially important factors routinely undertaken to inform formulation and to understand processes that may impact recovery. The results from the review tentatively suggest that targeting dissociative experiences may be useful in psychological treatment, and this is an area receiving increasing attention in the literature (e.g. Moskowitz, Schafer, & Dorahy, 2008). In addition, consideration of the impact of attachment style should be included in formulations, including engagement with mental health services and interpersonal functioning more generally (Gumley, Taylor, Schwannauer, & MacBeth, 2014) and may be a necessary focus for treatment.

4.5 Conclusion

In conclusion this review has considered whether different psychological factors may mediate the relationship between CT and positive psychotic symptoms. There is some evidence to support a mediating role of dissociative experiences and attachment anxiety. Evidence for other factors is somewhat lacking and there are methodological challenges in these studies. Future research should aim to address these difficulties and expand the literature by considering multiple mediation models to establish the relative contribution of the range of implicated factors to positive symptoms, in order to support a more comprehensive psychological model of how CT may lead to the development and maintenance of psychosis.

References

Aas, M., Dazzan, P., Fisher, H. L., Morgan, C., Morgan, K., Reichenberg, A., et al. (2011). Childhood trauma and cognitive functioning in first-episode affective and non-affective psychosis. *Schizophrenia Research, 129,* 12-19.

Aas, M., Nawari, S., Gibbs, A., Mondelli, V., Fisher, H. L., Morgan C., et al. (2012b). Is there a link between childhood trauma, cognitive, and amygdala and hippocampus volume within first-episode psychosis? *Schizophrenia Research, 137,* 73-79.

Aas, M., Steen, N. E., Agartz, I., Aminoff, S. R., Lorentzen, S., Sundet, K., et al. (2012a). Is cognitive impairment following early life stress in severe mental disorders based on specific or general cognitive functioning. *Psychiatry Research, 198*, 495-500.

Allen, J. G., Coyne, L., & Console, D. A. (1997). Dissociative detachment relates to psychotic symptoms and personality decompensation. Comprehensive Psychiatry, 38, 327-334.

Álvarez, M., Masramon, H., Peña, C., Pont, M., Gourdier, C., Roura-Poch, P., et al. (2015). Cumulative effects of childhood traumas: polytraumatization, dissociation and schizophrenia. *Community Mental Health Journal, 51*, 54-62.

Andrew, E. M., Gray, N. S., & Snowden, R. J. (2008). The relationship between trauma and beliefs about hearing voices: a study of psychiatric and non-psychiatric voice hearers. *Psychological Medicine, 38*, 1409-1417.

Austin, M. P., Mitchell, P., & Goodwin, G. M. (2001). Cognitive deficits in depression: possible implications for functional neuropathology. *British Journal of Psychiatry, 178,* 200-206.

Bak, M., Krabbendam, L., Janssen, I., de Graad, R., Vollebergh, W., & can Os, J. (2005). Early trauma may increase the risk for psychotic experiences by impacting on emotional response and perception of control. Acta *Psychiatrica Scandinavica, 112,* 360-366.

Baker, D., Hunter, E., Lawrence, E., Medford, N., Patel, M., Senior, C., et al. (2003). Depersonalisation disorder: clinical features of 204 cases. *British Journal of Psychiatry, 182,* 428-433.

Bedard-Gilligan, M., & Zoellner, L. A., (2012). Dissociation and memory fragmentation in posttraumatic stress disorder: An evaluation of the dissociative encoding hypothesis. *Memory, 20,* 177-299.

Bellack, A. S., Morrison, R. L., Wixted, J. T.,& Mueser, K. T. (1990). An analysis of social competence in schizophrenia. *British Journal of Psychiatry, 151*, 1409-1416.

Bendall, S., Alvarez-Jimenez, M., Hulbert, C. A., McGorry, P. D., & Jackson, H. J. (2012). Childhood trauma increases the risk of post-traumatic stress disorder in response to first-episode psychosis. *Australian and New Zealand Journal of Psychiatry, 46,* 35-39.

Bendall, S., Hulbert, C. A., Alvarex-Jimenez, M., Allott, K., McGorry, P. D., & Jackson, H. J. (2013). Testing a model of the relationship between childhood sexual abuse and

psychosis in a first-episode psychosis group. *The Journal of Nervous and Mental Disease, 201*, 941-947.

Bentall, R. P. (1990). The illusion of reality: a review and integration of psychological research on hallucinations. *Psychological Bulletin, 107*, 82-95.

Bentall, R. P., de Sousa, P., Varese, F., Wickham, S., Sitko, K., Haarmans, M., et al., (2014). From adversity to psychosis: pathways and mechanisms form specific adversities to specific symptoms. *Social Psychiatry and Psychiatric Epidemiology, 49*, 1011-1022.

Bentall, R. P., & Fernyhough, C. (2008). Social predictors of psychotic experiences: Specificity and psychological mechanisms. *Schizophrenia Bulletin, 34,* 1012-1020.

Berry, K., Barrowclough, C., & Weardon, A. (2009). Adult attachment, perceived earlier experiences of care giving and trauma in people with psychosis. *Journal of Mental Health, 18*, 280-287.

Bortolon, C., Capdevielle,D., Boulenger, J., Gely-Nargeot, M., & Raffard, S. (2013). Early maladaptive schemas predict positive symptomatology in schizophrenia: A cross-sectional study. *Psychiatry Research, 30,* 361-363.

Bozkurt Zincir, S., Yanartas, Zincir, S., & Semiz, U. B. (2014). Clinical correlates of childhood trauma and dissociative phenomena in patients with severe psychiatric disorders. *Psychiatric Quarterly, 85,* 417-426.

Braehler, C., Valiquette, L., Holowka, D., Malla, A. K., Joober, R., Ciampi, A., et al. (2013). Childhood trauma and dissociation in first-episode psychosis, chronic schizophrenia and community controls. *Psychiatry Research 210*, 36-42.

Brewin, C. R., & Holmes, E. A. (2003). Psychological theories of posttraumatic stress disorder. *Clinical Psychology Review, 23*, 339-376.

Campbell, C., Barrett, S., Shannon, C., Hoy, K., Rushe, T., Cooper, S., et al. (2013). The relationship between childhood trauma and neuropsychological functioning in first episode psychosis. *Psychosis: Psychological, Social and Integrative Approaches, 5,* 48-59.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York, NY: Academic Press.

Corcoran, R., Rowse, G., Moore, R., Blackwood, N., Kinderman, P., Howard, R., et al. (2008). A transdiagnostic investigation of 'theory of mind' and 'jumping to conclusions' in patients with persecutory delusions. *Psychological Medicine, 38,* 1557-1583.

Dorahy, M. J., Middleton, W., & Irwin, H. J. (2004). Investigating cognitive inhibition in dissociative identity disorder compared to depression, posttraumatic stress disorder and psychosis. *Journal of Trauma and Dissociation, 5*, 93-110.

Dorahy, M. J., Shannon, C., Seagar, L., Corr, M., Stewart, K., Hanna, D., et al. (2009). Auditory hallucinations in dissociative identity disorder and schizophrenia with and without childhood trauma history. *The Journal of Nervous and Mental Disease, 197*, 892-898.

Evans, G., Reid, G., Preston, P., Palmier-Claus, J., & Sellwood, W. (2015). Trauma and psychosis: the mediating role of self-concept clarity and dissociation. *Psychiatry Research*, in press.

Fowler, D., Freeman, D., Steel, C., Hardy, A., Smith, B., Hackmann, C., et al. (2006). The catastrophic interaction hypothesis: How does stress, trauma, emotion and

Garety, P., & Freeman, D. (1999). Cognitive approaches to delusions: a critical review of theories and evidence. *British Journal of Clinical Psychology, 38,* 113-154.

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of positive symptoms of psychosis. *Psychological Medicine, 31,* 189-195.

Gearon, J. S., Kaltman, S. I., Brown, C., & Bellack, A. S. (2003). Traumatic life events and PTSD among women with substance use disorders and schizophrenia. *Psychiatric Services, 54,* 523-528.

Gilbert, P., Price, J., & Allan, S. (1995). Social competence, social attractiveness and evolution. How might they be related? *New Ideas in Psychology, 13,* 149-165.

Glaslova, K., Bob, P., Jasoca, D., Bratkova, N., & Ptacek, R. (2004). Traumatic stress and schizophrenia. *Neurology, Psychiatry and Brain Research, 11*, 205-208.

Goff, D. C., Brotman, A. W., Kindlon, D., Waites, M., & Amico, E. (1991). Self-reports of childhood abuse in chronically psychotic patients. *Psychiatry Research, 37*, 73-80.

Goodman, L. A., Thompson, K. M., Weinfurt, K., Corls, S., Ackert, P., Mueser, K. T., et al. (1999). Reliability of reported of violent victimization and posttraumatic stress disorder among men and women with serious mental illness. *Journal of Traumatic Stress, 12*, 587-599.

Goren, J., Phillips, L., Chapman, M., & Salo, B. (2012). Dissociative and psychotic experiences of adolescents admitted to a psychiatric inpatient unit. *Journal of Trauma and Dissociation, 13*, 554-567.

Gracie, A., Freeman, D., Green, S., Garety, P. A., Kuipers, E., Hardy, A., et al. (2007). The association between traumatic experiences, paranoia and hallucinations: a test of the predictions of psychological models. *Acta Psychiatrica Scandinavica, 116*, 280-289.

Greenfield, S. F., Strakowski, S. M., Tohen, M., Batson, S. C., & Kolbrener, M. L. (1994). Childhood abuse in first-episode psychosis. *British Journal of Psychiatry, 164*, 831-834.

Gumley, A., Braehler, C., Laithwaite, H., MacBeth, A., & Gilbert, P. (2010). A compassion focused model of recovery after psychosis. *International Journal of Cognitive Therapy, 3*, 186-201.

Gumley, A. I., Taylor, H. E. F., Schwannauer, M., & MacBeth, A. A. (2014). A systematic review of attachment and psychosis: measurement, construct validity and outcomes. *Acta Psychiatrica Scandinavica, 129,* 257-274.

Haug, E., Oie, M., Andreassen, O. A., Bratlien, U., Nelson, B. Aas, M., et al. (2015). Anomalous self-experience and childhood trauma in first-episode schizophrenia. *Comprehensive Psychiatry, 56,* 35-41.

Holowka, D. W., King, S., Saheb, D., Pukall, M., & Brunet, A. (2003). Childhood abuse and dissociative symptoms in adult schizophrenia. *Schizophrenia Research, 60,* 87-90.

Janssen, I., Versmissen, D., Campo, J. A., Myin-Germeys, I., van Os, J., & Krabbendam, L. (2006). Attribution style and psychosis: evidence for an externalising bias in patients but not in individuals at high risk. *Psychological Medicine, 36,* 771-778.

Kahn, R. S., & Keefe, R. S. (2013). Schizophrenia is cognitive illness time for a change in focus. *JAMA Psychiatry, 70*, 1107-1112.

Kilcommons, A. M., & Morrison, A. P. (2005). Relationships between trauma and psychosis: an exploration of cognitive and dissociative factors. *Acta Psychiatrica Scandinavica, 112*, 351-359.

Laddis, A., & Dell, P. F. (2012). Dissociation and psychosis in dissociative identity disorder and schizophrenia. *Journal of Trauma and Dissociation, 13,* 397-413.

Liotti, G. (1992). Disorganized/ disoriented attachment in the etiology of the dissociative disorders. *Dissociation*, 5, 196-204.

Liotti, G. (2004). Trauma, dissociation and disorganized attachment: Three strands of a single braid. *Psychotherapy, Theory, research, practice, training, 41*, 472-486.

Longden, E., Madill, A., & Waterman, M. G. (2012). Dissociation, trauma and the role of lived experience: toward a new conceptualisation of voice hearing. *Psychological Bulletin, 138,* 28-76.

Lovatt, A., Mason, O., Brett, C., & Peters, E. (2010). Psychotic-like experiences, appraisals and trauma. *The Journal of Nervous and Mental Disease, 198*, 813-819.

Lysaker, P. H., Davis, L. W., Gatton, M. J., & Herman, S. M. (2005). Association of anxiety-related symptoms with reported history of childhood sexual abuse and schizophrenia spectrum disorders. *Journal of Clinical Psychiatry, 66*, 1279-1284.

Lysaker, P. H., Gumley, A., Brüne, M., Vanheule, S., Buck, K. D., & Dimaggio, G. (2011). Deficits in the ability to recognize one's own affects and those of others: Associations with neurocognition, symptoms and sexual trauma among persons with schizophrenia spectrum disorders. *Consciousness and Cognition, 20*, 1183-1192.

Lysaker, P. H., Meyer, P., Evans, J. D., & Marks, K. A. (2001). Neurocognitive and symptom correlated of self-reported childhood sexual abuse in schizophrenia spectrum disorders. *Annals of Clinical Psychiatry, 13*, 89-92.

Matheson, S. L., Shepherd, A. M., Laurens, K. R., & Carr, V. J. (2011). A systematic meta-review grading the evidence for non-genetic risk factors and putative antecedents of schizophrenia. *Schizophrenia Research, 133*, 133-142.

Matheson, S. L., Shepherd, A. M., Pinchbeck, R. M., Laurens, K. R., & Carr, V. J. (2013). Childhood adversity in schizophrenia: a systematic meta-analysis. *Psychological Medicine, 43*, 225-238.

McCabe, K. L., Maloney, E. A., Stain, H. J., Loughland, C. M., & Carr, V. J. (2012). Relationship between childhood adversity and clinical and cognitive features in schizophrenia. *Journal of Psychiatric Research, 46*, 600-607.

Morgan, C., Reininghaus, U., Fearon, P., Hutchinson, G., Morgan, K., Dazzan, P., et al., (2014). Modelling the interplay between childhood and adulthood adversity in pathways to psychosis: initial evidence from the AESOP study. *Psychological Medicine, 44,* 407-419.

Morrison, A. P., Frame, L., & Larkin, W. (2003). Relationships between trauma and psychosis: A review and integration. *British Journal of Clinical Psychology, 42*, 331-353.

Moskowitz, A., Barker-Collo, S., & Ellson, I. (2005). Replication of dissociation-psychosis link in New Zealand students and inmates. *Journal of Nervous and Mental Disease, 193*, 722-727.

Moskowitz, A., Schafer, I., & Dorahy, M. J. (2008). *Psychosis, Trauma and Dissociation: Emerging Perspective on Severe Psychopathology.* West Sussex: John Wiley & Sons, Ltd.

Newman Taylor, K., & Sambrook, S. (2013). The Role of Dissociation in Psychosis; Implications for Clinical Practice. In F. Kennedy, H. Kennerley, D. Pearson (Eds.), *Cognitive behavioural approaches to the understanding and treatment of dissociation* (pp.119-132). East Sussex: Routledge.

Offen, L. Waller, G., & Thomas, G. (2003). Is reported childhood sexual abuse associated with the psychopathological characteristics of patients who experience auditory hallucinations? *Child Abuse & Neglect, 27*, 919-927.

Perez, C. M., & Widom, C. S. (1994). Childhood victimization and long-term intellectual and academic outcomes. *Child Abuse and Neglect, 18,* 617-633.

Perona-Garcelán, S., Carrascoso-López, F., Garćia-Montes, J. M., Ductor-Recuerda, M. J., López Jiménez, A. M., Vallina-Fernández, O., et al., (2012). Dissociative experiences as mediators between childhood trauma and auditory hallucinations. *Journal of Traumatic Stress, 25*, 323-329.

Perona-Garcelán, S., Garćia-Montes, J. M.,Cuevas-Yust, C., Pérez-Álvarez, M., Ductor-Recuerda, M. J., Salas-Azcona, R., et al.,(2010). A preliminary exploration of trauma, dissociation and positive psychotic symptoms in a Spanish sample. *Journal of Trauma and Dissociation, 11*, 284-292.

Preacher, K. J., & Hayes, A., (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40,* 878-891.

Radford, L., Corral, S., Bradley, C., Fisher, H., Bassett, C., Howat, N., et al. (2011). *Child abuse and neglect in the UK today*. London: NSPCC.

Rajkumar, R. P. (2014). Childhood attachment and schizophrenia: The "attachment-developmental-cognitive" (ADC) hypothesis. *Medical Hypotheses, 83,* 276-281.

Read, J., Fosse, R., Moskowitz, A., & Perry, B. (2014). The traumagenic neurodevelopmental model of psychosis revisited. *Neuropsychiatry, 4,* 65-79.

Read, J., Perry, B. D., Moskowitz, A., & Connolly, J. (2001). The Contribution of Early Traumatic Events to Schizophrenia in Some Patients: A Traumagenic Neurodevelopmental Model. *Psychiatry: Interpersonal and Biological Processes, 64,* 319-345.

Reichenberg, A., Caspi, A., Harrington, H., Houts, R., Keffe, R. S., Murray, R. M., et al. (2010). Static and dynamic cognitive deficits in childhood preceding adult schizophrenia. *American Journal of Psychiatry, 167,* 160-169.

Renard, S. B., Pijnenborg, M., & Lysaker, P. H. (2012). Dissociation and social cognition in schizophrenia spectrum disorder. *Schizophrenia Research, 137,* 219-223.

Sanderson, S., Tatt, I. D., & Higgins, J. P. T. (2007). Tools for assessing quality and susceptibility to bias in observational studies in epidemiology: a systematic review and annotated bibliography. *International Journal of Epidemiology, 36*, 666-676.

Sar, V., Taycan, O., Bolat, N., Özmen, M., Duran, A., Öztürk, E., et al. (2010). Childhood trauma and dissociation in schizophrenia. *Psychopathology, 43,* 33-40.

Sass, L., Pienkos, E., Nelson, B., & Medford, N. (2013). Anomalous self-experience in depersonalization and schizophrenia: A comparative investigation. *Consciousness and Cognition, 22*, 430-441.

Schäfer, L., Harfst, T., Anderhold, V., Briken, P., Lehmann, M., Moritz, S., et al. (2006). Childhood trauma and dissociation in female patients with schizophrenia spectrum disorders - an exploratory study. *Journal of Nervous and Mental Diseases, 194*, 135-138.

Schäfer, L., Fisher, H. L., Aderhold, V., Huber, B., Hoffmann-Langer, L., Golks, D., et al. (2012). Dissociative symptoms in patients with schizophrenia: relationships with childhood trauma and psychotic symptoms. *Comprehensive Psychiatry, 53*, 364-371.

Schenkel, L. S., Spaulding, W. D., DiLillo, D., & Silverstein, S. M. (2005). Histories of childhood maltreatment in schizophrenia: Relationships with premorbid functioning, symptomatology and cognitive deficits. *Schizophrenia Research, 76*, 273-286.

Selten, J., van der Ven, E., Rutten, B. P. F., & Cantor-Graae, E. (2013). The social defeat hypothesis of schizophrenia: an update. *Schizophrenia Bulletin, 39*, 1180-1186.

Shamliyan, T., Kane, R. L., & Dickinson, S. (2010). A systematic review of tolls used to assess the quality of observational studies that examine incidence or prevalence and risk factors for diseases. *Journal of Clinical Epidemiology, 63,* 1061-1070.

Sidelli, L., Fisher, H. L., Russo, M., Murray, R. M., Stilo, S. A., Wiffen, B. D. R., et al. (2014). Failure to find association between childhood abuse and cognition in first-episode psychosis patients. *European Psychiatry, 29,* 32-35.

Sitko, K., Bentall, R. P., Shevlin, M., O'Sullivan, N., & Sellwood, W. (2014). Associations between specific psychotic symptoms and specific childhood adversities are mediated by attachment styles: An analysis of the National Comorbidity Survey. *Psychiatry Research, 217*, 202-209.

Steel, C., Fowler, D., & Holmes, E. A. (2005). Trauma-related intrusions and psychosis: an information processing account. *Behavioural Cognitive Psychotherapy, 33*, 139–152.

Susser, E., & Widom, C. (2012). Still searching for lost truths about the bitter sorrows of childhood. *Schizophrenia Bulletin, 38*, 672-675.

Swett, C., & Halpert, M. (1993). Reported history of physical and sexual abuse in relation to dissociation and other symptomatology in women psychiatric inpatients. *Journal of Interpersonal Violence, 8,* 545-555.

Toth, S. L., Stronach, E. P., Rogosch, F. A., Caplan, R., & Cicchetti, D. (2011). Illogical thinking and thought disorder in maltreated children. *Journal of the American Academy of Child and Adolescent Psychiatry, 50*, 659-668.

Tschoeke, S., Steinert, T., Flammer, E., & Uhlmann, C. (2014). Similarities and differences in borderline personality disorder and schizophrenia with voice hearing. *The Journal of Nervous and Mental Disorder, 7*, 544-549.

van Dam, D. S., Korver-Nieberg, N., Vlehorst, E., Meijer, C. J., & de Haan, L. For Genetic Risk and Outcome in Psychosis (GROUP). (2014). Childhood maltreatment adult attachment and psychotic symptomatology: a study in patients, siblings and controls. *Social Psychiatry* and *Psychiatric Epidemiology, 49,* 1759-1767.

van Nierop, M., Lataster, T., Smeets, F., Gunther, N., van Zelst, C., de Graaf, R., et al., (2014). Psychopathological mechanisms linking childhood traumatic experiences to risk of psychotic symptoms: Analysis of a large, representative population-based sample. *Schizophrenia Bulletin, 40,* S123-S130.

Varese, F., Barus, E., & Bentall, R. P. (2012b). Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychological Medicine, 42*, 1025-1036.

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., et al. (2012a). Childhood adversities increase the risk of psychosis: A meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophrenia Bulletin, 38*, 661-671.

Vogel, M., Meier, J., Grönke, S., Waage, M., Schneider, W., Freyberger, H. J., et al. (2011). Differential effects of childhood abuse and neglect: Mediation by posttraumatic distress in neurotic disorder and negative symptoms in schizophrenia. *Psychiatry Research, 189*, 121-127.

Vogel, M., Spitzer, C., Kuwert, P., Möller, B., Freyberger, H. J., & Grabe, H. J. (2009). Association of childhood neglect with adult dissociation in schizophrenic inpatients. *Psychopathology, 42*, 124-130.

Wickham, S., Sitko, K., & Bentall, R. P. (2015). Insecure attachment is associated with paranoia but not hallucinations in psychotic patients: the mediating role of negative self-esteem. *Psychological Medicine, 45*, 496-507.

Empirical Research Project

What is the role of dissociative processes in the relationship between childhood trauma and psychosis?

Supervised by Dr Emmanuelle Peters, Dr Elaine Hunter & Dr Amy Hardy

Abstract

With growing recognition of a high prevalence of childhood trauma (CT) in those with psychotic experiences, attention is increasingly being focused on understanding the psychological mechanisms which may mediate this relationship. The purpose of this work was to build on previous research and investigate the potential mediating role of dissociative experiences in the relationship between CT and positive symptoms by exploring both CT and dissociation in more detail than previous studies. In particular, dissociation was uniquely considered as a multidimensional construct and the mediating role of distinct dissociative experiences were examined (i.e. depersonalisation/derealisation; somatoform dissociation; dissociative amnesia). The results showed that emotional abuse (EA) was positively associated with delusions. Trends were found for positive associations between EA and hallucinations and childhood sexual abuse (CSA), hallucinations and delusions. Depersonalisation was positively correlated with most forms of abuse and all positive symptoms. Mediation analyses demonstrated that depersonalisation was a partial mediator between CSA and hallucinations and delusions of influence. No other types of dissociation were found to mediate this relationship and the relationships between other CT categories and positive symptoms were not mediated by dissociative experiences. This relationship was no longer significant when controlling for mood, suggesting that depression and anxiety may account for more of the shared variance between these factors than depersonalisation. Study limitations and clinical implications are discussed.

Table of contents

List of Figures

List of Tables

1 Literature Review

In the past few decades there has been increasing awareness of a high prevalence of childhood trauma (CT) in those with psychotic experiences, particularly interpersonal traumas such as physical, sexual and emotional abuse. Potential mechanisms for how CT might be related to adult psychosis[2] are less clearly understood. One proposition is that due to the strong association between trauma and dissociation reactions, the latter might be a mediating factor between childhood adversity and psychosis. Previous studies that have examined this link have limitations concerning the level of detail about CT, with an over-reliance on questionnaires. In addition, many have conceptualised dissociative responses as a unitary experience, rather than a spectrum of qualitatively different phenomena. This study aimed to investigate dissociative experiences as a mediating factor between CT and current adult psychotic experiences in closer detail than previous empirical studies.

1.1 The relationship between childhood adversity and adult psychosis

Accumulating evidence indicates a significant association between reported CT and psychosis in adulthood (Matheson, Shepherd, Pinchbeck, Laurens & Carr, 2013; Read, van Os, Morrison & Ross, 2005; Skehan, Larkin & Read, 2012; Varese et al., 2012a). Recent meta-analyses reported a medium to large effect of childhood adversity (Matheson et al., 2013) and found that compared to those without, individuals who had experienced CT were 2.8 times more likely to develop psychosis (Varese et al., 2012a).

Retrospective studies indicate that CT occurs more frequently in individuals with psychosis than the general population (e.g. Bebbington et al., 2004; Whitfield, Dube, Felitti & Anda, 2005) with up to 73% of people with psychosis reporting CT (Bendall, Jackson, Hulbert, & McGorry 2008). Critics of retrospective studies highlight that they tend to be of limited sample size which, combined with inconsistency of measurement tools, heterogeneity of psychosis as a diagnosis and frequent lack of control groups, makes it difficult to firmly establish a causal relationship (Morgan & Fisher, 2007). Some feel that more tentative conclusions are warranted given difficulties with retrospective measurement of CT (e.g. Prescott et al., 2000).

Prospective studies also suggest a causal relationship between CT and the development of positive symptoms (e.g. Arseneault et al., 2011; Cutajar et al., 2010; Janssen et al., 2004; Lataster et al., 2006; Spauwen, Kraddendam, Lieb, Wittchen, & van Os, 2006) with evidence from large-scale population-based studies helping to overcome some of the sample

[2] The term 'psychosis' rather than 'schizophrenia' is used in this study as it is the spectrum of phenomena, rather than a specific diagnostic category, which is under investigation.

size limitations of cross-sectional studies. In large population samples, baseline childhood abuse predicted development of psychotic symptoms associated with a need for care (Janssen et al., 2004) and a history of childhood sexual abuse (CSA) was associated with significantly higher rates of psychosis (Cutajar et al., 2010). A relationship has also been noted between emerging and subclinical psychotic symptoms and CT (Bechdolf et al., 2010; De Loore et al., 2007; Wigman et al., 2011) with the persistence of subclinical symptoms abnormally high in individuals with CT (Cougnard et al., 2007).

Trauma history has been associated with greater functional and social impairments in those diagnosed with schizophrenia (Gil et al., 2009) and patients with a history of CT are more likely to present with comorbidities (e.g. substance abuse), to have attempted suicide, to disengage from treatment and have poorer outcomes (Conus, Cotton, Schimmelmann, McGorry, & Lambert, 2010). Consideration of the underlying factors and mechanisms through which trauma is related to psychosis is therefore important, as this may in turn support the development of effective treatments targeting key mechanisms.

1.1.1 Relationship of specific positive symptoms and specific childhood traumas

Whilst some argue that the association between CT and psychosis has been overemphasised (e.g. Susser & Widom, 2012), others have begun to consider the psychological mechanisms by which these factors may be related. There is some debate concerning the specificity of associations between CT and particular psychiatric symptoms, with some proposing a general impact of CT on symptoms (van Nierop et al., 2014) and that CT may contribute to a shared vulnerability for depressive and psychotic symptoms (van Dam et al., 2014). Others argue that evidence for psychological mechanisms mediating particular pathways between specific categories of CT and specific symptoms suggests otherwise (Bentall, et al., 2014).

Examining the relationship between specific symptoms and adversity, the most robust finding appears to be between CSA and hallucinations (McCarthy-Jones, 2011; Varese et al., 2012a). It is more difficult to draw conclusions concerning other hallucinatory modalities due to fewer, lower quality studies; however significant associations have been found between tactile hallucinations and CSA and physical abuse (PA) (Read et al., 2003) and between visual hallucinations and neglect (Shevlin, Dorahy, & Adamson, 2007a). The few studies that report on thought disorder have typically found no association with CT (Goff, Brotman, Kindlon, Waites, & Amico, 1991; Read et al., 2003). The association between CT and paranoia appears to be the second most robust link emerging from the literature (Gracie et al., 2007; Fisher, Appiah-Kusi, & Grant, 2012; Freeman & Fowler).

Taking the opposite approach, interpersonal CT appears to be the most significant in terms of association with later psychosis (Arseneault et al., 2011). One meta-analysis (Varese et al., 2012a) calculated ORs for specific types of trauma and found the highest for emotional abuse (EA) (see Appendix 1 for additional evidence concerning the link between different trauma categories and positive symptoms). The literature suggests that no agreement has been found concerning the relative impact of different types of CT. Apparently contradictory results may be due to differences in assessment of trauma and the likely co-occurrence of traumatic experiences (e.g. Read et al., 2003), which may not be controlled. In addition, other aspects of the experience (e.g. age, frequency, duration, number of perpetrators, protective factors) may be more important than the type of trauma and this is not always considered.

1.1.2 Potential mediating factors between childhood trauma and psychosis

Several psychological mechanisms have been suggested as mediating factors between CT and psychosis; negative schematic beliefs about the self, others and world (Bentall & Fernyhough, 2008), attachment (Gómez, Kaehler & Freyd, 2014; O'Connor & Rutter, 2000), PTSD (Andrew, Gray & Snowden, 2008; Lysake & LaRocco, 2008; Morrison, Frame & Larkin, 2003), emotional distress and lower perceived control over psychotic experiences (Bak et al., 2005). Dissociation has also been explored in those with trauma and psychosis, with some suggesting that dissociative symptoms, arising from trauma experiences, lead to the development of positive symptoms (Moscowitz & Corstens, 2008).

1.2 Dissociation

Dissociation is a multidimensional construct defined as "a disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control and behaviour" (Diagnostic and Statistical Manual of Mental Disorders-V, American Psychiatric Association, 2013, p.291). It is conceptualised as a continuum, with 'normal' dissociative experiences at one end (e.g. daydreaming) and pathological dissociation at the other (e.g. dissociative amnesia) (Bernstein & Putnam, 1986). Clinical dissociation is found in up to 25% of people with mental health problems (Putnam et al., 1996).

Whilst dissociation is typically treated as a unitary concept in the literature, it has been argued that making distinctions between qualitatively different phenomena within this overall term is crucial for theoretical understanding to developing appropriate clinical interventions (Holmes et al., 2005). Holmes and colleagues suggest a classification of dissociative experiences into two categories of 'detachment' and 'compartmentalisation'. Detachment is defined as an altered state of consciousness and is typified by a sense of unreality of aspects of

the self (depersonalisation, DP) and/or the external world (derealisation, DR). Compartmentalisation refers to a fragmentation of normally integrated functions (i.e. these have been 'compartmentalised') leading to an inability to have executive control over functions that would normally be available to conscious control. These might be memory processes (e.g. with dissociative amnesia), motor functions (such as with dissociative paralysis) and unexplained medical symptoms, such as pain (Brown, 2013).

Distinct types of dissociative phenomena have not previously been systematically explored in relation to the association between trauma and psychosis, meaning there is a lack of understanding about how different aspects of dissociation might relate to psychotic symptoms.

1.2.1 Aetiology of dissociation

1.2.1.1 Childhood trauma

Research indicates strong associations between trauma and dissociative responses (e.g. van Ijzendoorn & Schuengel, 1996). Severe and multiple traumas have been linked to compartmentalisation forms of dissociation (Ross et al., 1991) whilst research has consistently indicated that only EA is related to DP (Simeon, Guralnik, Schmeidler, Sirof & Knutelska, 2001), with no evidence suggesting direct links between CSA, PA or neglect and DP (Michal et al., 2007).

Dissociation is considered as a defence mechanism when facing threat and may be an evolutionarily adaptive response when neither fight nor flight are possible (Bracha, 2004). At the time of a trauma (i.e. peritraumatically) the level of threat appraised by the individual may trigger a 'freeze-flight-fight-fright-flag-faint' sequence (Schauer & Elbert, 2010). The "shut-down" reactions (fright, flag, faint) are associated with parasympathetic arousal which the authors suggest increase dissociative reactions. Subsequent intrusive re-experiencing of the event or encountering similar threats might activate the peritraumatic response or trigger a post-traumatic dissociative coping style. Hence if the main reaction involved 'shutting down' then dissociative responses may become a dominant response pattern to perceived threat.

1.2.1.2 Depersonalisation and anxiety

Phenomenological studies consistently report a significant association between DP and mood (Baker et al., 2003; Noyes & Kletti, 1977; Trueman, 1984). Clinically significant DP in those without any history of CT appears more closely related to a history of chronic anxiety (Lee, Kwok, Hunter, Richards, & David, 2012), particularly low intensity DP (Sierra, Medford, Wyatt, & David, 2012). Research suggests that despite close links with depression and anxiety, DP is nonetheless a distinct phenomenon (Michal et al., 2011). The cognitive-behavioural

model of DP proposes that transient symptoms of DP/DR, perhaps related to panic, are catastrophically misinterpreted, leading to an increase in anxiety which perpetuates the DP/DR experience (Hunter, Phillips, Chalder, Sierra, & David, 2003).

1.3 Dissociation as a possible mediator between CT and psychosis

1.3.1 Dissociation in psychological models of psychosis

Ross (2004) proposed that there may be a trauma-dissociation subgroup within the schizophrenia diagnosis, pointing to the apparent overlap between some of the core features of schizophrenia and dissociative identity disorder. It has been suggested that 22-40% of all individuals diagnosed with schizophrenia fall into this category (Ross & Keyes, 2004; 2009) and this concept has gained some support in the literature (Laferrière-Simard, Lecomte, & Ahoundova, 2014; Sar et al., 2010).

Allen and colleagues suggested that dissociative experiences arising due to trauma may leave an individual vulnerable to psychotic experiences by undermining the individual's grounding in reality (Allen, Coyne, & Consort, 1997). Others propose that dissociative processes might be, or give rise to, anomalous experiences that form the basis for hallucinations as well as delusion formation (Newman-Taylor & Sambrook, 2013; Sass, Pienkos, Nelson, & Medford, 2013) and that auditory hallucinations of voices may be best understood as dissociated or disowned components of the self resulting from traumatic experiences (Longden, Madull, & Waterman, 2012).

Several psychological models have been proposed to explain how trauma may influence the development and maintenance of psychotic experiences (e.g. Read, Perry, Moskowitz, & Connolly, 2001). Garety's model highlights how, in the context of a biopsychosocial vulnerability, emotional changes, may give rise to alterations in sensory perceptual experience (which may be considered as dissociative phenomena) which leads, through appraisal of these experiences, to positive symptoms (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001). Within the model, it is proposed that trauma may constitute a psychological vulnerability to psychosis by shaping negative beliefs about the self and others, or may be a trigger for the emotional changes that disrupt sensory-perceptual processing.

Others propose that trauma in the context of psycho-social vulnerabilities leads to intrusions which, in combination with dissociative experiences, may then be appraised in culturally unacceptable ways, leading to a diagnosis of psychosis (Morrison et al., 2003). The compassion focused model of psychosis suggests that CT may lead to disorganised attachment and emotion regulation difficulties, one consequence of which is increased tendency towards dissociation (Gumley, Braehler, Laithwaite, MacBeth, & Gilbert, 2010). The catastrophic interaction hypothesis proposes that an interaction between difficulties integrating sensory

perceptual experiences due to problems with contextual integration (Steel et al., 2005) and emotional reactions to stress or trauma may lead to vulnerability to intrusions (Fowler et al., 2006).

1.3.2 Dissociation in psychosis

Substantial evidence suggests that those with psychosis may experience a high level of dissociative symptoms (Moskowitz, Barker-Collo & Ellson, 2005; Varese, Barkus, & Bentall, 2012b; Vogel et al., 2009a), with highest rates found in those with CT (Braehler et al., 2013; Goff et al., 1991; Gómez et al., 2014; Holowka, King, Saheb, Pukall, & Brunet, 2003; Schäfer et al., 2006), particularly with one or more events (Kilcommons & Morrison, 2005) and earlier CT onset (Offen et al., 2003). Dissociation has been found to positively mediate the effect of childhood trauma on hallucination-proneness in a mixed clinical and non-clinical sample, particularly for CSA (Varese et al., 2012b). Another study found that specifically depersonalisation mediated between CT and hallucinations (Perona-Garcelán et al., 2012).

However, the evidence concerning relationships between different forms of CT and dissociation in psychosis samples is inconclusive. Some studies reported that CSA is most strongly associated with high levels of dissociation (Goff et al., 1991), others with EA (Braehler et al., 2013; Holowka et al., 2003; Schäfer et al., 2006), and some PA and physical neglect (Sar et al., 2010; Vogel et al., 2009b). Dissociation was significantly higher in those abused by a parent than a non-parent (Greenfield, Strakowski, Tohen, Batson, & Kolbrener, 1994).

Overlap of traumas in each individual and different definition of traumatic experiences may account for this variation. In addition, distinct aspects of dissociation may be differentially related to various traumatic experiences and psychosis symptoms, as suggested by mediation analysis (Perona-Garcelán et al., 2012). In a non-clinical sample, the link between CSA and paranoia was explained by levels of anxiety (Freeman & Fowler, 2009), and whilst this study did not assess dissociative experiences, the known association between anxiety and DP suggests that this is an additional factor which should be considered in the relationship between childhood trauma and psychosis symptoms.

1.4 Limitations of previous research

1.4.1 Methodological issues in previous research on childhood trauma within psychosis

The use of simple, subjective self-report measures to assess traumatic events in previous studies limits the level of detail obtained, making it difficult to measure the severity of any trauma described and assess whether the adverse experiences reported would be objectively rated as traumatic. In addition, factors such as age at onset, duration, frequency, severity and relationship to the abuser are often not considered. This study aimed to address

some of the methodological limitations in previous studies by using a semi-structured interview that allowed for greater clarity of establishing the chronicity and severity of the participant's reported trauma history.

1.4.2 Methodological issues in studying dissociation

Previous studies in psychosis have typically oversimplified the concept of dissociation and grouped together a wide range of differing phenomena under the overarching term 'dissociation'. All except two of the previous studies with psychotic samples have assessed dissociative experiences using the most widely used measure of general dissociation (Dissociative Experiences Scale, DES; Bernstein & Putnam, 1986). A factor analysis of this scale (Carlsen & Putnam, 1993) found that three types of dissociation could be measured from the mean of certain items; namely dissociative amnesia ('compartmentalisation'), absorption (seen as a non-pathological aspect of dissociation) and DP/DR ('detachment'). This study used the DES subscale to allow comparison with other studies and to measure dissociative amnesia, with additional tools used to assess other aspects of dissociation.

1.4.2.1 Depersonalisation/Derealisation syndrome

The DES DP/DR subscale only measures the most typical symptoms of unreality and detachment, whereas depersonalisation syndrome also includes a wide range of unusual perceptual and somatic anomalies, such as distortions in vision, hearing, feeling that parts of your body do not belong to you (Hunter, 2013). It is possible that some of the unusual phenomena that form part of the depersonalisation syndrome may be akin to other anomalous experiences described in many people with psychosis. The Cambridge Depersonalisation Scale (CDS: Sierra & Berrios, 2000), a more comprehensive measure, has only been used previously in one study that found that those who heard voices had significantly higher DP scores although trauma history was not examined (Perona-Garcelán et al., 2011). In addition, the DES DP/DR subscale has an item concerning hearing voices and this has typically not been removed from analyses. The association between DP/DR and positive symptoms in previous studies may therefore be due in part to content overlap between measures. This item was removed in the current study analyses.

1.4.2.2 Somatoform Dissociation

Somatic forms of dissociation, an aspect of the 'compartmentalisation' category covering phenomena such as unexplained physical sensations, pain, dissociative seizures and loss of motor functions, are also not captured by the DES. These anomalous experiences are likely to provoke a search for meaning, and idiosyncratic appraisals of these may result in

positive symptoms (Garety et al., 2001; Morrison et al., 2003). The role of this type of dissociation has not previously been examined, to our knowledge, in those with a reported history of CT and current psychosis.

1.5 Current study

This study aimed to replicate findings of an association between CT and positive symptoms in a sample of patients diagnosed with psychosis. It sought to extend previous studies and address methodological shortcomings by examining CT in closer detail and by considering different aspects of dissociative experiences. This study investigated the strength and nature of the relationship between CT, dissociation and positive symptoms using mediation analysis to establish whether current dissociative experiences mediate the relationship between CT and positive psychosis symptoms, and more particularly whether specific types of dissociative experiences differentially mediate this relationship.

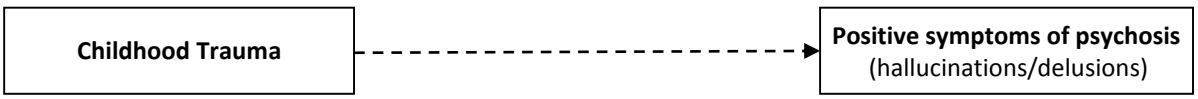
The hypotheses were that;

(i) there would be a positive correlation between the severity of CT and the severity of positive symptoms of psychosis (Figure 1a). In particular, previous research suggests a strong association may be predicted between CSA and auditory hallucinations.

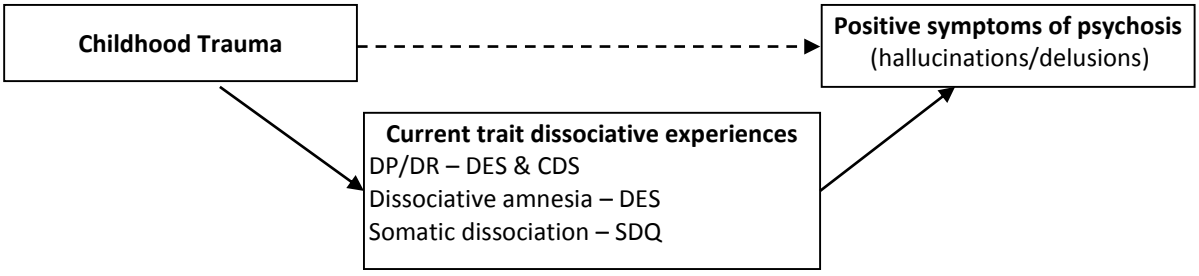
(ii) dissociative experiences would at least partially mediate the relationship between childhood trauma severity and positive symptoms (Figure 1b). In particular, it was hypothesised based on previous findings that DP/DR would play a mediating role between CT (especially CSA) and hallucinations but not delusions.

Figure 1 Graphical display of models to be tested

(a) Direct Effect



(b) Indirect effect – different dissociative phenomena



2 Method

2.1 Ethical approval

Ethical approval was granted from the Camberwell St Giles NHS Research Ethics Committee (Ref: 14/LO/0336; Appendix 2). The Psychosis Clinical Academic Group and the Research and Development department at South London and Maudsley NHS Foundation Trust (SLaM) granted approval for recruitment through inpatient wards, community teams, specialist psychological therapies services and a trust-wide register of clients who provided consent to be approached for research participation.

2.2 Recruitment

Fifty participants were recruited to the study from a range of services across SLaM over a six-month period and all gave written informed consent. Recruitment was primarily achieved through inpatient and outpatient services and research registers (the Psychological Interventions Clinic for outpatients with Psychosis research register and the SLaM-wide Consent for Contact register) (see Appendix 3).

The following inclusion criteria were specified: (i) current diagnosis of non-affective psychosis (ICD-10 F2029); (ii) no primary diagnosis of intellectual disability, head injury, substance misuse or known organic cause for psychosis; (iii) mental state sufficiently stable to participate in research and capacity to provide consent; (iv) 18 years and above; (v) sufficient level of English. Although CT was not a formal inclusion criterion and participants were not specifically selected on the presence of CT or asked about this prior to giving consent, the recruitment information emphasised that CT was under investigation and therefore nearly all participants who came forward had a history of CT.

2.3 Demographic information

The mean age of the participants was 48.9 years (SD=10.39, range23-74) and 21 were female (42.9%). The mean duration of illness (contact with services) was 29 [10.5] years. A high proportion of the sample was taking atypical antipsychotic medication (67.3%) and the majority were currently receiving ongoing support from services (85.7%). Most participants were not currently employed or in a relationship. Demographic data is summarised in Table 1.

Table 1 Demographic and clinical characteristics of sample

Variable	n (%)	Mean [SD], range
Sex		
Male	28 (57.1)	
Female	21 (42.9)	
Ethnicity		
White British	18 (36.7)	
African	8 (16.3)	
White other	7 (14.3)	
Caribbean	4 (8.2)	
Asian	3 (6.1)	
White and Black Caribbean	2 (4.1)	
White and Black African	1 (2.0)	
Other	6 (12.2)	
Education, years		12.7 [3.8], 3-20
Employment		
Yes	2 (4.1)	
No	47 (95.9)	
Marital status		
Single	37 (75.5)	
In a relationship	6 (12.2)	
Married	4 (8.2)	
Divorced/separated	2 (4.1)	
Number of hospital admissions		4.0 [4.4], 0-20
Medication		-
None	4 (8.2)	
Typical antipsychotic	2 (4.1)	
Atypical antipsychotic	33 (67.3)	
Antidepressant	8 (16.3)	
Other	9 (18.3)	
Current input from services		
Yes	42 (85.7)	
No	7 (14.3)	

2.4 Measures

2.4.1 Childhood trauma

The Victimisation Experiences Schedule (VES), used to evaluate childhood traumatic experiences, assesses interpersonal trauma in adulthood and childhood (i.e. bullying, psychological abuse, parental neglect, parental antipathy, physical abuse, threat/assault and sexual abuse) and a range of discriminatory experiences (e.g. being unfairly dismissed at work) (Charalambides et al., 2014). Only interpersonal traumatic experiences in childhood were assessed in the current study as these have been shown to be the most important in psychosis samples (Arseneault et al., 2011), and 'war trauma' was added as an additional category as this

was considered to be potentially relevant to the population from which the sample was drawn (Appendix 4).

Participants described their traumatic experience, including the age it began and ended. They rated the impact of the event, both at the time and currently, using a visual analogue scale ranging from 0-10 (0 = no impact 0; 10 = total impact). A scoring system was developed in consultation with experts in the field and by examining other measures (e.g. the Childhood Experience of Care and Abuse interview; Bifulco, Brown, & Harris, 1994). This included the frequency, duration and severity (i.e. the level of physical and psychological harm) of each category of traumatic experience (Appendix 5). These scores were summed to produce a composite score for each trauma type (maximum score of 12).

2.4.2 Positive symptoms

The Scale for Assessment of Positive Symptoms (SAPS; Andreasen, 1984) is a 35-item measure divided into four subscales; hallucinations, delusions, bizarre behaviour and formal thought disorder. The presence and persistence of each item over the past month is rated by an interviewer on a six-point scale (0-5). The SAPS has acceptable inter-rater reliability (Norman, Mala, Cortese, & Diaz, 1996; Peralta, Cuesta, & De Leon, 1995) and convergent validity with other measures (e.g. Positive and negative syndrome scale; Kay, Fiszbein, & Opler, 1987). For analysis, the global rating of hallucinations score was used, however delusions were considered in more detail to encompass emerging evidence that delusions of influence (DOI) may be qualitatively different phenomenon from other delusions types (A Hardy, personal communication, 20 April, 2015). DOI are passivity symptoms and include experiences such as delusions of mind/body control and delusions of alien control (Maes & Van Gool, 2008).

2.4.3 Dissociative symptoms

The Dissociative Experiences Scale II (DES-II; Bernstein & Putnam, 1986; Carlson & Putnam, 1993) is a 28-item self-report measure covering a range of dissociative phenomena. Factor analyses have indicated that the scale has three subscales; dissociative amnesia, absorption and depersonalisation/derealisation (Stockdale, Gridley, Balogh, & Holtgraves, 2012). The item from the DP/DR subscale assessing voice hearing was removed from the analysis. Respondents rate the percentage of the time they experience each item in their daily adult life on a scale from 0-100%. Total and subscale scores are calculated using the mean scores of relevant items (range 0-100). The DES-II has good test-retest reliability and clinical validity (Saxe et al., 1993; van Ijzendoorn & Schuengel, 1996).

The CDS is a 29-item self-report measure of the frequency and duration of depersonalisation symptoms over the previous six months. A total score is calculated (range 0-290). Internal consistency and reliability have been demonstrated (Sierra & Berrios, 2000).

The Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis, Spinhoven, Van Dyck, Van der Hart, & Vanderlinden, 1996) is a 20-item self-report scale evaluating the severity of somatoform dissociation using a Likert-type 5-point scale. A total score is calculated (range 0-100. It has good reliability and validity (Nijenhuis, 2010).

2.4.4 Mood

The Depression, Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1995) is a 42-item self-report questionnaire comprising three subscales measuring depression, anxiety and stress using a 4-point Likert-type scale. Total (range 0-123) and subscale scores (range 0-42 for depression and anxiety and 0-39 for stress) are calculated. It is a reliable and valid measure (Crawford & Henry, 2003).

2.5 Procedure

Participants provided basic demographic information. Questionnaires were completed with the assessor reading the items aloud. The majority of participants completed the measures in a single session lasting approximately two hours, however two participants required two separate sessions a week apart. Participants were assessed individually and the measures were administered in the same order (Appendix 6) with the DES-II, CDS and SDQ intentionally placed prior to the assessment of childhood trauma. This aimed to reduce the impact of dissociation potentially induced by remembering childhood trauma on ratings of current trait dissociation.

Data collection was shared with another trainee (CS) in order to maximise sample size. The current author and CS assessed one pilot participant each whilst observed by the other and scoring for these was completed together. Data collection was conducted separately, with 25 participants assessed by each trainee. Interrater reliability was calculated for the SAPS to assess the degree of concordance in scoring. The VES was jointly scored. Ethical approval was granted for both projects as part of a joint application. Supervision for each project was provided separately other than joint meetings regarding data collection. The design, analyses and reporting of each study were completed independently.

2.6 Statistical analyses

An a priori power analysis based on a previous study that showed a large effect of CT on positive symptoms (Ross, Anderson, & Clark, 1994) indicated a sample of 50 would be

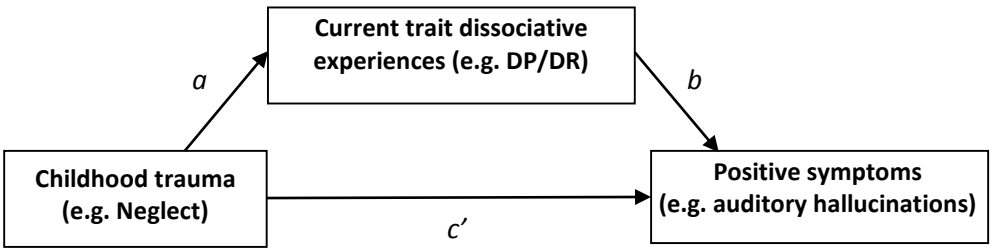
sufficient to find a large effect size (0.72) for regression models with three predictors at 80% power (α=0.01). The sample size would therefore be insufficient to reliably detect medium or small effects; however constraints of a doctoral thesis timeframe precluded further recruitment.

Data analysis was conducted using IBM SPSS for windows (V.22). Data were inspected for normality and no outliers were identified. Missing data were excluded pairwise and pro-rated scores were used where appropriate on missing questionnaire data, accounting for 4 missing data points. As assumptions of parametric data were not met group comparisons to assess potential impact of demographic variables were performed using the Mann-Whitney U tests. Comparison of trauma types was completed with Friedman's ANOVA and post-hoc Wilcoxon tests.

Spearman's correlations (two-tailed) were used to explore the relationship between objective (composite) and subjective (impact ratings) CT scores and used to explore the zero-order associations between the various forms of CT, dissociation experiences and positive symptoms. The alpha level was set to 0.01 to adjust for multiple testing. This method was chosen as although overall type I error does not remain at 5% as with Bonferroni correction, with a small sample size this method is a compromise between type I and type II error. Bonferroni correction is a highly conservative method and adjusting the alpha level to 0.01 is a typical approach to this problem (Lang & Secic, 2006).

To test the hypotheses, mediation analyses were planned. Mediation is a hypothesised causal chain in which an independent variable (X) is thought to affect a mediating variable (M), which in turn affects the dependent variable (Y). In the current study a mediational effect would be found if CT influenced positive symptoms through an indirect path involving dissociative experiences. The direct effects (*c'*) of different CT categories on the range of positive symptoms examined in this study and the indirect effects (*ab*) via depersonalisation/derealisation, absorption and somatoform dissociation were estimated using simple mediation models (Figure 2).

Figure 2 Mediation model



Simple mediation analyses were conducted using ordinary least squares path regression and the PROCESS tool developed for SPSS (Hayes, 2013). Bootstrapping (5000

samples) was used to estimate mediator significance and 99% percentile confidence intervals (C.I.) were used to adjust for multiple comparisons. If a C.I. not inclusive of zero was found the effect was considered significant at $p<.05$. κ^2 was used as a measure of effect size (Preacher & Kelley, 2011), which is the ratio of the indirect effect relative to its maximum possible value in the data. They suggest that κ^2 is interpreted in an analogous way to r^2 in line with Cohen's guidelines (1988), defining small, medium and large effect sizes as .01, .09 and .25 respectively.

It has been argued that due to relatively low power of the tests of direct effects (*c'*) and total effects (*c*) it may be the case that the indirect effect is statistically significant but the total effect is not (e.g. Kenny & Judd, 2014). For this reason, evidence of an association between X and Y is not a precondition of conducting a mediation analysis (Hayes, 2013) and this approach will be adopted in the current study, especially given the equivocal findings relating to the relationship between CT and dissociation in the context of psychosis. Mood was assessed and entered as a covariate in the mediation analyses as controlling for depressed mood has been found to reduce the strength of the relationship between CT and positive symptoms (Bebbington et al., 2004).

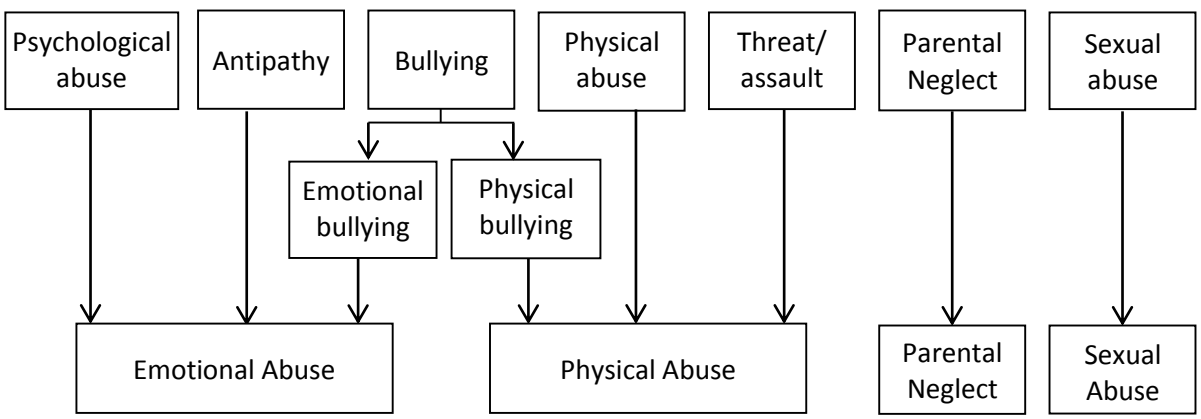
3 Results

3.1 Descriptive statistics

3.1.1 Childhood trauma

Trauma categories were collapsed into four subscales for analysis; Emotional Abuse (EA) comprising psychological abuse, antipathy and psychological bullying and Physical Abuse (PA) comprising physical abuse, threat/assault and physical bullying. Parental Neglect (PN; covering both physical and emotional neglect) and Sexual Abuse (SA) were maintained as separate factors (Figure 3). Only 10 participants (20%) reported experiencing war-related trauma in childhood and this category was therefore not included in the analysis due to lack of power. Supplementary analyses examining the impact of age, sex, and number of experiences are included in Appendix 7.

Figure 3 Organisation of trauma subtypes for analysis



95.9% of participants (n=47) had experienced at least one traumatic event. The mean number of events experienced was 4.35 (SD=2.0, range=0-7). In general, high rates of trauma were reported and the most frequently reported were EA and PA (Table 2). Composite scores significantly differed across categories ($\chi^2(3)=16.8$, P<.001). PN was more severe than PA (T=204, p<.001) and SA (T=101, p<.001) and EA was also significantly higher than both PA (T=890, P<.001) and SA (T=728, P<.01).

Table 2 Frequency, rate, mean and range of childhood trauma composite scores

Event		Frequency		Mean [SD]	Range[a]
		n	%		
Parental neglect	High	21	42.9	6.55 [5.0]	0-12
	Low	11	22.4		
	None	17	34.7		
Emotional abuse	High	32	65.3	5.70 [3.8]	0-11
	Low	10	20.4		
	None	7	14.3		
Physical abuse	High	26	53.1	3.62 [2.5]	0-9
	Low	15	30.6		
	None	8	16.3		
Sexual abuse	High	16	32.7	3.73 [4.2]	0-11
	Low	9	18.4		
	None	24	49.0		
Total trauma	High	25	51.0	19.6 [11.5]	0-39
	Low	21	42.9		
	None	3	6.1		

[a] maximum score for subscales (PN, SA, EA, PA) = 12, maximum score for total = 48

Table 3 shows the 'impact at the time' and 'impact now' scores for different trauma categories. SA was rated most highly as having an impact at the time, although median score for all categories was 8 or above. The current impact was typically rated as lower, with median scores ranging from 4.5 to 8. Analyses demonstrated a range of associations between the more objective composite scores and the participant-rated impact scores, with significant positive correlations between the scores found for SA, physical abuse and bullying (Table 4).

Table 3 'Impact at the time' and 'impact now' scores

Event	Impact at the time scores[a]			Impact now scores[a]		
	Mean [SD]	Median	Range	Mean [SD]	Median	Range
Parental neglect	8.73 [1.5]	9	5-10	6.76 [3.3]	7	0-10
Psychological abuse	8.58 [1.9]	9	5-10	6.86 [3.4]	8	0-10
Antipathy	8.85 [1.6]	10	5-10	5.96 [4.0]	7.5	0-10
Bullying	8.21 [1.9]	8	2-10	4.85 [3.8]	5	0-10
Threat/assault	7.61 [2.5]	8	2-10	4.67 [3.5]	4.5	0-10
Physical abuse	7.62 [2.9]	8	0-10	4.09 [3.7]	4	0-10
Sexual abuse	9.14 [1.7]	10	5-10	6.24 [3.6]	7	0-10

[a] n for each category of abuse as shown in table 3

Table 4 Correlations between composite, 'impact at the time' and 'impact now' scores

Composite scores	Impact at the time scores	Impact now scores
Parental neglect	.270	.368*
Psychological abuse	.385	.096
Antipathy	-.007	.267
Bullying	.451**	.206
Threat/assault	.470*	.283
Physical abuse	.496**	.421*
Sexual abuse	.454*	.691**

Note: *p<.05; ** p<.01

3.1.2 Positive symptoms

Mean values and prevalence (score of ≥2) of current positive symptoms are presented in Table 5. Auditory hallucinations were most commonly reported. Interrater reliability was assessed in four participants across four researchers using the intraclass correlation coefficient (ICC). The range of ICC across items was 0.76–0.99.

Table 5 Descriptive statistics for SAPS scores

Variable	Mean	Standard deviation	Median	Range	Frequency (yes 2+) (n, %)
Global rating of hallucinations [a]	**3.15**	**1.8**	**4**	**0 – 5**	**30 (61.2)**
Global rating of delusions	**2.63**	**1.5**	**2**	**0 – 5**	**22 (44.9)**
Delusion of influence [b]	3.88	4.9	1	0 – 20	-
Persecutory delusions [c]	1.82	1.4	2	0 – 5	29 (59.2)
Delusions of reference [c]	1.98	1.7	2	0 – 5	29 (59.2)
Delusions of mindreading [c]	1.33	1.5	1	0 – 5	22 (44.9)

[a] maximum score = 5, [b] maximum score = 20, [c] maximum score = 5

3.1.3 Dissociative experiences

Mean scores and range for the dissociation measures are shown in Table 6. 39% of participants scored in the clinical range (>70) on the CDS.

Table 6 Descriptive statistics for dissociation scores

Variable	Mean	Standard deviation	Range
DES Total [a]	24.38	18.5	0.36 - 87.86
DES Amnesia [a]	15.53	16.5	0 - 70
DES Depersonalisation/Derealisation [a]	25.67	24.5	0 - 95
DES Absorption [a]	29.90	22.5	0 - 88.3
CDS Total [b]	68	54.1	4 - 231
SDQ Total [c]	31.55	9.6	20 - 70

[a] maximum score = 100, [b] maximum score = 290, [c] maximum score = 100

3.1.4 Depression, anxiety and stress

40.8% of participants met criteria for at least 'moderate' depression, 16.3% exceeded the threshold for 'extremely severe' depression. 57.1% of participants met criteria for at least 'moderate' anxiety and 24.5% scored in the 'extremely severe' range. 36.7% of the sample scored in at least the 'moderate' range for stress, with 6.1% scoring in the 'extremely severe' range. Scores on the DASS are summarised in Table 7.

Table 7 Descriptive statistics for DASS scores

Variable	Mean	Standard deviation	Range [a]
DASS Total	42.06	28.9	0 – 114
DASS Depression	14.34	11.5	0 – 41
DASS Anxiety	13.39	9.9	0 – 36
DASS Stress	14.33	10.1	0 – 38

[a] maximum score for depression, anxiety = 42, stress = 39, total = 123

3.2 Relationship between trauma and positive symptoms

3.2.1 Composite scores

Table 8 summarises the correlations between CT composite scores and positive symptom severity. Significant positive correlations were found between EA and delusions of mind reading (r=.478, p<.001) and a trend towards significance between EA and DOI (r=.294, p=.040) and persecutory delusions (r=.317, p=.027). There was a trend towards a significant association between SA and persecutory delusions (r=.303, p=.035).

Table 8 Spearman correlations between composite scores of childhood trauma (severity, frequency, duration) and positive symptoms

Positive Symptom	Neglect		Emotional abuse		Physical abuse		Sexual abuse		Total trauma	
	r	p	r	P	r	p	r	p	r	p
Auditory hallucinations	.020	.891	.168	.248	.078	.595	.270	.060	.179	.218
Non-auditory hallucinations	.001	.994	.241	.096	.124	.397	.033	.822	.105	.473
Delusions of influence	.050	.733	.294	.040	.232	.108	.274	.057	.246	.089
Persecutory delusions	.218	.133	.317	.027	.092	.528	.303	.035	.330	.021
Delusions of mind reading	.237	.101	**.478**	**.001**	.267	.063	.250	.084	**.406**	**.004**
Delusions of reference	-.045	.757	.248	.085	.167	.252	.184	.205	.166	.256

Note: significant results (p<.01) in bold

3.2.2 Impact scores

The correlations between participant rated impact scores at the time of the trauma and currently and positive symptoms were calculated (Table 9). This analysis is reported for the individual trauma types as computing impact scores for the combined trauma scales (EA and PA) was not possible. Significant correlations were generally not found with the 'impact at the time' scores. In contrast, the 'impact now' scores for Antipathy, Bullying and Sexual Abuse were strongly correlated with most positive symptoms, with many retaining significance at p<.01. Participants reporting higher impact of their traumatic event within a category experienced more severe positive symptoms.

Table 9 Spearman correlations between subjective measures of childhood trauma (impact at the time and now) and positive symptoms

Positive Symptoms	Neglect		Psychological Abuse		Antipathy		Bullying		Physical abuse		Threat/ Assault		Sexual abuse		Total impact scores (mean)	
	Then	Now	Then	Now	Then	Now	Then	Now	Then	Now	Then	Now	Then	Now	Then	Now
Auditory hallucinations	.241	.074	.100	.129	-.037	.229	.272	.389*	.027	.070	.374	.344	.392	.796***	.202	.393**
Non-auditory hallucinations	.004	.160	-.105	-.110	.034	.411*	.107	.187	-.097	-0.26	-.001	.089	.415	.429	.014	.156
Delusions of influence	.152	.196	.149	.050	-.063	.434*	.262	.358*	.038	.118	.199	.235	-.052	.696***	.140	.272
Persecutory delusions	.119	.377*	-.026	.081	.107	.545**	.312	.528***	.016	.359*	.138	.205	.130	.514*	.153	.362*
Delusions of mind reading	.307	.248	.305	.161	.313	.413*	.231	.345*	.200	.223	.137	.360	.003	.535*	.212	.360*
Delusions of Reference	.139	.233	.205	.238	.015	.590**	.275	.367*	-.131	.067	-.153	.286	.125	.657***	.000	.306*

*p<.05, ** p<.01, *** p<.001

3.3 Relationship between trauma, positive symptoms and dissociation

The association between dissociative experiences and CT, positive symptoms and mood were considered with Spearman's correlations (Table 10).

3.3.1 CT and dissociation

Significant, positive correlations were found between the DES DP/DR subscale and all categories of abuse except PA. No association was found between the DES Amnesia subscale and CT severity for any category of trauma and for the DES Absorption subscale only SA showed a significant positive correlation. The CDS was significantly positively correlated with PN, EA and total trauma. The SDQ was only significantly positively correlated with EA.

3.3.2 Positive symptoms and dissociation

The DES DP/DR subscale was highly correlated with all positive symptoms except PD. No significant associations were found for the other DES subscales (Amnesia & Absorption) and positive symptoms. The CDS was significantly correlated with DOI, delusions of reference and delusions of mindreading and the SDQ was significantly correlated with DOI, PD and delusions of reference.

3.3.3 Dissociation and depression, anxiety and stress

All measures of dissociation and mood were highly positively correlated indicating that more severe dissociation experiences are associated with increased scores on depression, anxiety and stress measures.

Table 10 Spearman correlations between trauma scores (VES), positive symptoms (SAPS), mood (DASS) and dissociation scores (DES, CDS, SDQ)

		DES				CDS	SDQ
		Total	Amnesia	DP/DR	Absorption		
Childhood trauma	Neglect	.329*	.218	.418**	.272	.436**	.231
	Emotional abuse	.331*	.232	.391**	.288*	.406**	.397**
	Physical abuse	.160	.071	.217	.094	.175	.306*
	Sexual abuse	.389**	.278	.401**	.383**	.207	.225
	Total trauma	.404**	.263	.488**	.342*	.437**	.335*
Positive symptoms	Auditory hallucinations	.357*	.328*	.390**	.317*	.364*	.149
	Non-auditory hallucinations	.277	.171	.350**	.213	.280	.267
	Delusions of influence	.370**	.229	.496**	.273	.431**	.385**
	Persecutory delusions	.180	.121	.344*	.028	.202	.410**
	Delusions of mind reading	.318*	.267	.449**	.245	.402**	.335*
	Delusions of reference	.425**	.206	.487**	.422**	.438**	.377**
Mood	Depression	.603**	.500**	.580**	.538**	.550**	.516**
	Anxiety	.572**	.502**	.480**	.503**	.510**	.724**
	Stress	.471**	.377**	.442**	.406**	.474**	.475**
	Total	.593**	.482**	.547**	.517**	.560**	.603**

*p<.05, ** p<.01, *** p<.001

3.4 Mediation analyses

3.4.1 Neglect

The severity of PN was not found to predict the level of positive symptoms reported; hence there was no total effect. No association was found between PN and somatoform dissociation (SDQ), absorption (DES) or amnesia (DES) and therefore no mediating effect of these variables was explored. The results of the analyses with the DES DP/DR and CDS scores are shown in Table 11. For both the DP/DR subscale and the CDS total score the indirect effects were also not significant indicating that there was no mediating effect of DP/DR.

Table 11 Summary of simple mediation models for Parental Neglect (n=32)

Mediator variable	Dependent variable	Total effect (c)	a	b	Indirect effect (a x b)	99% CI (a x b)	95% CI (a x b)	κ^2
DES DP/DR	Auditory hallucinations	0.05	1.71*	0.11**	0.20	[-0.03, 0.45]	[0.04, 0.37]	0.17
	Non-auditory hallucinations	-0.02	1.71*	0.06***	0.10	[-0.02, 0.23]	[0.01, 0.21]	0.18
	Delusions of influence	0.03	1.71*	0.11***	0.19	[-0.03, 0.48]	[0.03, 0.39]	0.21
	Persecutory delusions	0.07	1.71*	0.01	0.02	[-0.02, 0.09]	[-0.01, 0.07]	0.08
	Delusions of mind reading	0.07	1.71*	0.02*	0.04	[-0.01, 0.12]	[0.00, 0.09]	0.12
	Delusions of reference	0.002	1.71*	0.03**	0.05	[-0.02, 0.12]	[0.01, 0.09]	0.15
CDS	Auditory hallucinations	0.05	1.95*	0.05**	0.19	[-0.01, 0.44]	[0.04, 0.37]	0.17
	Non-auditory hallucinations	-0.12	1.95*	0.02**	0.09	[-0.01, 0.24]	[0.01, 0.20]	0.16
	Delusions of influence	0.03	1.95*	0.05***	0.19	[-0.01, 0.45]	[0.04, 0.38]	0.21
	Persecutory delusions	0.07	1.95*	0.01	0.02	[-0.03, 0.06]	[-0.02, 0.07]	0.08
	Delusions of mind reading	0.07	1.95*	0.01**	0.05	[-0.01, 0.11]	[0.01, 0.10]	0.15
	Delusions of reference	0.002	1.95*	0.02***	0.07	[-0.00, 0.14]	[0.02, 0.12]	0.22

Note: The data are expressed as unstandardized β coefficients and are based on 5000 bootstrapped iterations. a = effect of CT on dissociation scores, b = effect of dissociation scores on positive symptoms, c' = direct effect, a x b = indirect effect, c = total effect.

* p<.05, ** p<.01, *** p<.001

3.4.2 Emotional Abuse

Similarly no total effect was found for the severity of EA and the level of positive symptoms reported. No association was found between EA and somatoform dissociation (SDQ), absorption (DES) or amnesia (DES) and therefore no mediating effect of these variables was explored. The results of the analyses with the DES DP/DR and CDS scores are shown in Table 12. For both the DP/DR subscale and the CDS total score the indirect effects were not significant indicating that there was no mediating effect of DP/DR.

Table 12 Summary of simple mediation models for Emotional Abuse (n=42)

Mediator variable	Dependent variable	Total effect (c)	a	b	Indirect effect (a x b)	99% CI (a x b)	95% CI (a x b)	κ^2
DES DP/DR	Auditory hallucinations	0.28	1.82*	0.10**	0.18	[-0.06, 0.50]	[0.00, 0.01]	0.12
	Non-auditory hallucinations	0.18	1.82*	0.05**	0.09	[-0.02, 0.28]	[-0.00, 0.22]	0.11
	Delusions of influence	0.30	1.82*	0.10***	0.17	[-0.06, 0.57]	[0.00, 0.46]	0.14
	Persecutory delusions	0.12	1.82*	0.01	0.02	[-0.12, 0.12]	[-0.01, 0.09]	0.05
	Delusions of mind reading	0.16	1.82*	0.02*	0.03	[-0.01, 0.13]	[-0.00, 0.10]	0.09
	Delusions of reference	0.11	1.82*	0.02*	0.05	[-0.03, 0.15]	[-0.01, 0.12]	0.10
CDS	Auditory hallucinations	0.28	4.44*	0.02**	0.19	[-0.04, 0.45]	[0.01, 0.38]	0.12
	Non-auditory hallucinations	0.18	4.44*	0.02*	0.08	[-0.02, 0.26]	[-0.00, 0.22]	0.10
	Delusions of influence	0.30	4.44*	0.04**	0.18	[-0.05, 0.46]	[0.00, 0.38]	0.14
	Persecutory delusions	0.12	4.44*	0.01	0.03	[-0.03, 0.09]	[-0.01, 0.08]	0.07
	Delusions of mind reading	0.16	4.44*	0.01**	0.04	[-0.02, 0.12]	[-0.00, 0.10]	0.11
	Delusions of reference	0.11	4.44*	0.012**	0.07	[-0.01, 0.16]	[-0.09, 0.18]	0.15

Note: The data are expressed as unstandardized β coefficients and are based on 5000 bootstrapped iterations. a = effect of CT on dissociation scores, b = effect of dissociation scores on positive symptoms, c' = direct effect, a x b = indirect effect, c = total effect.

* p<.05, ** p<.01, *** p<.001

3.4.3 Physical Abuse

No mediation analyses were conducted for PA as it was not found to be significantly associated with any measures of dissociation.

3.4.4 Sexual Abuse

There was a trend towards significance for the total effect between SA and auditory hallucinations, PD and delusions of mind reading (at $p<.05$). SA was only found to be significantly correlated with the DES DP/DR subscale and the CDS and the results of the mediation analyses with these variables are shown in Table 13. DP/DR was found to significantly mediate the effect of SA on auditory hallucinations, non-auditory hallucinations and DOI with a medium-large effect size. In contrast, CDS scores were not found to mediate the relationship between SA and any positive symptoms.

3.4.5 Impact of mood on mediation analyses

To assess for the impact of mood on the mediating effect of DP/DR on the relationship between SA and hallucinations and DOI, the analyses were conducted entering mood scores as a covariate. The significant mediating effect of DP/DR was no longer found to be significant when mood was entered into the model.

Table 13 Summary of simple mediation models for Sexual Abuse (n=25)

Mediator variable	Dependent variable	Total effect (c)	a	b	Indirect effect (a x b)	99% CI (a x b)	95% CI (a x b)	κ^2
DES DP/DR	Auditory hallucinations	0.40*	2.59**	0.19**	0.24	[0.02, 0.52]	[0.06, 0.44]	0.17
	Non-auditory hallucinations	0.01	2.59**	0.06***	0.16	[0.01, 0.35]	[0.04, 0.29]	0.22
	Delusions of influence	0.30	2.59**	0.10***	0.25	[0.04, 0.53]	[0.07, 0.45]	0.21
	Persecutory delusions	0.09*	2.59**	0.01	0.03	[-0.03, 0.12]	[-0.02, 0.09]	0.08
	Delusions of mind reading	0.11*	2.59**	0.02*	0.05	[-0.02, 0.15]	[-0.00, 0.72]	0.13
	Delusions of reference	0.08	2.59**	0.03*	0.07	[-0.02, 0.17]	[0.00, 0.14]	0.16
CDS	Auditory hallucinations	0.40*	3.86*	0.04*	0.15	[-0.06, 0.45]	[-0.00, 0.36]	0.11
	Non-auditory hallucinations	0.01	3.86*	0.02**	0.08	[-0.04, 0.27]	[-0.00, 0.21]	0.12
	Delusions of influence	0.30	3.86*	0.04**	0.16	[-0.07, 0.44]	[0.00, 0.36]	0.14
	Persecutory delusions	0.09*	3.86*	0.01	0.02	[-0.02, 0.09]	[-0.01, 0.07]	0.07
	Delusions of mind reading	0.11*	3.86*	0.01**	0.04	[-0.02, 0.13]	[-0.00, 0.10]	0.12
	Delusions of reference	0.08	3.86*	0.02***	0.06	[-0.02, 0.16]	[0.00, 0.14]	0.15

Note: The data are expressed as unstandardized β coefficients and are based on 5000 bootstrapped iterations. a = effect of CT on dissociation scores, b = effect of dissociation scores on positive symptoms, c' = direct effect, a x b = indirect effect, c = total effect.

* p<.05, ** p<.01, *** p<.001

4 Discussion

4.1 Summary of results

This study sought to replicate and build on previous research (Varese et al., 2012b; Perona-Garcelán et al., 2012) and was the first to discriminate between different aspects of dissociative experiences as potential mediators in the relationship between CT and positive symptoms of psychosis. Results indicated that the relationship between CSA and hallucinations (auditory, non-auditory) and delusions of influence was positively mediated by DP/DR experiences with a medium to large effect size. This was no longer significant when controlling for mood, although it has been argued that controlling for additional factors such as mood may artificially lower the probability of finding a significant relationship (Read, Fink, Rudegeair, Felitti & Whitfield, 2008). This finding is consistent with generic cognitive-behavioural models of the impact of trauma on psychosis. Dissociative experiences were not found to mediate any other relationships between CT and positive symptoms. Consistent with some previous evidence, associations were not identified between some categories of CT (i.e. parental neglect & physical abuse) and positive symptoms and reasons for this are considered below.

4.2 Childhood trauma

The present study found a high rate of adverse childhood experiences, which is perhaps unsurprising given the sampling bias, with 96% of the sample reporting at least one event. The most prevalent negative experience was EA (86%) and the least common was SA (51%) and these rates are similar to those reported in other studies with smaller sizes and targeted recruitment (e.g. Álvarez et al., 2015; Kilcommons & Morrison, 2005).

Comparison of the composite scores and the participant-rated 'impact at the time' scores indicated moderate positive correlations, with several reaching statistical significance, suggesting that the composite scoring system reflected participants' experiences. One notable exception was Parental Antipathy, for which no association was found, suggesting that scoring on this item may not have accurately captured individuals' experiences. Unlike some of the other categories (e.g. physical abuse), it is more difficult to find objective concrete anchor points for a severity scale for what is actually a felt sense within a relationship. The subjective experience of antipathy is therefore perhaps more difficult to score objectively.

4.3 Childhood trauma and positive symptoms

Significant associations between CT and positive symptoms were found most strongly between EA and delusions of mind reading whilst the association between EA, PD and DOI

were at trend level significance with medium effect sizes. This appears to be consistent with some previous findings suggesting that EA is the category most strongly associated with positive symptoms (Sitko, Bentall, Shevlin, O'Sullivan, & Sellwood, 2014; Varese et al., 2012a). In contrast with what may be considered an established relationship within the literature (McCarthy-Jones, 2011) this study failed to find a significant association between SA and auditory hallucinations. This correlation was approaching significance however (at $p<.05$) and it may be that there was insufficient power in the present study, given the relatively small sample size that was only powered to detect large effects. What should be considered is that in the present sample, in addition to EA being most common, no individual reported experiencing EA without also scoring positively for another type of trauma. This study has therefore more power to detect a significant relationship between EA and positive symptoms and in addition, the significant associations found for this category may have been partly due to a cumulative effect of multiple trauma types. This is supported by a similar pattern of findings for the correlations between total trauma scores and positive symptoms.

PA and PN were also not found to be associated with positive symptoms, in contrast to some previous reports (e.g. Bentall et al., 2014; Fisher et al., 2010). In the current study PN included both emotional and physical neglect and this may have reduced the sensitivity of this category, as other studies have separated these components. The lack of significance may also be due to the sample only being powered to find a large effect and the study may therefore lack power to detect small-medium effects. This is especially likely given that all participants had psychotic symptoms, which in comparison to studies with general population samples may produce a ceiling effect somewhat masking the impact of CT on positive symptoms.

Some other studies have also failed to find a robust association between CT and positive symptoms (e.g. Davidson, Shannon, Mulholland, & Campbell, 2009; Goldstone, Farhall, & Ong, 2012; Sar et al., 2010). Kilcommons and Morrison (2005) highlighted an association between lifetime trauma and positive symptoms, however close inspection of the data indicates no significant association was found between trauma in childhood alone. Whilst meta-analyses have indicated a strong evidence base for the association between CT and later psychopathology, this will reflect evidence from larger epidemiological samples and studies considering more general symptoms. Meta-analysis may also be unduly influenced by non-publication of non-significant results (e.g. Drage, 2012).

The participant impact scores for traumatic experiences were more strongly correlated with positive symptoms than the composite scores, particularly for SA. As a general trend, the current impact scores were associated more highly with positive symptoms than 'impact at the time' scores, with the latter typically not demonstrating an association. It may be argued that

participants' ratings of the current impact may be affected by their mental state and that this may explain the large correlations found. However, this might be expected to be the case across all trauma categories, which was not reflected in the data. One factor not considered in the present study was whether the individual had undergone psychological therapy as this may have affected how they viewed the impact of the trauma on their lives currently. This was pertinent given that the majority of the sample were recruited from a research register for a clinic specialising in CBT for psychosis and many may have had CBT as a result.

4.4 Childhood trauma and dissociation

In line with previous studies, a high proportion of the sample reported experiencing dissociative phenomena (e.g. Braehler et al., 2013; Varese et al., 2012b). The DP/DR subscale of the DES-II was highly associated with all categories of trauma except PA, which is in agreement with previous studies (e.g. Kilcommons & Morrison, 2005). In contrast, correlations with the Amnesia subscale failed to reach significance. The Absorption subscale was significantly correlated with SA only, with non-significant trends found for PN and EA. The lack of significant association between dissociation (as measured by the DES-II) and PA is in contrast with some previous findings in this area (Sar et al., 2010), however the results do agree with studies that have found that EA has the strongest association with dissociative symptoms (Braehler et al., 2013; Schäfer et al., 2006).

The CDS showed a similar pattern of results to the DES DP/DR subscale, although the effect sizes were typically smaller for the CDS. Somatoform dissociation was significantly correlated with EA only with a trend towards significance for PA. The difference in association between EA and PA may reflect differences in the nature of the traumatic experience. Psychological abuse and parental antipathy are typically prolonged experiences, perhaps over many years. In contrast, although physical attacks may be repeated over a long period, it is likely that there are discrete incidents and the mode of responding to these two types of experience may therefore be different, with detachment perhaps more adaptive for EA and compartmentalisation for both PA and EA.

4.5 Dissociation as a mediating factor

The results from this study support previous findings (Perona-Garcelán et al., 2012) as depersonalisation was the only aspect of dissociative experience that acted as a mediator between CT and positive symptoms (hallucinations and DOI). This previous study only considered a total CT score in their analysis however, although CSA was the second most frequent category of abuse reported by their sample. The present study extends this finding

by suggesting that DP/DR only mediates the relationship between SA and hallucinations and that this finding was not replicated for other categories of CT.

The finding that both hallucinations and DOI are similarly mediated by DP/DR is in line with hypotheses that DOI differ from other types of delusion (e.g. grandiosity, delusions of reference or persecution). It is argued that similarly to hallucinations, DOI arise from anomalous experiences, in this case of thought (e.g. loss of sense of ownership of thoughts), for which the individual generates secondary explanations (A Hardy, personal communication, 20 April, 2015).

These results are consistent with the hypothesis that adverse childhood events influence hallucinations via dissociative experiences rendering an individual more vulnerable to psychotic experiences (e.g. Garety et al., 2001; Morrison et al., 2003). The cross-sectional design of the study somewhat limits the conclusions that can be drawn as it is difficult to infer a temporal association between CT and positive symptoms. Causation cannot be inferred from cross-sectional studies; it is possible that those with more severe positive symptoms may reflect on and report childhood experiences more negatively. Similarly it is not possible using cross-sectional studies to evaluate the nature of the association between two variables, for example whether there is a linear or non-linear relationship.

Morrison and colleagues highlight that a sense of detachment and unreality about the self and world appears to be a sequalae particularly of CSA, and that this is most strongly associated with hallucinations but not delusions. Moskowitz and Corstens (2008) propose that the dissociative experiences themselves lead to a separation from private events that are related to CT and which are consequently experienced as hallucinations. It has been suggested that this detachment may be partial, resulting in internally heard voices, or complete, in which certain parts of the self are experienced as external hallucinations (Perona-Garcelán et al., 2012). Internal versus external attribution of auditory hallucinations was not explicitly assessed in the current study, however it may be expected that those with higher depersonalisation experiences would be more likely to make external attributions and this should be considered in future work.

In addition, the more specific finding that it is CSA that affects hallucinations through dissociation is in agreement with the theoretical perspective of the anxiety response to traumatic stress. Exposure to trauma may trigger the 'freeze-flight-fight-fright-flag-faint' sequence. The final two stages of this sequence, flag and faint, are characterised by reduced sympathetic arousal or 'shut-down', and this response is thought to occur when an individual faces extreme disgust (Schauer & Elbert, 2010). These authors propose that specifically contamination or sexual violence/ forced penetration produce an intense disgust reaction. This results biologically in functional sensory deafferentation, motor paralysis and loss of

language functions and psychologically results in dissociation, specifically depersonalisation and derealisation.

In line with previous research (Perona-Garcelán et al., 2012; Varese et al., 2012b), no mediating effect of dissociation was found between any type of CT and delusional symptoms in the current study. This supports current theory that the pathway from CT to paranoia and delusional beliefs may be through other cognitive factors such as reasoning biases, theory of mind deficits and negative schemas about the self, world and others in which the self is weak and vulnerable, others cannot be trusted and the world is dangerous (Bentall & Fernyhough, 2008; Comb, Penn, Wicher & Waldheter, 2007; Garety et al., 2001; Gracie et al., 2007; Morrison, 2001; Lovatt, Mason, Brett & Peters, 2010). Conversely, a recent study reported high levels of DP in a sample of patients with PD and found an association between DP and symptom severity (Černis et al., 2014). Some have argued that individuals with delusions may find it difficult to understand questions about dissociation and to distinguish dissociative from delusional experiences (Steinberg, Cicchetti, Buchanan, Rakfeldt, & Rounsaville, 1994). Obtaining an accurate measurement of dissociative experiences in those with delusions may therefore be problematic, making it difficult to draw any firm conclusions concerning the role of dissociative experiences in those with CT and delusions.

It is important to note that these results may point towards another interpretation. The 99% CIs for the mediation analyses were primarily considered due to multiple comparisons. However examination of the 95% CIs reveals a similar pattern across PN, EA and SA and across the DES DP/DR scale and the CDS. For the majority of the mediation analyses, the lower limit of the 95% CIs was close to, or just above, zero. This consistent pattern of findings may indicate that there is a more general impact of trauma on positive symptoms (hallucinations and delusions) and that this is partially mediated by depersonalisation/ derealisation. Fritz & MacKinnon (2007) provide sample sizes necessary for bootstrapped mediation analyses and suggest a sample size of 78 for medium size associations between CT and dissociation and between dissociation and positive symptoms. The current study is therefore underpowered to detect small-medium indirect effects and should be considered as a preliminary investigation which needs to be substantiated by further research with a larger sample. Considering this limitation, it is not inconceivable that a replication study with increased power would confirm a significant mediating effect of depersonalisation between most trauma subtypes and positive symptoms. This conclusion would support the hypothesis that there is a general impact of CT on symptoms (van Dam et a., 2014; van Nierop et al., 2014).

4.5.1 Different forms of dissociation

It is unclear why different results were found for the DES-II DP/DR subscale and the CDS measure, which was not shown to have a significant mediating effect. It is possible that the DP/DR is a purer measure of dissociative experience, consisting of fewer items. For example, the CDS includes items such as 'my favourite activities are no longer enjoyable', which may be affected by negative symptoms or low mood. On the other hand, it is possible to argue that the CDS is a more comprehensive assessment as it includes both frequency and duration of experiences. It is also time bound, unlike the DES-II, which may also account for the differences between the two measures. Although somatoform dissociation was found to be associated with two categories of abuse (EA & PA) it was not found to be a mediating factor suggesting that it is detachment rather than compartmentalisation that is important in the link between CT and positive symptoms.

This study highlights the importance of assessing and measuring different aspects of dissociation with the relevant subscales of the DES, as suggested by Holmes et al. (2005), rather than the global total score, as the results indicated that these qualitatively different phenomena had different patterns of association with positive symptoms.

4.5.2 Impact of mood

One potential limitation when undertaking mediation analyses is the difficulty in assessing all factors that may have a potentially mediating or moderating effect. In this study, mood (anxiety, depression and stress) was also assessed, as controlling for depressed mood has been noted to attenuate the strength of the relationship between traumatic experiences and psychosis (Bebbington et al., 2004). Entering mood as a covariate into the mediation analyses lead to the mediating effect of DP/DR becoming non-significant. This suggests that although DP/DR may be important in the link between CT and positive symptoms, low mood and anxiety may account for more of the shared variance between these factors. Low mood and anxiety were found to be highly correlated with CT, positive symptoms and dissociative scores. Emotional difficulties have long been recognised as being strongly associated with positive symptoms, and are increasingly recognised as important in their development (Garety et al., 2001).

The association between DP/DR and anxiety is in agreement with previous studies (Baker et al., 2003). A previous mediation analysis reported that anxiety was the only significant predictor of positive symptoms from a range of factors including depression and trauma (Freeman & Fowler, 2009). A more recent study using a worry induction paradigm found that increasing worry leads to experiencing more anomalous experiences (Freeman et al., 2013). It is possible that emotional regulation difficulties resulting from CT, perhaps

through hypothalamic-pituitary-adrenal (HPA) dysregulation or habitual dissociative responding to stress (Read et al, 2015), leads to increased worrying which in itself may produce anomalous experiences akin to DP/DR, the appraisal of which results in positive symptoms.

4.6 Clinical implications

Although the rate of CT in the current sample was likely inflated by sampling bias, given the implication of the results of this study for the involvement of CSA in positive symptoms, it would seem relevant to ensure that all patients are routinely asked about trauma history (Read, Hammersley, & Rudegeair, 2007). Several participants in the current study reported that they had not spoken about their experiences before, despite being in contact with services. In addition, concerns about taking a trauma history from participants were raised in more than one team, highlighting that some clinical staff may be reluctant to explore the individual's history in more detail, which is supported in the literature (Agar, Read, & Bush, 2002). Psycho-education for staff around the link between traumatic experiences and psychosis may be advisable to ensure understanding about the importance of gaining this information. Similarly, individuals presenting to services, particularly those with auditory hallucinations, should be asked about dissociative experiences and low mood. Psycho-education about dissociation, inclusion in the formulation and explicit targeting in therapy may be important for those individuals for whom dissociation is associated with positive symptoms.

4.7 Limitations

The small and heterogeneous nature of the sample limits the conclusions that can be drawn. The length of time participants had been in contact with services was highly varied as was their pharmacological and psychological histories. As discussed, whilst the number of participants recruited met the requirements of the power analysis to detect a large effect, the number of participants within each category of trauma was somewhat lower, meaning the analysis may lack sufficient power to identify smaller effects.

The scale to assess trauma was based purely on participant self-report, which is open to bias and may be influenced by the level of positive symptoms they are currently experiencing. Obtaining collateral information from family members or caregivers may have helped to overcome this limitation, however in many cases this would not have been possible or desirable for the participant, and those who are able to provide corroborating evidence for childhood trauma are rare and atypical. There are studies which indicate that reported trauma histories obtained from those with severe mental difficulties are reliable (Fisher et al., 2009). In addition, it has been shown that there is a tendency for individuals to provide less

information of trauma rather than false-positives (Greenfield et al., 1994; Goodman et al., 1999).

Those who experience CT are at greater risk of re-victimisation as adults (Desai, Arias, Thompson, & Basile, 2002) with evidence suggesting that CT plus adult adversity is particularly harmful (Morgan et al., 2014). Whilst this study aimed to maintain a narrow focus on the impact of childhood trauma, not assessing further victimisation experiences may have lowered the predictive ability of the trauma measures. The cut-off in the current study was 18 years and below; other studies have used 13 or 16 as a cut-off and this is a somewhat arbitrary distinction.

The overlap of traumatic experiences in the current sample made it difficult to clearly distinguish the impact of different types of trauma. Whilst the present study had insufficient numbers, a cluster analysis of individuals according to their trauma profile may be helpful in drawing out the specific impact of different trauma experiences on subsequent development of positive symptoms. Whilst the current study examined the main categories of CT, it was not an exhaustive list and some participants were anxious to mention other negative childhood events that they felt had impacted on their wellbeing. Whilst this study went further in assessing CT than some previous studies, for example by assessing frequency and duration in addition to severity, there are further variables that may have impacted on the link between CT and psychosis (e.g. the relationship to the perpetrator). Whether the individual sought and received support may be an important factor in whether the experience goes on to influence the development of positive symptoms.

Finally, antipsychotic medication may induce effects similar to dissociative experiences (Chiang, Klanin-Yobas, Ignacio, & Ching, 2011; Pec, Bob, & Raboch, 2014). The majority of participants (92%) were taking some form of antipsychotic mediation and this may partly account for the level of dissociation found. Similarly, although participants were asked to respond about experiences when they were not under the influence of any substances, this factor was not controlled for in the present study.

4.8 Conclusion

Despite some limitations, the current study is in line with previous literature in finding some specific associations between CT, positive symptoms of psychosis and dissociative experiences. It extends previous findings by considering both CT and dissociation in close detail. The results suggest that dissociation, specifically depersonalisation and derealisation, does play a mediating role in the relationship between CSA and hallucinations but that low mood and anxiety may account for more of the shared variance between these factors. Assessment of traumatic experiences, dissociation and mood should be a routine aspect of

clinical work with this population and an important consideration in formulation and therapy planning.

There are likely to be a large number of mediating factors in this relationship however, and a more complex model considering additional variables such as those described above may help to further understand the nature of the mediating and moderating influences on the relationship between childhood trauma and psychosis.

References

Agar, K., Read, J., & Bush, J. (2002). Identification Of abuse histories in a community mental health centre: the need for policies and training. *Journal of Mental Health, 11*, 533-546.

Allen, J. G., Coyne, L., & Console, D. A. (1997). Dissociative detachment relates to psychotic symptoms and personality decompensation. *Comprehensive Psychiatry, 38,* 327-334.

Álvarez, M., Masramon, H., Peña, C., Pont, M., Gourdier, C., Roura-Poch, P., et al. (2015). Cumulative effects of childhood traumas: polytraumatization, dissociation and schizophrenia. *Community Mental Health Journal, 51*, 54-62.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Andreasen, N. C. (1984). *The Scale for the Assessment of Positive Symptoms (SAPS).* The University of Iowa, Iowa City, IA.

Andreasen, N. C., Arndt, S., Alliger, R., Miller, D., & Flaum, M. (1995). Symptoms of schizophrenia. *Archives of General Psychiatry*, *52*, 341–351.

Anderson, S. L., Tomoda, A., Vincow, E. S., Valente, E., Polcari, A., & Teicher, M. H. (2008). Preliminary evidence for sensitive periods in the effect of childhood sexual abuse on regional brain development. *The Journal of Neuropsychiatry and Clinical Neurosciences, 20*, 292-301.

Andrew, E. M., Gray, N. S., & Snowden, R. J. (2008). The relationship between trauma and beliefs about hearing voices: a study of psychiatric and non-psychiatric voice hearers. *Psychological Medicine, 38*, 1409-1414.

Arseneault, L., Cannon, M., Fisher, H. L., Polanczyk, G., Moffitt, T. E., & Caspi, A. (2011). Childhood trauma and children's emerging psychotic symptoms: A genetically sensitive longitudinal cohort study. *American Journal of Psychiatry, 168*, 65-72.

Bak, M., Krabbendam, L., Janssen, I., de Graad, R., Vollebergh, W., & can Os, J. (2005). Early trauma may increase the risk for psychotic experiences by impacting on emotional response and perception of control. Acta *Psychiatrica Scandinavica, 112,* 360-366.

Baker, D., Hunter, E., Lawrence, E., Medford, N., Patel, M., Senior, C., et al. (2003). Depersonalisation disorder: clinical features of 204 cases. *British Journal of Psychiatry, 182,* 428-433.

Bebbington, P. E., Bhugra, D., Brugha, T., Singleton, N., Farrell, M., Jenkins, R., et al., (2004). Psychosis, victimisation and childhood disadvantage: Evidence from the second British National Survey of Psychiatric Morbidity. *The British Journal of Psychiatry, 185*, 220-226.

Bechdolf, A., Thompson, A., Nelson, B., Cotton, S., Simmons, M. B., Amminger, G. P., et al. (2010). Experience of trauma and conversion to psychosis in an ultra-high-risk (prodromal) group. *Acta Psychiatrica Scandinavica, 121*, 377-384.

Bendall, S., Jackson, H. J., Hulbert, C. A., & McGorry, P. D. (2008). Childhood trauma and psychotic disorders: A systematic, critical review of the evidence. *Schizophrenia Bulletin, 3*4, 568-579.

Bentall, R. P., & Fernyhough, C. (2008). Social predictors of psychotic experiences: Specificity and psychological mechanisms. *Schizophrenia Bulletin, 34*, 1012-1020.

Bentall, R. P., de Sousa, P., Varese, F., Wickham, S., Sitko, K., Haarmans, M., et al., (2014). From adversity to psychosis: pathways and mechanisms form specific adversities to specific symptoms. *Social Psychiatry and Psychiatric Epidemiology, 49*, 1011-1022.

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability and validity of a dissociation scale. *Journal of Nervous and Mental Disease, 174*, 727-735.

Bifulco, A., Brown, G. W., & Harris, T. O. (1994). Childhood experience of care and abuse (CECA): A retrospective interview measure. *Journal of Child Psychology and Psychiatry, 35,* 1419-1435.

Bracha, H. S. (2004). Freeze, flight, fight, fright, faint: Adaptationist perspectives on the acute stress response spectrum. *CNS Spectrums, 9*, 679–685.

Braehler, C., Valiquette, L., Holowka, D., Malla, A. K., Joober, R., Ciampi, A., et al. (2013). Childhood trauma and dissociation in first-episode psychosis, chronic schizophrenia and community controls. *Psychiatry Research 210*, 36-42.

Brown, R. J. (2013). Dissociation and somatoform disorders. In F. Kennedy, H. Kennerley, D. Pearson (Eds.), *Cognitive behavioural approaches to the understanding and treatment of dissociation* (pp. 133-147). East Sussex: Routledge.

Campbell, M. L. C., & Morrison, A. P. (2007). The relationship between bullying, psychotic-like experiences and appraisals in 14-16 year olds. *Behaviour Research and Therapy, 45,* 1579-1591.

Carlson, E.B., & Putnam, F.W. (1993). An update on the Dissociative Experiences Scale. *Dissociation, 6,* 16-27.

Černis, E., Dunn, G., Startup, H., Kingdon, D., Wingham, G., Pugh, K., et al. (2014). Depersonalization in patients with persecutory delusions. *The Journal of Nervous and Mental Disease, 202*, 752-758.

Charalambides, M., Ward, T., Garety, P., Jackson, M., Morgan, C., & Peters, E. (2014). Victimisation in people with psychotic experiences with and without a 'need for care'. Paper presented at BABCP Annual Conference, Birmingham.

Chiang, Y.L., Klanin-Yobas, P., Ignacio, J., & Ching, C. M. L. (2011). The impact of antipsychotic side effects on attitudes towards medication In people with schizophrenia and related disorders. *Journal of Clinical Nursing, 20*, 2172-2182.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York, NY: Academic Press.

Comb, D.R., Penn, D.L., Wicher, M., & Waldheter, E. (2007). The Ambiguous Intention Hostility Questionnaire (AIHQ) a new measure for evaluating hostile social-cognitive biases in paranoia. *Cognitive Neuropsychiatry, 12,* 128–143.

Connor, C., & Birchwood, M. (2012). Abuse and dysfunctional affiliations in childhood: an exploration of their impact on voice-hearers' appraisals of power and expressed emotion. *Psychosis: Psychological, Social and Integrative Approaches, 4,* 19-31.

Conus, P., Cotton, S., Schimmelmann, B. G., McGorry, P. D., & Lambert, M. (2010). Pre-treatment and outcome correlates of sexual and physical trauma in an epidemiological cohort of first episode psychosis patients. *Schizophrenia Bulletin, 36*, 1105-1114.

Cougnard, A., Marcelis, M., Myin-Germeys, I., de Graaf, R., Vollebergh, W., Krabbendam, L., et al., (2007). Does normal developmental expression of psychosis combine with environmental risk to cause persistence of psychosis? A psychosis proneness-persistence model. *Psychological Medicine, 37*, 513-527.

Crawford, J. R., & Henry, J. D. (2003). The Depression Anxiety Stress Scales (DASS): Normative data and latent structure in a large non-clinical sample. *British Journal of Clinical Psychology, 42*, 111-131.

Cutajar, M. C., Mullen, P. E., Ogloff, J. R. P., Thomas, S. D., Wells, D. L., & Spataro, J. (2010). Schizophrenia and other psychotic disorders in a cohort of sexually abused children. *Archives of General Psychiatry, 67,* 1114-1119.

Davidson, G., Shannon, C., Mulholland, C., & Campbell, J. (2009). A longitudinal study of the effects of childhood trauma on symptoms and functioning of people with severe mental health problems. *Journal of Trauma & Dissociation, 10*, 57-68.

De Loore, E., Drukker, M., Gunther, N., Feron R., Deboutte, D., Sabbe, B., et al. (2007). Childhood negative experience and subclinical psychosis in adolescence: a longitudinal general population study. *Early Intervention in Psychiatry, 1,* 201-207.

Desai, S., Arias, I., Thompson, M. P., & Basile, K. C. (2002). Childhood victimization and subsequent adult revictimization assessed in a nationally representative sample of women and men. *Violence and Victims, 17*, 639-653.

Drage, L. (2012). *Investigating potential mediators in the relationship between psychosis and childhood trauma*. Unpublished doctoral dissertation, University of Manchester, UK.

Fisher, H. L., Appiah-Kusi, E., & Grant, C. (2012). Anxiety and negative self schemas mediate the association between childhood maltreatment and paranoia. *Psychiatry Research, 196,* 323-324

Fisher, H. L., Craig, T. K., Fearon, P., Morgan, K., Dazzan, O., Lappin, J., Hutchinson, G., et al. (2009). Reliability and comparability of psychosis patients' retrospective reports of childhood abuse. *Schizophrenia Bulletin, 37,* 546-553.

Fisher, H. L., Jones, P. B., Fearon, P., Craig, T. K., Dazzan, P., Morgan, K., et al. (2010). The varying type, timing and frequency of exposure to childhood adversity on its association with adult psychotic disorder. *Psychological Medicine, 40,* 1967-1978.

Fowler, D., Freeman, D., Steel, C., Hardy, A., Smith, B., Hackmann, C., et al. (2006). The catastrophic interaction hypothesis: How does stress, trauma, emotion and information processing abnormalities lead to psychosis? In A. Morrison, & W. Larkin (Eds.), *Trauma and Psychosis* (pp. 101-124). Routledge, Hove.

Freeman, D., & Fowler, D. (2009). Routes to psychotic symptoms: Trauma, anxiety and psychosis-like symptoms. *Psychiatry Research, 169*, 107-112.

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample sixe to detect the mediated effect. *Psychological Science, 18*, 233-239.

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of the positive symptoms of psychosis. *Psychological Medicine, 31*, 189-195.

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of positive symptoms of psychosis. *Psychological Medicine, 31,* 189-195.

Gil, A., Gama, C. S., de Jesus, D. R., Lobato, M. I., Zimmer, M., & Belmonte-de-Abreu, P. (2009). The association of child abuse and neglect with adult disability in schizophrenia and the prominent role of physical neglect. *Child Abuse and Neglect, 33*, 618-624.

Goff, D. C., Brotman, A. W., Kindlon, D., Waites, M., & Amico, E. (1991). Self-reports of childhood abuse in chronically psychotic patients. *Psychiatry Research, 37*, 73-80.

Goldstone, E., Farhall, J., & Ong B. (2012). Modelling the emergence of hallucinations: early acquired vulnerabilities, proximal life stressors and maladaptive psychological processes. *Social Psychiatry and Psychiatric Epidemiology, 47,* 1367-1380.

Gómez, J. M., Kaehler, L. A., & Freyd, J. K. (2014). Are hallucinations related to betrayal trauma exposure? A three-study exploration. *Psychological Trauma: Theory Research, Practice and Policy, 6*, 675-682.

Goodman, L. A., Thompson, K. M., Weinfurt, K., Corls, S., Ackert, P., Mueser, K. T., et al. (1999). Reliability of reported of violent victimization and posttraumatic stress disorder among men and women with serious mental illness. *Journal of Traumatic Stress, 12*, 587-599.

Gracie, A., Freeman, D., Green, S., Garety, P. A., Kuipers, E., Hardy, A., et al. (2007). The association between traumatic experiences, paranoia and hallucinations: a test of the predictions of psychological models. *Acta Psychiatrica Scandinavica, 116*, 280-289.

Greenfield, S. F., Strakowski, S. M., Tohen, M., Batson, S. C., & Kolbrener, M. L. (1994). Childhood abuse in first-episode psychosis. *British Journal of Psychiatry, 164*, 831-834.

Gumley, A., Braehler, C., Laithwaite, H., MacBeth, A., & Gilbert, P. (2010). A compassion focused model of recovery after psychosis. *International Journal of Cognitive Therapy, 3*, 186-201.

Hardy, A., Fowler, D., Freeman, D., Smith, B., Steel, C., Evans, J., et al. (2005). Trauma and hallucinatory experiences in psychosis. *The Journal of Nervous and Mental Disease, 193*, 501-507.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation and Conditional Process Analysis. A regression-based approach.* The Guildford Press, New York.

Holmes, E. A., Brown, R. J., Mansell, W., Fearon, R. P., Hunter, E. C. M., Frasquilho, F., et al. (2005). Are there two qualitatively distinct forms of dissociation? A review and some clinical implications. *Clinical Psychology Review, 25*, 1-23.

Holowka, D. W., King, S., Saheb, D., Pukall, M., & Brunet, A. (2003). Childhood abuse and dissociative symptoms in adult schizophrenia. *Schizophrenia Research, 60,* 87-90.

Hunter, E.C.M. (2013) Understanding and treating depersonalisation disorder in Kennedy, F. Kennerley, H and Pearson, D (Eds.) Cognitive *Behavioural Approaches to the understanding and treatment of Dissociation*. East Sussex: Routledge

Hunter, E. C. M., Phillips, M. L., Chalder, T., Sierra, M., & David, A. S. (2003). Depersonalisation disorder: a cognitive-behavioural conceptualisation. *Behaviour Research and Therapy, 41*, 1451-1467.

Janssen, I., Krabbendam, L., Bak, M., Hanssen, M., Vollbergh, W., de Graad, R., & van Os, J. (2004). Childhood abuse as a risk factor for psychotic experiences. *Acta Psychiatrica Scandinavica, 109,* 38-45.

Kay, S. R., Fiszbein, A., & Opler, L. A. (1987). The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bulletin, 13*, 261-276.

Kenny, D. A., & Judd, C. M. (2014). Power anomalies in testing mediation. *Psychological Science, 25*, 334-339.

Kilcommons, A. M., & Morrison, A. P. (2005). Relationships between trauma and psychosis: an exploration of cognitive and dissociative factors. *Acta Psychiatrica Scandinavica, 112*, 351-359.

Laferrière-Simard, M., Lecomte, T., & Ahoundova, L. (2014). Empirical testing of criteria for dissociative schizophrenia. *Journal of Trauma and Dissociation, 15*, 91-107.

Lang, T. A., & Secic, M. (2006). *How to report statistics in medicine: Annotated guidelines for authors, editors and reviewers, 2nd Edition*. American College of Physicians, Philadelphia, PA.

Lataster, T., van Os, J., Drukker, M., Henquet, C., Feron, F., Gunther, N., et al. (2006). Childhood victimisation and developmental expression of non-clinical delusional ideation and hallucinatory experiences. *Social Psychiatry and Psychiatric Epidemiology, 41,* 423-428.

Lee, W. E., Kwok, C. H. T., Hunter, E. C. M., Richards, M., & David, A. S. (2012). Prevalence and childhood antecedents of depersonalization syndrome in a UK birth cohort. *Social Psychiatry and Psychiatric Epidemiology, 47,* 253-261.

Longden, E., Madill, A., & Waterman, M. G. (2012). Dissociation, trauma and the role of lived experience: toward a new conceptualisation of voice hearing. *Psychological Bulletin, 138,* 28-76.

Lovatt, A., Mason, O., Brett, C., & Peters, E. (2010). Psychotic-like experiences, appraisals and trauma. *The Journal of Nervous and Mental Disease, 198*, 813-819.

Lovibond, S.H., & Lovibond, P.F. (1995). *Manual for the Depression Anxiety Stress Scales 2nd Edition*. Sydney: Psychology Foundation.

Lysaker, P. H., & LaRocco, V. A. (2008). The prevalence and correlates of trauma-related symptoms in schizophrenia spectrum disorder. *Comprehensive Psychiatry, 49*, 330-334.

Maes, J. P. M. A., & Van Gool, A. R. (2008). Misattribution of agency in schizophrenia: An exploration of historical first-person accounts. *Phenomenology and the Cognitive Sciences, 7,* 191-202.

Matheson, S. L., Shepherd, A. M., Pinchbeck, R. M., Laurens, K. R. & Carr, V. J., (2013). Childhood adversity in schizophrenia: a systematic meta-analysis. *Psychological Medicine, 43*, 225-238.

McCarthy-Jones, S. (2011). Voices from the storm: A critical review of quantitative studies of auditory verbal hallucinations and childhood sexual abuse. *Clinical Psychology Review, 31*, 983-992.

Michal, M., Beutel, M. E., Jordan, J., Zimmerman, M., Wolters, S., & Heidenreich, T. (2007). Depersonalization, mindfulness and childhood trauma. *Journal of Nervous and Mental Disease, 195*, 693-696.

Michal, M., Wiltink, J., Till, Y., Wild, P. S., Blettner, M. & Beutel, M. E. (2011). Distinctiveness and overlap of depersonalization with anxiety and depression in a community sample: Results from the Gutenberg Heart Study. *Psychiatry Research, 188*, 264-268.

Morgan, C. & Fisher, H. (2007). Environmental factors in schizophrenia: Childhood trauma – a critical review. *Schizophrenia Bulletin, 33*, 3-10.

Morgan, C., Reininghaus, U., Fearon, P., Hutchinson, G., Morgan, K., Dazzan, P. et al., (2014). Modelling the interplay between childhood and adulthood adversity in pathways to psychosis: initial evidence from the AESOP study. *Psychological Medicine, 44,* 407-419.

Morrison, A.P. (2001). The interpretation of intrusions in psychosis: An integrative cognitive approach to hallucinations and delusions. Behavioural and Cognitive Psychotherapy, 29, 257-276.

Morrison, A. P., Frame, L. & Larkin, W. (2003). Relationships between trauma and psychosis: A review and integration. *British Journal of Clinical Psychology, 42*, 331-353.

Moskowitz, A., Barker-Collo, S., & Ellson, I. (2005). Replication of dissociation-psychosis link in New Zealand students and inmates. *Journal of Nervous and Mental Disease, 193*, 722-727.

Moskowitz, A., & Corstens, D. (2008). Auditory Hallucinations: Psychotic Symptom or Dissociative Experience? *Journal of Psychological Trauma, 6*, 35-63.

Newman Taylor, K., & Sambrook, S. (2013). The Role of Dissociation in Psychosis; Implications for Clinical Practice. In F. Kennedy, H. Kennerley, D. Pearson (Eds.), *Cognitive behavioural approaches to the understanding and treatment of dissociation* (pp.119-132). East Sussex: Routledge.

Nijenhuis, E. R. S. (2010). The scoring and interpretation of the SDQ-20 and SDQ-5. *Activitas Nervosa Superior, 52*, 24-28

Nijenhuis, E. R. S., Spinhoven, P., Van Dyck, R., Van der Hart, O., & Vanderlinden, J. (1996). The development and the psychometric characteristics of the Somatoform Dissociation Questionnaire (SDQ-20). *Journal of Nervous and Mental Disease, 184*, 688-694.

Norman, R. M. G., Malla, A. K., Cortese, L., & Diaz, F. (1996). A study of the interrelationship between and comparative interrater reliability of the SAPS, SANS and PANSS. *Schizophrenia Research, 19, 73-85.*

Noyes, R. & Kletti, R. (1977). Depersonalisation in response to life-threatening danger. *Comprehensive Psychiatry, 18,* 375-384.

O'Connor, T. G. & Rutter, M. (2000). Attachment disorder behavior following early severe deprivation: extension and longitudinal follow-up. English and Romanian adoptees study team. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*, 703-712.

Offen, L. Waller, G., & Thomas, G. (2003). Is reported childhood sexual abuse associated with the psychopathological characteristics of patients who experience auditory hallucinations? *Child Abuse & Neglect, 27*, 919-927.

Pec, O., Bob, P. & Raboch, J. (2014). Dissociation in schizophrenia and borderline personality disorder. *Neuropsychiatric Disease and Treatment, 10*, 487-491.

Peralta, V., Cuesta, M. J., & De Leon, J. (1995). Positive and negative symptoms/syndromes in schizophrenia: reliability and validity of different diagnostic systems. *Psychological Medicine, 25, 43-50.*

Perona-Garcelán, S., Carrascoso-López, F., Garćia-Montes, J. M., Ductor-Recuerda, M. J., López Jiménez, A. M., Vallina-Fernández, O. et al., (2012). Dissociative experiences as mediators between childhood trauma and auditory hallucinations. *Journal of Traumatic Stress, 25*, 323-329.

Perona-Garcelán, S., Carrascoso-López, F., García-Montes, J. M., Vallina-Fernández, O., Pérez-Álvarez, M., Jesús Ductor-Recuerda,, M., et al. (2011). Depersonalization as a mediator in the relationship between self-focused attention and auditory hallucinations. *Journal of Trauma & Dissociation, 12,* 535-548.

Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods, 16,* 93-115.

Prescott, A., Bank, L., Reid, J. B., Knutson J. F., Burraston, B. O. & Eddy, J. M. (2000). The veridicality of punitive childhood experiences reported by adolescents and young adults. *Child Abuse & Neglect, 24*, 411-423.

Read, J., Agar, K., Argyle, N., Aderhold, V. (2003). Sexual and physical abuse during childhood in predictors of hallucinations, delusions and thought disorder. *Psychology and Psychotherapy, 76*, 1-22.

Read, J., Fink, P. J., Rudegeair, T., Felitti, V. & Whitfield, C. L. (2008). Child maltreatment and psychosis: A return to a genuinely integrated bio-psycho-social model. *Clinical Schizophrenia and Related Psychoses, 7*, 235-254.

Read, J., Hammersley, P., & Rudegeair, T. (2007). Why, when and how to ask about childhood abuse. *Advances in Psychiatric Treatment, 13*, 101-110.

Read, J., Perry, B. D., Moskowitz, A., Connolly, J. (2001). The Contribution of Early Traumatic Events to Schizophrenia in Some Patients: A Traumagenic Neurodevelopmental Model. *Psychiatry: Interpersonal and Biological Processes, 64,* 319-345.

Read, J., van Os, J., Morrison, A. P. & Ross, C. A. (2005). Childhood trauma, psychosis and schizophremia: A literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica, 112*, 330-350.

Ross, C. A. (2004). Dissociation and psychosis: Conceptual issues. *Journal of Psychological Trauma, 6*, 21-34.

Ross, C. A., Anderson, G., & Clark, P. (1994). Childhood abuse and the positive symptoms of schizophrenia. *Hospital Community Psychiatry, 45*, 489–491.

Ross, C. A., & Keyes, B. (2004). Dissociation and schizophrenia. *Journal of Trauma and Dissociation, 5*, 69-83.

Ross, C. A., & Keyes, B. (2009). Clinical features of dissociative schizophrenia in China. *Psychosis: Psychological, Social and Integrative Approaches, 1*, 51-60.

Ross, C. A., Miller, S. D., Bjornson, L., Reagor, P., Fraser, G. A., & Anderson, G. (1991). Abuse histories in 102 cases of multiple personality disorder. *Canadian Journal of Psychiatry, 36,* 97-101.

Rubino, I. A., Nanni, R. C., Pozzi, D. M. & Siracusano, A. (2009). Early adverse experiences in schizophrenia and unipolar depression. *Journal of Nervous and Mental Disease, 197,* 65-68.

Sass, L., Pienkos, E., Nelson, B., & Medford, N. (2013). Anomalous self-experience in depersonalization and schizophrenia: A comparative investigation. *Consciousness and Cognition, 22*, 430-441.

Sar, V., Taycan, O., Bolat, N., Özmen, M., Duran, A., Öztürk, E. et al. (2010). Childhood trauma and dissociation in schizophrenia. *Psychopathology, 43,* 33-40.

Saxe, G. N., van der Kolk, B. A., Chinman, G., Hall, K., Lieberg, G., & Schwartz, J. (1993). Dissociative disorders in psychiatric inpatients. *American Journal of Psychiatry, 150*, 1037-1042.

Schäfer, L., Harfst, T., Anderhold, V., Briken, P., Lehmann, M., Moritz, S. et al. (2006). Childhood trauma and dissociation in female patients with schizophrenia spectrum disorders - an exploratory study. *Journal of Nervous and Mental Diseases, 194*, 135-138.

Schauer, M., & Elbert, T. (2010). Dissociation following traumatic stress: etiology and treatment. *Zeitschrift fur Psychologie, 218,* 109-127.

Schreier, A., Wolke, D., Thomas, K., Horwood, J., Hollis, C., Gunnell, D., et al. (2009). Prospective study of peer victimization in childhood and psychotic symptoms in a non-clinical population at age 12 years. *Archives of General Psychiatry, 66*, 527-536.

Sheffield, J. M., Williams, L. E., Blackford, J. U., & Heckers, S. (2013). Childhood sexual abuse increases risk of auditory hallucinations in psychotic disorders. *Comprehensive Psychiatry, 54*, 1098-1104.

Shevlin, M., Dorahy, M. J., & Adamson, G, (2007a). Childhood traumas and hallucinations: An analysis of the National Comorbidity Survey. *Journal of Psychiatric Research, 41,* 222-228.

Shevlin, M., Dorahy, M. J., & Adamson, G, (2007b). Trauma and psychosis: An analysis of the National Comorbidity Survey. *American Journal of Psychiatry, 164*, 166-169.

Sierra, M., Medford, N., Wyatt, G. & David, A. D. (2012). Depersonalization disorder and anxiety: A special relationship? *Psychiatry Research, 197*, 123-127.

Sierra, M., & Berrios, G. E. (2000). The Cambridge Depersonalisation Scale: a new instrument for the measurement of depersonalisation. *Psychiatry Research, 93*, 153-164.

Simeon, D., Guralnik, O., Schmeidler, J., Sirof, B., & Knutelska, M. (2001). The role of childhood interpersonal trauma in depersonalization disorder. *American Journal of Psychiatry, 158,* 1027-1033.

Sitko, K., Bentall, R. P., Shevlin, M., O'Sullivan, N., & Sellwood, W. (2014). Associations between specific psychotic symptoms and specific childhood adversities are mediated by attachment styles: An analysis of the National Comorbidity Survey. *Psychiatry Research, 217*, 202-209.

Skehan, D., Larkin, W. & Read, J. (2012). Childhood adversity and psychosis: a literative review with clinical and societal implications. *Psychoanalysis, Culture & Society, 17,* 373-391.

Sourander, A., Jensen, P., Rönning, J. A., Niemelä, S., Sillanmäki, L., Kumpulanien, K. et al. (2007). What is the early adulthood outcome of boys who bully or are bullied in childhood? The Finnish "From a boy to a man" study. *Pediatrics, 120*, 397-404.

Spauwen, J., Krabbendam, L., Lieb, R., Wittchen, H., & van Os, J. (2006). Impact of psychological trauma on the development of psychotic symptoms: relationship with psychosis. *British Journal of Psychiatry, 188*, 527-533.

Steel, C., Fowler, D., & Holmes, E. A. (2005). Trauma-related intrusions and psychosis: an information processing account. *Behavioural Cognitive Psychotherapy, 33*, 139–152.

Steinberg, M., Cicchetti, D., Buchanan, J., Rakfeldt, J. & Rounsaville, B. (1994). Distinguishing between multiple personality disorder (dissociative identity disorder) and schizophrenia using the Structured Clinical Interview for DSM-IC Dissociative Disorders. *Journal of Nervous and Mental Disease, 182*, 495-502.

Stockdale, G. D., Gridley, B. E., Balogh, D. W., & Holtgraves, T. (2002). Confirmatory factor analysis of single- and multiple-factor competing models of the Dissociative Experiences Scale in a nonclinical sample. *Assessment, 9,* 94-106.

Susser, E. & Widom, C. (2012). Still searching for lost truths about the bitter sorrows of childhood. *Schizophrenia Bulletin, 38*, 672-675.

Trotta, A., Di Forti, M., Mondelli, V., Dazzan, P., Pariante, C., David, A., et al. (2013). Prevalence of bullying victimisation amongst first-episode psychosis patients and unaffected controls. *Schizophrenia Research, 150,* 169-175.

Trueman, D. (1984). Anxiety and depersonalisation and derealisation experiences. *Psychological Reports, 54,* 91–96.

van Dam, D. S., van Nierop, M., Viechtbauer, W., Velthorst, E., van Winkel, R., Bruggeman, R. et al. (2015). Childhood abuse and neglect in relation to the presence and persistence of psychotic and depressive symptomatology. *Psychological Medicine, 45,* 1363-1377.

van Ijzendoorn, M. H., & Schuengel, C. (1996). The measurement of dissociation in normal and clinical populations: meta-analytic validation of the Dissociative Experiences Scale (DES). *Clinical Psychology Review, 16*, 365-382.

van Nierop, M., Lataster, T., Smeets, F., Gunther, N., van Zelst, C., de Graaf, R. et al., (2014). Psychopathological mechanisms linking childhood traumatic experiences to risk of psychotic symptoms: Analysis of a large, representative population-based sample. *Schizophrenia Bulletin, 40,* S123-S130.

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W. et al. (2012a). Childhood adversities increase the risk of psychosis: A meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophrenia Bulletin, 38*, 661-671.

Varese, F., Barus, E., & Bentall, R. P. (2012b). Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychological Medicine, 42*, 1025-1036.

Vogel, M., Schatz, D., Spitzer, C., Kuwert, P., Möller, B., Freyberger, H. J. et al. (2009a). A more proximal impact of dissociation than of trauma and posttraumatic stress disorder on schneiderian symptoms in patients diagnosed with schizophrenia. *Comprehensive Psychiatry, 50*, 128-134.

Vogel, M., Spitzer, C., Kuwert, P., Möller, B., Freyberger, H. J., & Grabe, H. J. (2009b). Association of childhood neglect with adult dissociation in schizophrenic inpatients. *Psychopathology, 42*, 124-130.

Whitfield, C. L., Dube, S. R., Felitti, V. J., & Anda, R. F. (2005). Adverse childhood experiences and hallucinations. *Child Abuse and Neglect, 29,* 797-810.

Wigman, J. T. W., van Winkel, R., Raaijmakers, Q. A. W., Ormel, J., Verhulst, F. C., Reijneveld, S. A., et al. (2011). Evidence for a persistent, environment-dependent and deteriorating subtype of subclinical psychotic experiences: a 6-year longitudinal general population study. *Psychological Medicine, 41*, 2317-2329.

Wolke, D., Lereya, S. T., Fisher, H. L., Lewis, G. & Zammit, S. (2014). Bullying in elementary school and psychotic experiences at 18 years: a longitudinal population-based cohort study. *Psychological Medicine, 44*, 2199-2211.

Appendices

Appendix 1 – Evidence for an association between different categories of CT and positive symptoms

Appendix 2 – Ethics letters

Appendix 3 – Recruitment flowchart

Appendix 4 – Victimisation Experiences Scale

Appendix 5 – Victimisation Experiences Scale scoring

Appendix 6 – Participant questionnaires

Appendix 7 – Supplementary analyses

Appendix 8 – Participant information sheet

Appendix 1 – Evidence for an association between different categories of CT and positive symptoms

Trauma type	Evidence
Physical abuse	A high incidence of childhood PA has been noted in adults experiencing psychosis, with estimates falling between 35-49% (Morgan & Fisher, 2007; Read et al., 2008). Some authors have reported that maternal PA is the most robust indicator of psychosis (Fisher et al., 2010; Shelvin et al., 2007b; Rubino, Nanni, Pozzi & Siracusano, 2009), although no impact of paternal PA has been reported (Fisher et al., 2010).
Sexual abuse	CSA appears to be specifically related to auditory hallucinations (Goldstone, Farhall & Ong, 2012; Hardy et al,2005; Kilcommons & Morrison, 2005; Sheffield, Williams, Blackford & Heckers, 2013). One study reported that CSA involving penetration, but not other forms, was significantly associated with development of psychosis (Cutajar et al., 2010). Others reported that CSA was not significantly more common in the psychosis group than the controls (Fisher et al., 2010). In a review McCarthy-Jones (2011) concluded that there is a clear association between CSA and auditory verbal hallucinations but that evidence is as yet lacking to draw a clear causal relationship.
Emotional abuse	The literature suggests that less overt forms of child abuse are also related to adult psychosis, with some studies reporting a stronger link for emotional abuse than CSA and PA (e.g. Whitfield et al., 2005; Varese et al., 2012a). Studies typically report a high incidence of EA in those diagnosed with psychosis, ranging from 32-94% (Read et al., 2008).
Neglect and antipathy	This area has typically received less attention in the literature than other forms of abuse. A recent study reported rates of 77% for emotional neglect and 65% for physical neglect in a sample of 74 individuals diagnosed with schizophrenia (Connor & Birchwood, 2012). Maternal neglect and antipathy has been reported to be approximately twice as common in individuals with psychosis as controls, although paternal antipathy and neglect were not associated with psychosis symptoms (Fisher et al., 2010).
Bullying	Individuals with psychosis have been found to be twice as likely to report childhood bullying as controls, with a significant association with adult psychosis symptoms reported for women but not men (Trotta et al., 2013). In a clinical sample, Hardy et al. (2005) found that the bullying was as likely to be associated with hallucinations as CSA. Others report that the association does not remain when controlling for factors such as other negative life events (Bebbington et al., 2004) and parental education (Sourander et al., 2007). Some have failed to find any association (Bentall et al., 2012). Discrepancies may reflect difference in measurement of victimisation and psychosis symptoms across studies or variation in the chronicity/severity of experience across samples. Bullying has been found to be significantly associated with a predisposition to psychotic–like experiences in adolescents (Campbell & Morrison, 2007; Lataster et al., 2006; Wolke, Lereya, Fisher, Lewis, & Zammit, 2014) with a dose-response effect (Schreier et al., 2009). Findings are inconsistent as a large population study failed to find a significant association between bullying and subclinical psychosis in adolescents after controlling for confounding variables (De Loore et al., 2007).

Appendix 2 – Ethical approval letter

NHS
Health Research Authority

NRES Committee London - Camberwell St Giles
Bristol Research Ethics Centre
Level 3, Block B
Whitefriars Lew ins Mead
Bristol BS1 2NT

Telephone: 0117 342 1333
Facsimile: 0117 342 0445

08 April 2014

Dr Emmauelle Peters
Reader in Clinical Psychology &
PICuP Director King's College London
King's College London,
Institute of Psychiatry
De Crespigny Park
London SE5 8AF

Dear Dr Peters

Study title:	**The role of cognitive processes in the relationship between trauma and psychosis**
REC reference:	**14/LO/0336**
IRAS project ID:	**140965**

Thank you for your letter of 4th April 2014. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 01 April 2014

Documents received

The documents received were as follows:

Document	*Version*	*Date*
Covering Letter		04 April 2014
Other: Flow Chart 'How long should I keep my research data'		
Participant Information Sheet: Main Participant Information Sheet	2.0	04 April 2014

Approved documents

The final list of approved documentation for the study is therefore as follows:

Document	*Version*	*Date*
Advertisement	1.0	29 November 2013
Covering Letter		11 February 2014
Covering Letter		04 April 2014

GP/Consultant Information Sheets	1.0	26 November 2013
Investigator CV	Dr E Peters	15 December 2011
Investigator CV	Hardy	31 January 2014
Investigator CV	Sykes	
Investigator CV	Davis	
Investigator CV	Hunter	
Letter from Sponsor		09 August 2013
Other: Lightstream relaxation technique script		
Other: Scale for the Assessment of Positive Symptoms	1.0	17 November 2013
Other: Victimisation Experiences Schedule	1.0	17 November 2013
Other: Brief Negative Symptom scale - Manual	1.0	17 November 2013
Other: Brief Negative Symptom Scale - Scoresheet	1.0	17 November 2013
Other: Flow Chart 'How long should I keep my research data'		
Participant Consent Form	1.0	01 November 2013
Participant Information Sheet: Brief Participant Information Sheet	1.0	26 November 2013
Participant Information Sheet: Participant de-brief sheet	1.0	01 November 2013
Participant Information Sheet: Main Participant Information Sheet	2.0	04 April 2014
Protocol	1.0	31 January 2014
Questionnaire: Participant questionnaire pack	validated	
REC application		
Referees or other scientific critique report		14 October 2012
Summary/Synopsis	1.0	17 November 2013

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

14/LO/0336 **Please quote this number on all correspondence**

Yours sincerely

T. Fairman

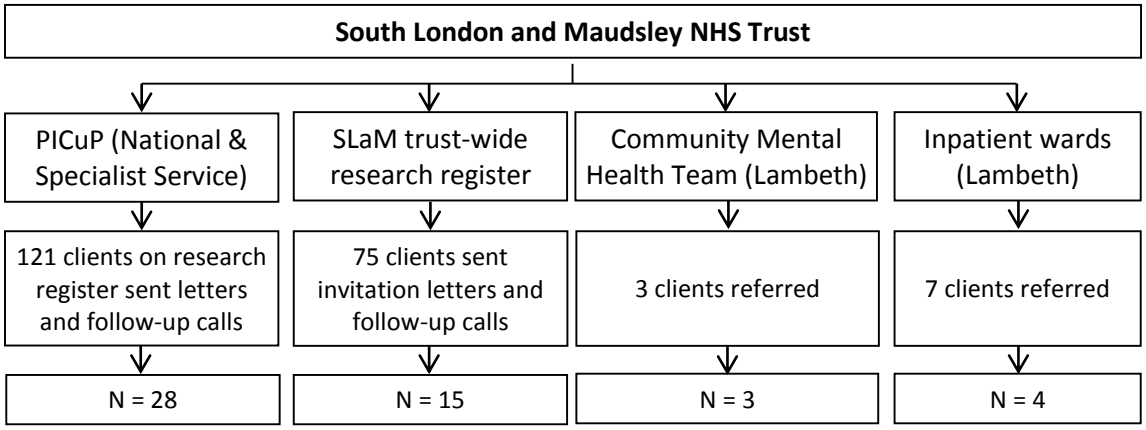
Mr Thomas Fairman
REC Manager

E-mail: nrescommittee.london-camberwellstgiles@nhs.net

Copy to: *Mr Keith Brennan,*
Ms Jennifer Liebscher, King's College London, Institute of Psychiatry

Appendix 3 – Recruitment flowchart

Twenty-eight participants were recruited from a research register held by a specialist Psychological Interventions Clinic for Outpatients with Psychosis (PICuP) and 15 from the SLaM research register. Two clients were recruited from a low-secure male rehabilitation unit and a further two from an inpatient recovery and intensive support unit. Three clients were recruited from a community mental health team.



Appendix 4 – Victimisation Experiences Scale (Charalambides et al., 2014)

VICTIMISATION EXPERIENCES SCHEDULE

Introduction to the Task (Note to researchers: The purpose of this introduction is to a) fully inform participants in advance of the sensitive nature of the questions to follow b) be clear about the participants' right not to answer questions c) reiterate the rationale of asking these questions d) be explicit about confidentiality).

"OK, we are now going to move on to something different. Hopefully you remember we have discussed that part of the study would involve questions relating to challenging and traumatic events. We are asking these questions to everybody taking part in the study- however we understand that the questions can be quite personal, so it is important to say clearly that you can choose not to answer any questions that make you feel uncomfortable. It is also important to repeat that the information that you give is confidential and your name will be anonymised and will not be used. The only time we would need to break this confidentiality would be if there was any indication of current risk to yourself or others- in this case we would have a duty of care to disclose this information. If this was to happen we would speak to you about this in the first instance. Have you got any questions about this?

Just before we start I want to make it really clear that by asking these questions I am not trying to suggest in any way that people only have mystical/spiritual/ unusual [insert person's own word] because of past trauma. We know that for some of the people we are talking to, their experiences are not related to traumatic events at all and some may find their experiences help them to cope with past difficult events. The idea of the study is to try to understand whether any of these traumatic events make the difference for those people who are distressed by their experiences. We are not assuming anything but we hope that by understanding the role of traumatic events we can find ways to help those who are distressed".

All of the questions that I am going to ask you are about experiences that you may or may not have had during childhood and by 'childhood' I mean during any time when you were aged 0-18 years old.

Participant Number	
Researcher	
Date completed	

SECTION 1: INTERPERSONAL TRAUMA

[note to researcher- only ask prompts if information is not spontaneously given]

BULLYING

I am now going to ask you a few questions about any teasing and bullying you may have experienced in childhood (so when you were aged 0-18 years). By the terms teasing and bullying we mean when people of a similar age to you:

Said mean and hurtful things, made fun of you or called you mean and hurtful names; Completely ignored or excluded you from their group of friends or left you out of things on purpose; Hit, kicked or shoved you, or locked you in a room; Told lies or spread rumours about you; Other hurtful things. (N.B. We don't call it teasing or bullying when it is done in a friendly or playful way.)

Did you have any such experiences? **Yes/No**

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Were there any other times that it happened?
Yes/No

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Impact (0-10) Now

PSYCHOLOGICAL ABUSE

I am now going to ask you some questions about some difficult experiences you may or may not have experienced during childhood (0-18 years).

Were you ever tormented or treated cruelly by a member of a household you lived in whilst you were growing up (0-18)? Did anyone try to frighten you? Did anyone try to humiliate you? (e.g. belittle you in front of others, ridicule you) Yes/No

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

PARENTAL NEGLECT

Whilst growing up (0-18) were any of your material, social, educational or emotional needs ever not met by your parents/ caregivers? (e.g. a lack of interest in friends, schoolwork, not being able to go to your parent if you were upset, and not providing basic material needs (eg: clothes)) Yes/No

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

PARENTAL/CAREGIVER ANTIPATHY

Did you ever feel like your parents/caregiver did not like you? (e.g. were they hard to please, very critical of you, cold and distant, did you feel that they did not want you) Yes/No

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

PHYSICAL ABUSE

Were you ever slapped, hit or physically hurt by a parent / caregiver or someone in your household in a way which was sufficient to cause you harm?

Were you ever hit repeatedly with an implement (such as a belt or stick) or punched, kicked or burnt by parent/ carer/ someone in the household? Yes/No

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

THREAT OR ACTUAL ASSAULT

The next few questions are about whether you were ever threatened or assaulted during your childhood (0-18 years).

Did you have any such experiences? **Yes/No**

If yes: Did anyone threaten to attack you with a weapon (a gun, knife, or some other weapon) or without a weapon but with the intent to kill or seriously harm you during your childhood?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

Did anyone (including family members or friends) ever attack you with a weapon (a gun, knife, or some other weapon) or without a weapon but with the intent to kill or seriously harm you, regardless of whether you ever reported it? **Yes/No**

If yes **Age:**	Can you tell me what happened? How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes **Age:**	Can you tell me what happened? How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

SEXUAL ABUSE

I am now going to ask you some questions about unwanted sexual experiences during childhood.

Did you ever have any such experiences? Yes/No

If yes: Did anyone ever force or persuade you to have sexual intercourse against your wishes? Yes/No

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

Can you think of any other upsetting sexual experiences with an adult who was related to you or someone in authority e.g. teacher?

Yes/No

If yes **Age:**	Can you tell me what happened? How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes **Age:**	Can you tell me what happened? How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

Has anyone ever used physical force or the threat of physical force to make you have some type of unwanted sexual contact with them?

Yes/No

If yes **Age:**	Can you tell me what happened? How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10)	
				Then	Now

War trauma

I am now going to ask you some questions about any experiences of being involved in a war you may have had during your childhood (0-18 years).

Did you ever have any such experiences? **Yes/No**

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Did anything else happen?

If yes	Can you tell me what happened?
Age:	How old were you when it started?
Frequency:	How often did it happen?
Duration:	What age were you when it stopped?

Scoring:

Age started	Age stopped	Duration (years/months)	Frequency	Impact (0-10) Then	Now

PARTICIPANT RESPONSE CARD

Impact:

"How much did this event/experience affect you at the time?"

0 1 2 3 4 5 6 7 8 9 10
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
Not at all A little Somewhat Quite a lot Totally

"How much does this event/experience affect you now?"

0 1 2 3 4 5 6 7 8 9 10
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
Not at all A little Somewhat Quite a lot Totally

Appendix 5 – Victimisation Experiences Scale scoring

VES Scoring

Frequency
0 = never
1 = rarely (1-2 x)
2 = occasionally (2 +, less than monthly)
3 = frequently (monthly +)
4 = very frequently (weekly +)
5 = daily

Duration
0 = N/A
1 = acute (event lasted under a day)
2 = chronic (pervasive)

Severity
0 = N/A
1 = mild
2 = mild/moderate
3 = moderate
4 = moderate/severe
5 = severe

(F+D+S = COMPOSITE SCORE / 12)

Impact then / 10
Impact now /10

- If multiple examples in a trauma category - rate the highest
- If participant reports it began as far back as they remember = less than 4 years old
- If lasted past 18 years = greater than 18 years

BULLYING

Severity	Violence/aggression	Exclusion	Verbal
0	None	None	None
1	Having belongings stolen/hidden. Intimidation	Has one or more friends	Occasional name calling (not personally directed) being laughed at (whispering, sniggering)
2	Threats of violence without being acted on	Occasionally excluded	Prolonged name calling that is targeted at personal characteristics. Being pressured into doing something.
3	Pushed around without significant injury (bruises or scratches only). Being locked in a room.	Excluded from one group	As above, plus having rumours spread about S.
4	Punching, hitting, kicking to cause injury (not prolonged each time, e.g. one punch etc.)	Excluded from all social groups at school	As above
5	Severe, prolonged episodes causing significant injury	Excluded from multiple social arenas	As above

PSYCHOLOGICAL ABUSE

Severity	Physical means of achieving submission	Emotional means of achieving submission
0	None	None
1	Occasional deliberate deprivation to cause distress/as punishment (e.g. no dinner). Occasional deprivation of valued object	Occasional/one-off name calling or pointing out faults
2	Permanent deprivation of valued object (toy/pet)	Forced to do degree/level of tasks not expected of a child. Private humiliation/shaming. Made to feel fear through physical threat
3	Deprived of physical needs for longer periods (food, water, light, warmth). Inflicting distress/discomfort (e.g. having to stand for long periods)	Treated differently to siblings. Involvement in illicit activities (e.g. carrying drugs). Public humiliation/shaming. Failure to protect from abuse from another person.
4	Inflicting marked distress/discomfort (e.g. put in cold bath for prolonged period). Often deprived of physical needs for long periods	Witnessing domestic violence. Threat of abandonment. Terrorising by deliberately playing on child's fear (e.g. leaving in the dark). Emotional blackmail. Exploitative acts (e.g. pornographic photos)
5	Extreme (prolonged) deprivation of physical needs. Inflicting severe distress/discomfort (e.g. forced to eat faeces)	Actively blaming the child for the abuse. Terrorising by threats of violence. Enslavement/forced into prostitution (dehumanisation)

NEGLECT

Severity	
0	None
1	One aspect of needs (social, emotional, physical/material, educational) only partially or inconsistently met
2	One aspect not met, or two partially/inconsistently met
3	Two aspects not met, or three partially/inconsistently met
4	Three aspects not met or four partially/inconsistently met
5	No needs met

Examples for each factor:

Social	Emotional	Physical/material	Educational
Not interested in friends. Not allowing friends to visit. Not facilitating adequate socialisation opportunities from a young age. Family isolated.	Not being able to go to P if upset. No physical comfort. Lack of affection, warmth, praise. Not noticing if S upset. Inappropriate modelling of how to manage emotions. Shutting emotions down; failure to understand emotions (lack of mentalisation). Low supervision/poor boundaries.	Not enough to eat/sufficient nutritional value in food. Not enough clothes/ clothes old, ill-fitting, broken. General hygiene, e.g. bathing, dental care, unwashed clothes. House cold, insufficient bedding/blankets etc.	No interest in school achievement. Not helping with homework. Not helping younger children get schoolbag ready. Not attending parents evening. Not providing space/time to learn within home.

PARENTAL CARE/ANTIPATHY

Severity	
0	None
1	Care-giver removed, distant, disinterested
2	Felt-sense S does not belong, fit in or feeling different. Negative comparisons made with siblings. Not able to please parents.
3	Care-giver cold, actively critical. Targeted arguments with child (often over personal characteristics of child)
4	Care-giver actively shuns or excludes S and encourages other family members to do so. Narrative in family that S is a 'problem child', a nuisance or a burden.
5	S made explicitly aware that no-one in family wants, likes or cares about them. Actively say they wish S was not around. Talking as if S was dead.

PHYSICAL ABUSE

Severity	Where on the body	Act	Harm caused
0		None	None
1	Anywhere except head or face	Pushed, grabbed, shoved, slap with open hand.	No mark/minimal marking
2	Anywhere except head or face	Hit with object without causing injury (e.g. slipper on bottom, ruler on hand)	No lasting mark
3	Head/face and body	Attacked with hand – hard	Obvious bruising

		enough to cause injury. Or soft use of implement.	
4	All of body	Kicked, bitten, burned, scalded, punched, hit with fist. Hit with implement. Object thrown that could cause damage (e.g. glass)	Severe bruising, broken skin, burns
5	All of body	Attacked using a knife/gun. As above (4) but prolonged duration.	Broken bones and teeth. Multiple injuries. Loss of consciousness.

THREAT OR ACTUAL ASSAULT

Severity	Verbal	Physical	Harm caused
0	None	None	None
1	Verbal threat without weapon. S does not act on threat	None	None
2	Verbal threat, S concerned and behaviour affected. Racial abuse.	Entrapment (e.g. blocking exit, in car) where could be possibility of harm. Dog to intimidate.	None
3	-	Kicked, punched, slapped, hit by one person	Moderate injury, e.g. bruising, broken skin.
4	-	Kicked, punched, slapped, hit by multiple people. Threatened with a weapon	Moderate/severe injury. Think going to die.
5	-	Assaulted with a weapon. As above (3, 4) plus strangling/throttling.	Severe injuries. Loss of consciousness. Think going to die.

SEXUAL ASSAULT

Severity	
0	None
1	Purposefully being exposed to sexual material/activity. Perpetrator shows genitals. Sexual kissing. Being photographed. Being stalked/followed/chased. Pushing themselves against S.
2	Touching genitals (S and perpetrator)
3	Masturbating (S and perpetrator)
4	Any form of penetration, including oral sex. Single perpetrator, no violence.
5	Violent penetration. Multiple perpetrators. Significant injury sustained. Humiliating/degrading acts.

WAR TRAUMA

Severity	
0	None
1	Being aware of presence of threat, opposition, regime change, visible army presence
2	Hearing about (distant) violence, significant change to life, being displaced
3	People going missing, family/friends tortured/raped - not witnessed
4	Witnessing violence towards others (inc. rape and death), imprisonment/abduction, being forced into combat. Bombing.
5	Sustaining severe injuries, imminent possibility of death, being tortured, raped.

Appendix 6 – Participant questionnaire pack

Trauma and psychosis: the role of cognitive processes

Participant Questionnaire Pack

Participant Number	
Researcher	
Date completed	
Data entered	

1. This questionnaire consists of 28 questions about experiences you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influences of alcohol or drugs. To answer the questions, please determine to what degree the experience described in the question applies to you and select the number to show what percentage of the time you have the experience. 100% means 'always', 0% mean 'never' with 10% increments in between.

Never 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% Always

DES1	Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES2	Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was just said. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES3	Some people have the experience of finding themselves in a place and having no idea how they got there. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES4	Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES5	Some people have the experience of finding new things among their belongings that they do not remember buying. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES6	Some people sometimes find that they are approached by people that they do not know who call them by another name or insist that they have met them before. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES7	Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something, and they actually see themselves as though they were looking at another person. Circle a number what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES8	Some people are told that they sometimes do not recognize friends or family members. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES9	Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Circle a number to show what percentage of the important events in your life you have no memory for. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

DES10	Some people have the experience of being accused of lying when they do not think that they have lied. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES11	Some people have the experience of looking in a mirror and not recognizing themselves. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES12	Some people sometimes have the experience of feeling that other people, objects, and the world around them are not real. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES13	Some people sometimes have the experience of feeling that their body does not seem to belong to them. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES14	Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES15	Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES16	Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES17	Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES18	Some people sometimes find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES19	Some people find that they sometimes are able to ignore pain. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES20	Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES21	Some people sometimes find that when they are alone they talk out loud to themselves. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES22	Some people find that in one situation they may act so differently compared to another situation that they feel almost as if they were two different people. Circle a number to show what percentage of the time

	this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES23	Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social interactions, etc.). Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES24	Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES25	Some people sometimes find evidence that they have done things that they do not remember doing. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES26	Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES27	Some people sometimes find that they hear voices inside their head which tell them to do things or comment on things that they are doing. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
DES28	Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. Circle a number to show what percentage of the time this happens to you. 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

2. This questionnaire describes strange and 'funny' experiences that normal people may have in their daily life. We are interested in their: (a) frequency, i.e. how often you have had these experiences **over the last six months** and (b) their approximate duration. For each question, please circle the answers that suit you best. If you are not sure, give your best guess.

		Frequency	**Duration** **In general, it lasts**:
CDS1	Out of the blue, I feel strange, as if I were not real or as if I were cut off from the world.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS2	What I see looks 'flat' or 'lifeless', as if I were looking at a picture.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS3	Parts of my body feel as if they didn't belong to me.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS4	I have found myself ***not being frightened at all*** in situations which normally I would find frightening or distressing.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS5	My favourite activities are no longer enjoyable.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS6	Whilst doing something I have the feeling of being a "detached observer" of myself.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS7	The flavour of meals no longer gives me a feeling of pleasure or distaste.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*

		Frequency	**Duration** **In general, it lasts**:
CDS8	My body feels very light, as if it were floating on air.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS9	When I weep or laugh, I do not seem ***to feel*** any emotions at all.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS10	I have the feeling of ***not having any thoughts at all***, so that when I speak it feels as if my words were being uttered by an 'automaton'.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS11	Familiar voices (including my own) sound remote and unreal.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS12	I have the feeling that my hands or my feet have become larger or smaller.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS13	My surroundings feel detached or unreal, as if there was a veil between me and the outside world.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS14	It seems as if things that I have recently done had taken place a long time ago. For example anything which I have done this morning feels as if it were done weeks ago.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS15	Whilst fully awake I have "visions" in which I can ***see*** myself outside, as if I were looking at my image in a mirror.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*

		Frequency	**Duration** **In general, it lasts**:
CDS16	I feel detached from memories of things that have happened to me - as if I had not been involved in them.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS17	When in a new situation, it feels as if I have been through it before.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS18	Out of the blue, I find myself not feeling any affection towards my family and close friends.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS19	Objects around me seem to look smaller or further away.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS20	I cannot feel properly the objects that I touch with my hands for, it feels ***as if it were not me*** who were touching it.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS21	I do not seem able to picture things in my mind, for example, the face of a close friend or a familiar place.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS22	When a part of my body hurts, I feel so detached from the pain that if feels as if it were 'somebody else's pain.'	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS23	I have the feeling of being outside my body.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*

		Frequency	**Duration** **In general, it lasts**:
CDS24	When I move it doesn't feel as if I were in charge of the movements, so that I feel 'automatic' and mechanical as if I were a 'robot'.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS25	The smell of things no longer gives me a feeling of pleasure or dislike.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS26	I feel so detached from my thoughts that they seem to have a 'life' of their own.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS27	I have to touch myself to make sure that I have a body or a real existence.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS28	***I seem to have lost*** some bodily sensations (e.g. of hunger and thirst) so that when I eat or drink, it feels an automatic routine.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*
CDS29	Previously familiar places look unfamiliar, as if I had never seen them before.	0 = *never* 1 = *rarely* 2 = *often* 3 = *very often* 4 = *all the time*	1 = *few seconds* 2 = *few minutes* 3 = *few hours* 4 = *about a day* 5 = *more than a day* 6 = *more than a week*

3. This questionnaire asks about different physical symptoms or body experiences, which you may have had either briefly or for a longer time. Please indicate to what extent these experiences apply to you **in the past year**.

   For each statement, please circle the number in the first column that best applies to you. The possibilities are:
   1 = this applies to me NOT AT ALL
   2 = this applies to me A LITTLE
   3 = this applies to me MODERATELY
   4 = this applies to me QUITE A BIT
   5 = this applies to me EXTREMELY

   If a symptoms or experience applies to you, please indicate whether a *physician* has connected it with a *physical disease*. Indicate this by circling the word YES or NO in the column, 'Is the physical cause known?' If you circle YES, please write the physical cause (if you know it) on the line.

   Example:

Sometimes	**Extent to which the symptom or experience applies to you**					**Is the physical cause known?**		
My teeth chatter	1	2	3	4	5	NO	YES	namely_____
I have cramps in my calves	1	2	3	4	5	NO	YES	namely_____

   If you have circled a 1 in the first column (i.e. This applies to me NOT AT ALL), you do NOT have to respond to the question about whether the physical cause is known.

   On the other hand, if you circle 2, 3, 4, or 5, you MUST circle NO or YES in the 'Is the physical cause known?' column.

   Please do not skip any of the 20 questions. Thank you for your cooperation.

1 = this applies to me NOT AT ALL
2 = this applies to me A LITTLE
3 = this applies to me MODERATELY
4 = this applies to me QUITE A BIT
5 = this applies to me EXTREMELY

	Sometimes	**Extent to which the symptom or experience applies to you**					**Is the physical cause known?**
SDQ1	I have trouble urinating	1	2	3	4	5	NO YES namely_____
SDQ2	I dislike tastes that I usually like (Women: at times *other than* during pregnancy or monthly periods)	1	2	3	4	5	NO YES namely_____
SDQ3	I hear sounds from nearby as if they were coming from far away	1	2	3	4	5	NO YES namely_____
SDQ4	I have pain while urinating	1	2	3	4	5	NO YES namely_____
SDQ5	My body, or a part of it, feels numb	1	2	3	4	5	NO YES namely_____
SDQ6	People and things look bigger than usual	1	2	3	4	5	NO YES namely_____
SDQ7	I have an attack that resembles an epileptic seizure	1	2	3	4	5	NO YES namely_____
SDQ8	My body, or a part of it, are insensitive to pain	1	2	3	4	5	NO YES namely_____
SDQ9	I dislike smells I usually like	1	2	3	4	5	NO YES namely_____
SDQ10	I feel pain in my genitals (at times *other than* sexual intercourse)	1	2	3	4	5	NO YES namely_____
SDQ11	I cannot hear for a while (as if I am deaf)	1	2	3	4	5	NO YES namely_____
SDQ12	I cannot see for a while (as if I am blind)	1	2	3	4	5	NO YES namely_____
SDQ13	I see things around me differently than usual (for example, as if looking through a tunnel, or merely seeing part of an object)	1	2	3	4	5	NO YES namely_____
SDQ14	I am able to smell much *better* or *worse* (even though I do not have a cold)	1	2	3	4	5	NO YES namely_____
SDQ15	It is as if my body, or part of it, has disappeared	1	2	3	4	5	NO YES namely_____
SDQ16	I cannot swallow, or can only swallow with great difficulty	1	2	3	4	5	NO YES namely_____
SDQ17	I cannot sleep for nights on end, but remain very active during the day	1	2	3	4	5	NO YES namely_____
SDQ18	I cannot speak (or only with great eff ort) or I can only whisper	1	2	3	4	5	NO YES namely_____
SDQ19	I am paralyzed for a while	1	2	3	4	5	NO YES namely_____
SDQ20	I grow stiff for a while	1	2	3	4	5	NOYES namely_____

BNSS
SAPS

4. Below is a list of problems and complaints that people sometimes have in response to stressful life experiences.

'In order to complete this questionnaire, I wonder if you could tell me when you first came into contact with mental health services?

What was happening at that time that meant you came into contact with mental health services? What sort of experiences or symptoms were you having?

Would you be able to tell me very briefly about the course of your contact with mental health services and your symptoms since that time?

Looking back over this time since your first contact with mental health services, what is your worst moment or memory in relation to your symptoms or to the treatment you have received? We are looking for you most distressing memory currently. That is, you may have experiences events in the past which were very distressing but no longer trouble you so much. For this questionnaire, we are looking for a memory which affects you now, so that for example you avoid thinking about it, or avoid reminders of it, or you remember it when you don't want to.

Please answer the following questions whilst thinking about this experience and how it has impacted on you in **the past month**.

		Not at all	A little bit	Moderately	Quite a bit	Extremely
PCL1	Repeated, disturbing *memories*, *thoughts*, or *images* of a stressful experience from the past?					
PCL2	Repeated, disturbing *dreams* of a stressful experience from the past?					
PCL3	Suddenly *acting* or *feeling* as if a stressful experience *were happening again* (as if you were reliving it)?					
PCL4	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
PCL5	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					
PCL6	Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?					
PCL7	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					

		Not at all	A little bit	Moderately	Quite a bit	Extremely
PCL8	Trouble *remembering important parts* of a stressful experience from the past?					
PCL9	Loss of interest in things that you used to enjoy?					
PCL10	Feeling *distant* or *cut off* from other people?					
PCL11	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
PCL12	Feeling as if your *future* will somehow be *cut short*?					
PCL13	Trouble falling or staying asleep?					
PCL14	Feeling irritable or having angry outbursts?					
PCL15	Having difficulty concentrating?					
PCL16	Being *"super alert"* or watchful on guard?					
PCL17	Feeling *jumpy* or easily startled?					

VES

5. Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. We've been talking about upsetting experiences you had in childhood. Now I want you to think about which one of these upsetting experiences causes you the most distress currently.
   I would then like you to hold this upsetting experience in your mind whilst you answer some questions about its impact on you in the last month. Which upsetting experience are you going to answer the questions about? Is this the upsetting event from childhood which causes you the most distress currently?

   Experience.....
   .....

   Please read each one carefully and put and X in the box to indicate how much you have been bothered by that problem **in the past month**.

		Not at all	A little bit	Moderately	Quite a bit	Extremely
PCL1	Repeated, disturbing *memories*, *thoughts*, or *images* of a stressful experience from the past?					
PCL2	Repeated, disturbing *dreams* of a stressful experience from the past?					
PCL3	Suddenly *acting* or *feeling* as if a stressful experience *were happening again* (as if you were reliving it)?					
PCL4	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
PCL5	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					
PCL6	Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?					
PCL7	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					
PCL8	Trouble *remembering important parts* of a stressful experience from the past?					
PCL9	Loss of interest in things that you used to enjoy?					
PCL10	Feeling *distant* or *cut off* from other people?					
PCL11	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
PCL12	Feeling as if your *future* will somehow be *cut short*?					

		Not at all	A little bit	Moderately	Quite a bit	Extremely
PCL13	Trouble falling or staying asleep?					
PCL14	Feeling irritable or having angry outbursts?					
PCL15	Having difficulty concentrating?					
PCL16	Being *"super alert"* or watchful on guard?					
PCL17	Feeling *jumpy* or easily startled?					

6. Please read each statement and circle a number 0, 1, 2, or 3 which indicates how much the statement applied to you **over the last week**. There are no right or wrong answers. Do not spend too much time on any statement.

		Did not apply to me at all	Applied to me to some degree, or some of the time	Applied to me a considerable degree, or a good part of the time	Applied to me much, or most of the time
DASS1	I found myself getting upset by quite trivial things	0	1	2	3
DASS2	I was aware of dryness of my mouth	0	1	2	3
DASS3	I couldn't seem to experience any positive feeling at all	0	1	2	3
DASS4	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
DASS5	I just couldn't seem to get going	0	1	2	3
DASS6	I tended to over-react to situations	0	1	2	3
DASS7	I had a feeling of shakiness (e.g. legs going to give way)	0	1	2	3
DASS8	I found it difficult to relax	0	1	2	3
DASS9	I found myself in situations that made me so anxious I was most relieved when they ended	0	1	2	3
DASS10	I felt that I had nothing to look forward to	0	1	2	3
DASS11	I found myself getting upset rather easily	0	1	2	3
DASS12	I felt that I was using a lot of nervous energy	0	1	2	3
DASS13	I felt sad and depressed	0	1	2	3
DASS14	I found myself getting impatient when I was delayed in any way (e.g. lifts, traffic lights, being kept waiting)	0	1	2	3
DASS15	I had a feeling of faintness	0	1	2	3
DASS16	I felt that I had lost interest in just about everything	0	1	2	3
DASS17	I felt I wasn't worth much as a person	0	1	2	3
DASS18	I felt that I was rather touchy	0	1	2	3
DASS19	I perspired noticeably (e.g. hands sweaty) in the absence of high temperatures or physical exertion	0	1	2	3
DASS20	I felt scared without any good reason	0	1	2	3

		Did not apply to me at all	Applied to me to some degree, or some of the time	Applied to me a considerable degree, or a good part of the time	Applied to me much, or most of the time
DASS21	I felt that life wasn't worthwhile	0	1	2	3
DASS22	I found it hard to wind down	0	1	2	3
DASS23	I had difficulty in swallowing	0	1	2	3
DASS24	I couldn't seem to get any enjoyment out of the things I did	0	1	2	3
DASS25	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
DASS26	I felt down-hearted and blue	0	1	2	3
DASS27	I found that I was very irritable	0	1	2	3
DASS28	I felt I was close to panic	0	1	2	3
DASS29	I found it hard to calm down after something upset me	0	1	2	3
DASS30	I feared that I would be "thrown" by some trivial but unfamiliar task	0	1	2	3
DASS31	I was unable to become enthusiastic about anything	0	1	2	3
DASS32	I found it difficult to tolerate interruptions to what I was doing	0	1	2	3
DASS33	I was in a state of nervous tension	0	1	2	3
DASS34	I felt I was pretty worthless	0	1	2	3
DASS35	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
DASS36	I felt terrified	0	1	2	3
DASS37	I could see nothing in the future to be hopeful about	0	1	2	3
DASS38	I felt that life was meaningless	0	1	2	3
DASS39	I found myself getting agitated	0	1	2	3
DASS40	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
DASS41	I experienced trembling (e.g. in the hands)	0	1	2	3
DASS42	I found it difficult to work up the initiative to do things	0	1	2	3

Appendix 7 – Supplementary analyses

Age of trauma

The age at which the abuse began and ended was not significantly correlated with symptom severity.

Sex differences

Childhood trauma

There was no significant difference in the mean number of traumas suffered between men and women (*U*=379.5, *p*=.08). Similarly, there was no difference in the composite trauma scores between men and women for PN (*U*=392.0, *p*=.05), EA (*U*=367.5, *p*=.137), PA (*U*=261.5, *p*=.510) and total trauma score (*U*=382.5, *p*=.074). A significant difference was found in the severity of SA reported (*U*=417.5, *p*=.008) with women reporting more severe experiences. 35.7% of male participants and 71.4% of female participants reported experiencing CSA.

Positive symptoms

No significant differences in severity scores across symptoms were found for male and female participants.

Dissociative experiences

No significant differences between male and female participants were found for DES amnesia, DES absorption, CDS and SDQ scores. Women scored significantly higher on the DES DP/DR subscale (*U*=396.0, *p*=.039).

Duration of illness

Current participant age and duration of contact with services were not correlated with any trauma severity scores.

Number of trauma experiences endorsed

Analyses revealed no significant correlations between the number of traumas an individual had suffered and severity of positive symptoms.

Appendix 8 – Participant information sheet

Trauma and psychosis: the role of cognitive processes

Participant Information sheet

We would like to invite you to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. This study will contribute towards the clinical qualification for the researchers who are clinical psychologists in training (Charlotte Sykes and Emma Davis).

Thank you for reading this information.

Part 1

Why is the study being done?

Research suggests that some people who experience unusual symptoms (such as hearing voices, seeing visions, having beliefs that they may be harmed or other unusual beliefs) have experienced difficult or upsetting things during their childhood, and there is some evidence to suggest that they may be a link between the two.

We want to understand how symptoms related to early experiences of distress might be linked to these difficulties so that we can learn what contributes to ongoing distress and problems in daily life. We hope that a greater understanding may contribute to improving the care provided to people experiencing difficulties.

Why have I been invited?

We are inviting you to participate because you have had difficulties in your childhood and currently experience distressing symptoms. Alternatively you may have been contacted as your name is on research register you have agreed to be part of, or you may have seen an advert for this research and contacted us. At this point we have no other information about you, and will not access any further information without your consent.

Do I have to take part?

It is up to you whether or not you decide to take part. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you can leave the study at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, **will not** affect any other aspect of your current or future care.

What will happen to me if I take part?

If you are interested in taking part you will meet with a researcher to complete an interview about some of your childhood experiences and current symptoms, and to complete some questionnaires. We expect that this meeting will take between two and three hours in total. This can be completed in one session or over two sessions if you would prefer shorter meetings.

The interview with the researcher will ask you to think about certain past experiences you may have had as a child where someone has acted harmfully towards you (such as bullying, physical harm or sexual abuse). These will be in the form of answering structured questions and apart from this you will not have to talk about your memories in detail. You will be asked to keep an upsetting memory in mind while completing a questionnaire about any current distress you feel in relation to it (for example nightmares, or remembering the event when you don't want

to). You will also be asked to hold this memory in mind whilst completing a questionnaire about any unusual feelings or sensations you had at the time of the difficult experiences. Finally you will be asked to complete some questionnaires assessing any unusual experiences you may be experiencing currently and assessing your current mood.

We will ask you if we can audio-record your meetings with the researcher. This is to ensure that we capture your information accurately and to standardise the interview procedure. This information will be kept secure (see below). You may decline permission for us to record at any time and still take part in the research.

Will I be reimbursed for any expenses?
Yes. You will receive £20 for completing the research assessment, to cover any expenses.

What are the disadvantages and risks of taking part?
As described above, you will be required to answer questions about difficult childhood experiences that you may have experienced. Although you will not need to describe these experiences in lots of detail, you will need to answer some questions about them and bringing it to mind may be distressing for some people. You will be free to withdraw from the project at any time. In the event that you do become upset by thinking about past events, we will help you to manage these feelings by using simple relaxation strategies commonly used to reduce distress (e.g. involving breathing slowly, visualising a calming scene or muscle relaxation) at the end of the meeting. You will also be offered the opportunity to do one of these relaxation strategies at the end of the research assessment. If necessary the researcher will seek further support for you through your services and you will be provided with contact details for the researcher and mental health professionals involved in your care.

What are the possible benefits of taking part?
If you feel that it would be helpful, we can give a summary of the information you share with the researchers to the mental health professionals involved in your care so that you do not need to repeat information to them. We will not do this if you do not want us to. Also, the information we get from this project may help us to better understand how to help people with similar problems and develop better treatments.

What if there is a problem?
Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in Part 2.

This completes Part 1 of the Information Sheet. If the information in Part 1 has interested you and you are considering participants, please continue to read the additional information Part 2 before making any decision.

Part 2
What if there is a problem?
If you have a concern about any aspect of this study you should speak to the researchers who will do their best to answer your questions (contact details below). If you remain unhappy and wish to complain formally, you can do this through the NHS complaints procedure. Details can be obtained from your local hospital or team base.

Will my taking part in the project be confidential?
We will inform your clinical team that you are taking part in the study. Otherwise, all the information collected about you will be kept strictly confidential and will conform to the Data

Protection Act of 1998 with respect to data collection, storage and destruction. After you have completed the questionnaires and interview your name will be removed from all the information collected so that it is anonymous and you cannot be recognised from it. Paper copies of questionnaires will be kept securely by the researchers in a locked filing cabinet in a locked office.

One exception to this is if you give information that suggests you or someone else is at risk of harm. If this occurs we will need to share the information with your health care team.

What will happen to the results of the study?
The results will be included in Emma Davis' and Charlotte Sykes' doctoral theses as part of their training at King's College London to become clinical psychologists. We will also aim to publish the results in a scientific journal. We will make the results available to all participants in a non scientific format. You will not be identifiable in any of these reports. If you would like to receive a summary of the results you will be asked to indicate this in the consent form.

Who has reviewed the study?
All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study have been reviewed and given a favourable opinion by Camberwell St Giles Research Ethics Committee.

Who is organising the research?
The project is organised by the South London and Maudsley NHS Trust and the Institute of Psychiatry at King's College London.

Contact for further information
If you require further information about the study you may contact one of the following people:

Name and title	Role in the project	Contact details
Charlotte Sykes Trainee Clinical Psychologist	Researcher	
Emma Davis Trainee Clinical Psychologist	Researcher	
Dr Elaine Hunter	Academic supervisor	
Dr Amy Hardy	Academic supervisor	

Thank you for taking the time to read this information and for agreeing to take part in the study.

Service Evaluation Project

Pilot of a new opt-in system in an IAPT service

Supervised by Dr Grace Wong, Consultant Clinical Psychologist

Southwark Psychological Therapies IAPT service,

South London and Maudsley NHS Trust

Abstract

The Improving Access to Psychological Therapies (IAPT) scheme aims to provide more accessible mental health services that are socially inclusive and located in the community for people experiencing mild to severe depression and anxiety. IAPT services are commissioned on the basis that they are able to demonstrate effective delivery of evidence-based treatments, with specific targets used to evaluate the number of people referred for treatment, the number who have entered and completed treatment and are moving towards recovery. Like many services, the Southwark IAPT service uses an 'opt-in' procedure for processing new referrals, where clients are required to actively opt-in for assessment and treatment. Whilst this process helps to reduce non-attendance, it has the potential to disadvantage and exclude certain groups of clients. The current audit was undertaken in the Southwark IAPT service to examine the impact of a new system for processing referrals, employing a more flexible approach taking client preference into account. Waiting times were examined and client satisfaction data was considered, in addition to staff feedback of implementing the new procedure. The analysis revealed that the new process significantly reduced waiting times from referral to assessment in the service and was largely acceptable to clients and staff. The implications of these findings and limitations of the audit are discussed.

Table of Contents

List of Figures

List of Tables

1 Introduction

There is growing recognition that a substantial proportion (17%) of the population in England is affected by common mental health problems, namely different forms of anxiety and depression (Bebbington et al., 2009), and they are the single largest cause of disability in the UK (World Health Organisation, 2008). In addition to the distress and suffering of individuals and families affected by mental health problems, the economic impact of mental illness is substantial (Sainsbury Care for Mental Health, 2003). The cost of services, lost productivity at work and reduced quality of life is estimated to cost approximately £105.2 billion per year in England (Centre for Mental Health, 2010). The recent Department of Health policy 'No health without mental health' highlights that this cost is predicted to increase substantially (McCrone, Dhanasiri, Patel, Knapp, & Lawton-Smith, 2008) and suggests that 'improving the quality and efficiency of current services' may be one solution towards reducing costs and improving outcomes (Department of Health [DoH], 2011a, p4). This policy sets out six mental health objectives, one of which was that 'more people will have a positive experience of care and support' (DoH, 2011b, p24). Ensuring that support and treatment for mental health problems is accessible for all people who would benefit is therefore a critical issue for services to address both locally and nationally.

1.1 Improving Access to Psychological Therapies (IAPT)

A study in 2000 indicated that around 76% of individuals with common mental health problems were not receiving any form of treatment (Singleton, Bumpstead, O'Brien, Lee & Meltzer, 2000). Of those in treatment, 15% had medication alone and the remainder received psychological therapy or therapy plus medication. The National Institute for Health and Clinical Excellence (NICE) provides guidelines for services to ensure clients receive a high standard of care and these guidelines place emphasis on the use of evidence-based treatments (NICE, 2009). A wide body of evidence now exists demonstrating the effectiveness of psychological therapies alone and in conjunction with medication for both depression (e.g. Cuijpers et al., 2013) and anxiety (e.g. Bandelow, Seidler-Brandler, Becker, Wedekind, & Rüther, 2007). Psychological therapies have therefore been included in the NICE guidelines for anxiety and depression in a stepped care model (National Collaborating Centre for Mental Health, 2004a, 2004b; NICE, 2011).

In 2006 the UK government introduced the IAPT scheme whose principle aim was to help Primary Care Trusts (PCTs) implement NICE guidelines in services that are socially inclusive and located in the community (DoH, 2007). IAPT services offer primary care mental health services for people experiencing mild to severe depression and anxiety. In the current

economic climate there is an increasing imperative for all health services to prove their value. Accordingly, IAPT services are commissioned on the basis that they are able to demonstrate effective delivery of evidence-based treatments, as recommended by NICE guidelines, and routinely monitor outcomes. Seven Key Performance Indicators (KPIs) are used to evaluate IAPT services and aim to assess the number of people referred for treatment, the number who have entered and completed treatment and are moving towards recovery. Pertinent to the current study are Key Performance Indicator 3; the number of active referrals who have waited more than 28 days from referral to first session and Key Performance Indicator 4; the number of people who have entered psychological therapies. This is defined as "attending a first therapeutic session which leads to entering a full course of treatment. The first therapeutic session may be the same appointment as initial assessment." (National IAPT Programme Team, 2012, p14).

1.2 Impact of opt-in procedures in mental health services

Whilst the IAPT programme has significantly improved standards of care for those with mental health problems, some evidence suggests that large numbers of individuals do not attend or complete treatment (e.g. Richards & Borglin, 2011). It has been estimated that approximately between 20-34% of individuals referred to mental health services in the National Health Service (NHS) do not attend their first appointment (Aubrey, Self & Halstead, 2003; Mitchell & Sehnes, 2007). As there is evidence that over half of individuals with mental health difficulties do not perceive a need for mental health care (Meadows, Burgess, Fossey & Harvey, 2000), it has been argued that non-attendance may be considered as clients making decisions about their own care (Carey & Spratt, 2009). This is not a universally held view however, and non-attendance may instead reflect more systemic issues with service development and organisation (Paige & Mansell, 2013). Irrespective, non-attendance has a significant cost to the NHS with estimates for missed appointments in England at approximately £600 million a year (Carr et al., 2008; Hennessy & Kite, 2005).

In an attempt to ease this considerable financial burden, many services have adopted an opt-in system whereby clients are invited by letter to make contact with the service to arrange an initial appointment. In addition, opt-in systems have also been introduced as one way of managing long waiting lists in view of limited resources, as some patients will not engage with the service (Stalland & Sayers, 1998; DoH, 2004). Although opt-in systems have been demonstrated to be effective in significantly reducing non-attendance rates (Hawker, 2007), they may come at the cost of discriminating against clients who find it difficult to engage with services. A previous study examining attrition rates in cognitive-behavioural

therapy (CBT) and counselling found that 32% of clients failed to opt-in to treatment and that people from the most deprived areas were less likely to opt-in (Grant et al., 2012). The authors highlighted ethical concerns about using an opt-in approach, as they felt that issues such as poor self-esteem or disorganisation may prevent individuals from opting-in. Similarly, Houghton and colleagues reported that introduction of an opt-in system to their service appeared to adversely affect most client groups, with those suffering from an anxiety problem being particularly less likely to opt-in (Houghton, Saxon & Smallwood, 2010).

To conclude, opt-in systems are an attempted solution to limited resources within mental health settings, however those who fail to opt-in are likely to represent 'a hard to reach' population with complex needs. It is important that services are continually developed to meet the needs of this population (White, 2010). Some IAPT services have already begun to investigate new ways of easing access to services, for example the 'Callback' system of self-referral in Glasgow (White, Ross, Richards, Manson & Johnston, 2012). This approach enabled clients to opt-in by calling to leave a message with the service and receiving a call back by a qualified therapist within three days. This is an issue that all IAPT services will need to address and, it has been argued, these processes are best developed at a local level in the context of individual services (Sharp & Hamilton, 2001).

1.3 Impact of waiting times

It has recently been suggested that IAPT services need to do more to reduce waiting times from referral to treatment (Callan & Fry, 2012). A report by Mind indicated that waiting times for psychological therapy varies according to geographical area in the UK. Their survey found that although a large number of people wait less than six months from referral to treatment, for one in five people the wait is longer than a year and one in ten wait over two years (Mind, 2010). Research has indicated that timeliness is a critical component of providing mental health care, with long waiting times leading to patient attrition and the loss of a critical window for care (Van Voorhees, Wang & Ford, 2001; Van Voorhees, Wang, & Ford, 2003). The Mind survey found that longer waiting times impacted on the effectiveness of therapy and reduced the likelihood of helping people return to work. In addition, respondents noted that long waiting times were associated with negative personal outcomes such as family breakdown, social isolation, homelessness, job losses and suicide attempts. Other research has also indicated that delays in treatment may lead to the development of psychological and physical comorbidities and the use of unhelpful coping strategies such as substance misuse (Wang, Berglung, Olfson & Kessler, 2004). A qualitative study found that clients reported that

long delays for appointments discouraged them from using services and impeded their efforts to sustain recovery (Onken, Dumont, Ridgway, Dornan & Ralph, 2002).

The length of time between initial contact with a mental health service and the first appointment is an important predictor of attendance, with increased waiting time leading to lower rates of first attendances (Gallucci, Swartz, & Hackerman, 2005; Greeno, Anderson, Shear, Mike, 1999). In addition to the ethical imperative of providing timely care, it may also therefore be in the interest of cost and efficiency to reduce waiting times for access to psychological therapy.

1.4 Current study

1.4.1 Southwark Psychological Therapies Service

Southwark Psychological Therapies Service (SPTS) is an IAPT service which covers the London borough of Southwark. It is divided into four cluster teams based on geographical location (North East, North West, South East, South West). SPTS provides a range of psychological treatments for adults aged 18 years and above and referrals can be made by GPs, other health professionals or by self-referral. Typically, depressive episode, recurrent depression, generalised anxiety disorder and mixed anxiety and depressive disorder are the most common presenting problems.

As in many IAPT services, for a period of time SPTS has used an 'opt-in' model where, upon receipt of a referral, the client is sent a letter asking them to complete a questionnaire pack and return it to the service. Once the service receives this pack back the client would be contacted to complete a telephone triage assessment and to discuss treatment options if appropriate. Whilst this system may be effective in managing inappropriate referrals and reducing non-attendance, it has the disadvantage of limiting service accessibility for those people for whom completing a questionnaire pack is difficult, either due to level of functioning or motivation. It may also increase the waiting time from referral to initial appointment by needing to complete a fairly lengthy opt-in pack.

It has been estimated that since this opt-in system was established in 2012 approximately 40% of clients who were sent an opt-in questionnaire pack from SPTS did not return it and were not seen by the service. For SPTS, the KPI 4 target is to reach 12.5% of the prevalence rate of common mental health disorders in the population by March 2014 and 15% by March 2015. The number of referrals received by the service is sufficient to meet this target but the opt-in rate means it is not met. Given the impact of mental health problems at an individual and societal level, it is important that increased efforts are made to reach and engage the significant proportion of referrals who are not seen by the service, but who

nevertheless would value input. As a result, the North East (NE) SPTS team developed and piloted a new and more flexible system for processing referrals.

1.4.2 Pilot opt-in procedure

The existing and pilot systems for processing referrals are shown in Figure 1. The pilot system made several changes to the existing process.

1. At the screening level, if the referral was clear about the nature and severity of the presenting difficulty, those clients could be fast-tracked to receive a triage assessment on first contact, rather than needing to complete opt in forms.
2. For all other referrals, once accepted by the service the client received an initial engagement telephone call to inform them about the questionnaire opt-in pack and ascertain whether they would find this acceptable to receive and complete. This was completed by senior members of staff (team leaders). As in the existing system, those who returned the opt-in were offered a triage assessment (telephone or face-to-face).
3. Clients who declined to receive and complete the opt-in pack in the engagement call were instead offered a triage assessment directly.
4. For those clients who received the opt-in pack, assertive outreach was taken in the form of follow-up calls if they failed to return the pack within three weeks. These calls were made by Psychological Wellbeing Practitioners (PWPs) or an honorary assistant.
5. If clients reported difficulties they were offered support to complete the forms over the telephone if necessary. Telephone or triage appointments were then scheduled for these clients.

Given the reasons many services have for instigating an opt-in procedure, the pilot process used by SPTS aimed to balance the advantages and pit-falls of an opt-in system. Hawker highlighted that the issue of engaging 'difficult to engage' clients is a separate issue from the challenge of reducing non-attendance (Hawker, 2007). The pilot procedure retains the benefits of an opt-in option, but provides additional support for those who are likely to find opting-in difficult. The pilot system has the added advantage of making personal contact with clients prior to their first appointment, which has been shown to significantly increase attendance rate (Shoffner, Staudt, Marcus & Kapp, 2007).

The specific objectives of the new process were:

1. To increase the opt-in rate and hence completed assessments in the service
2. To reduce waiting time between the referral being accepted by the service and the assessment being completed
3. To increase the number of people entering psychological therapy (KPI4)

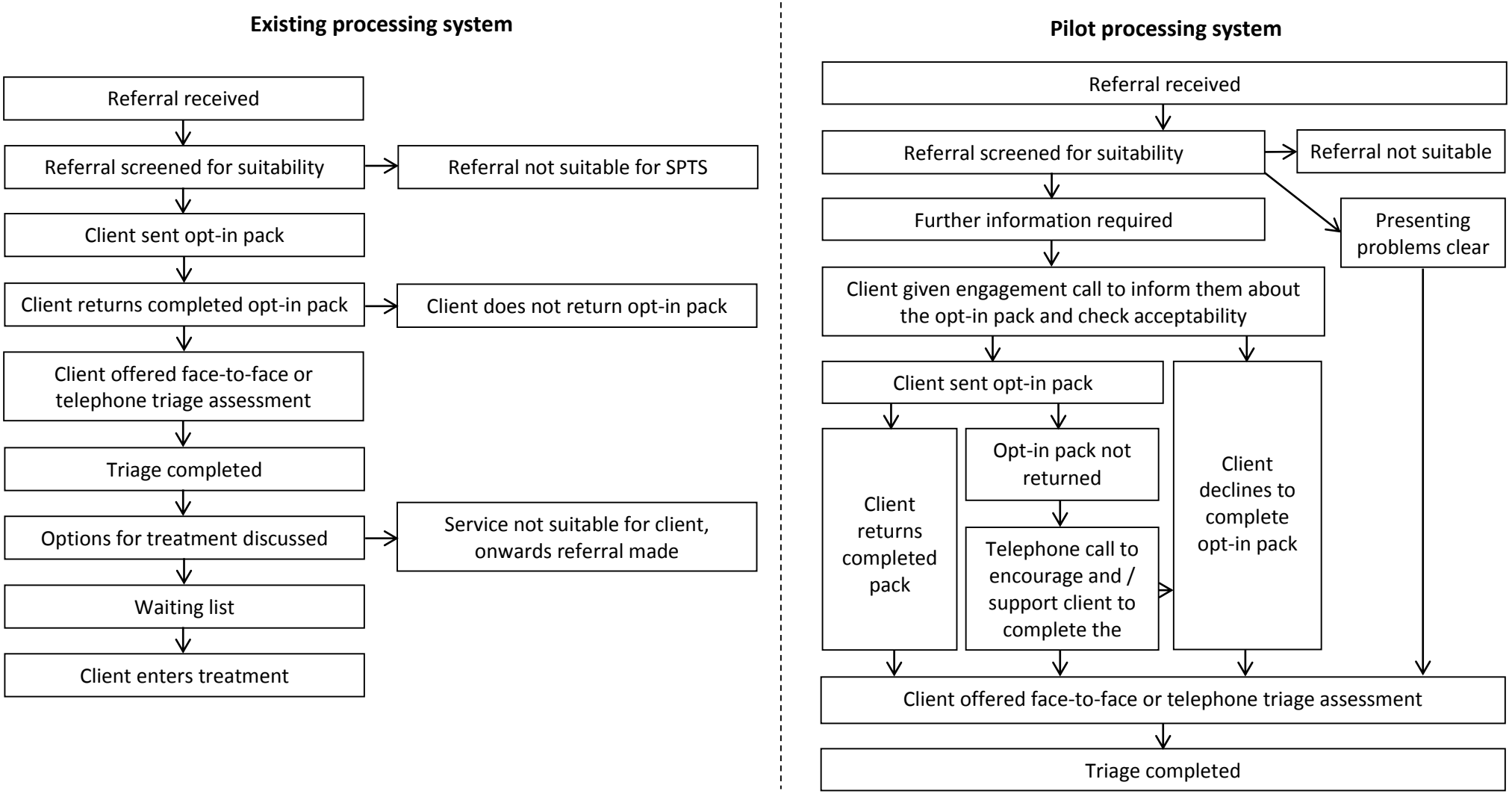
1.4.3 Aims

This audit assessed the impact of changing the client opt-in procedure in SPTS to a system whose aim was to increase the number of clients being seen for an assessment in the service and reduce waiting times. In addition, the audit examined staff attitudes towards the new opt-in system by interviewing team members involved in the new procedure.

1.4.4 Hypotheses

It was hypothesised that the new system would facilitate the engagement of a higher proportion of clients with the service and result in more assessments being completed with reduced waiting times between referral and assessment.

Figure 1 Existing and pilot systems for processing new referrals for SPTS



2 Method

2.1 Design

A cross-sectional design was used to assess the impact of altering the opt-in system for new referrals to SPTS. The pilot system was implemented for an eight week period (08/01/2014 – 05/03/2014) and data collected from this period was compared to a previous two month control period (06/05/2013 – 28/06/2013). The analysis also included data from between these two periods as staff levels in the team increased during this period and it was felt that this may impact on the variables being examined.

Data was also collected for the North West (NW), South East (SE) and South West (SW) teams for the control and pilot periods. No change was made to the referral processing procedure in these three teams.

2.2 Ethical approval and considerations

Approval for the study as an 'Audit and Service Evaluation Project' was obtained from the Mood and Anxiety Clinical Academic Group in the South London and Maudsley NHS Foundation Trust. Compliance with the BPS code of ethics and conduct (2009) was ensured throughout the study.

2.3 Procedure

Data was extracted from IAPTus, an online patient record system commonly used in IAPT services for entering and analysing clinical data. The data for the outcome variables to be included in the analyses had already been entered into the system as routine practice. Client satisfaction is routinely collected at the end of the assessment period using the End of Assessment Patient Experience Questionnaire (see Appendix 1) and responses were gathered from IAPTus.

Staff attitudes towards the new opt-in system were evaluated by conducting individual semi-structured interviews with the four members of staff who implemented the pilot procedure. This involved a discussion based around ten questions and typically lasted 20-30 minutes (see Appendix 2 for interview questions). As only four members of staff were involved in the pilot it was not possible to undertake a formal thematic analysis on the data and their responses were examined individually to assess efficacy and acceptability of the pilot system.

2.4 Outcome variables

The main outcome variables extracted from IAPTus were as follows:

- The number of clients referred and seen during the two periods for the NE team
- The number of clients seen for an assessment in the control and pilot periods for all four teams
- The time taken in days from referral to the assessment being attended in all for teams
- The time taken in days from the client opting-in to the assessment being attended in all teams
- Client satisfaction in the NE team
- Staff attitudes in the NE team

2.5 Participants

Demographic factors were included to enable comparison between the NE samples for the two time periods, namely age, sex, ethnicity and primary diagnosis. Table 1 reports the demographic factors of the control and pilot samples, which do not differ significantly between the two periods.

Table 1 Sample demographics for the control and pilot period

	Control	**Pilot**
N	79	107
Sex (% female)	66	62
Ethnicity (%)		
White	70.9	63.6
Mixed	3.8	2.8
Asian or Asian British	2.5	0.9
Black or Black British	10.1	9.3
Other	2.5	6.5
Unwilling to disclose	2.5	0.9
Missing	7.6	15.9
Diagnosis		
Depressive episode	8.8	2.8
Recurrent depressive episode	7.6	10.3
Anxiety (mixed)	6.3	8.4
Mixed anxiety and depression	5.1	1.9
OCD	2.5	0.9
PTSD	6.3	0
Other	5.1	1.9
Missing	58.2	73.8

2.6 Analysis

Data were inspected for normality and linearity and assumptions for parametric statistics were not met. Outliers were removed and the data was transformed using a log transformation. As the data was not normally distributed bootstrapping was used for the factorial ANOVA analyses. For other analyses, non-parametric tests were used.

3 Results

3.1 Referrals and assessments during the control and pilot period

3.1.1. North East team

The results indicated that in the NE team during the control period, 7 out of 79 clients assessed (9%) were referred and seen during that time. In contrast, 42 out of 108 clients assessed (39%) were both referred and assessed during the pilot period (Figure 2). A chi-square test indicated that this difference was significant ($\chi^2_{(1)} = 21.28$, $p<.001$).

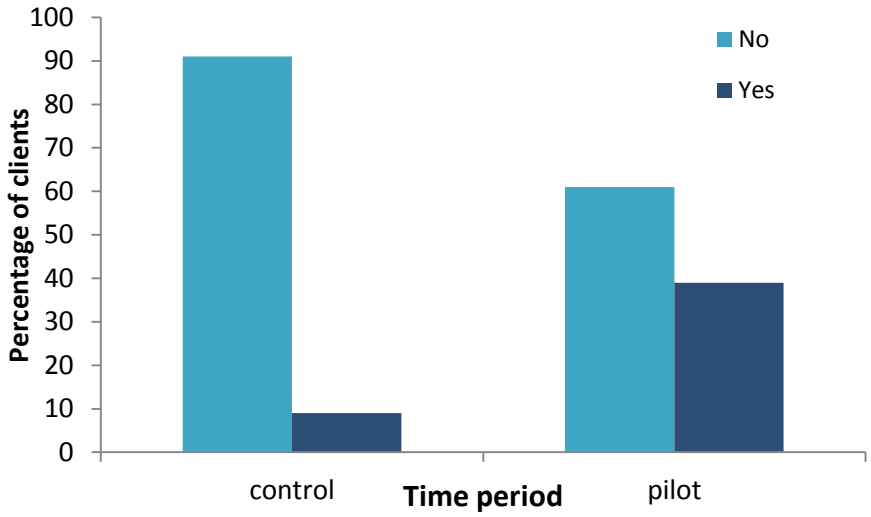


Figure 2 Percentage of referred clients who attended an assessment in the two periods

3.1.2 All teams

The results indicated that in the NE team 107 clients attended for assessment during the control period, versus 79 in the pilot period (35% increase). Similarly, a higher number of assessments were attended in the pilot than in control period for the SE (39% increase) and SW (35% increase) teams. No such difference was observed for the NW team (1% increase) (Figure 3). A chi-square test indicated no significant difference between the number of assessments completed in the pilot and control periods across the four teams ($\chi^2_{(3)} = 3.28$, $p=.35$).

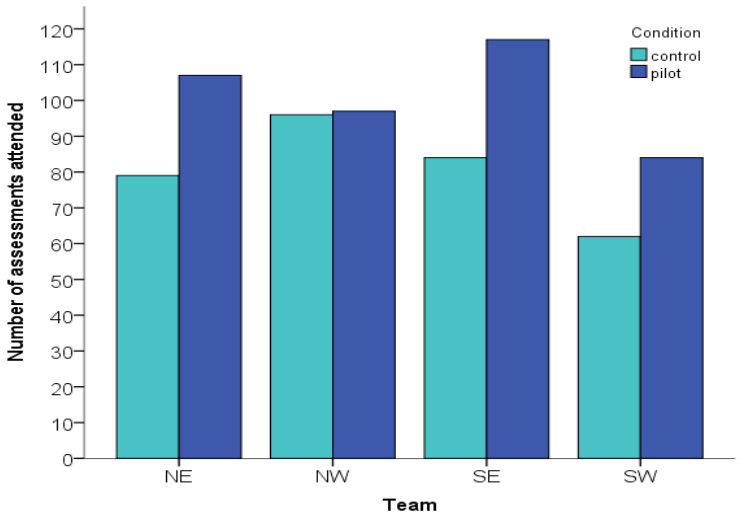


Figure 3: Assessments completed in the two time periods across teams

3.2 Waiting time from referral accepted to assessment

3.2.1 North East Team

The mean waiting times between the referral being accepted by the NE team and the client attending for an initial assessment for each of the three periods (control, between, pilot) are shown in Table 2.

Table 2 Mean waiting times for the different periods

Period	Number of clients	Mean waiting time [SD] (days)
Control	79	71.2 [38.9]
Between	356	43.4 [30.3]
Pilot	107	34.9 [20.3]

The waiting time was significantly different across the three time periods ($H_{(2)}$ = 48.41, p<.001). Subsequent pairwise analysis found a significant difference between the control and between period (U = 7902.5, p<.001, r=-.29) and between the control and pilot period (U = 1858.5, p<.001, r=-.48). No significant difference was found between the pilot and between period once Bonferroni correction was applied (p<.0167) (U = 16827, p=.045, r=-0.09).

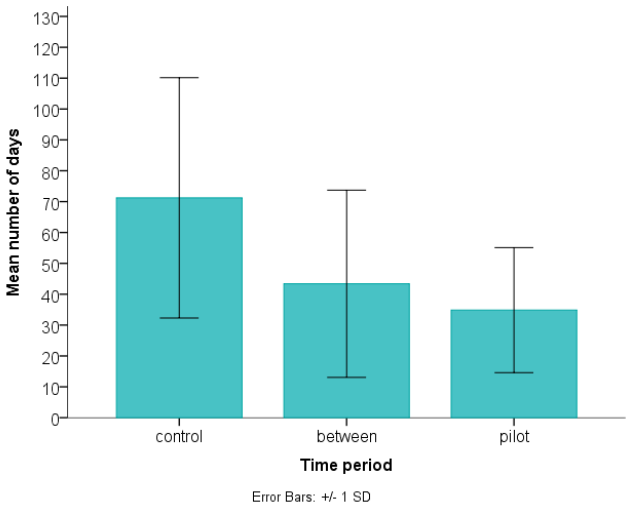


Figure 4 Mean number of days between referral accepted and assessment attended, NE team

3.2.2 All teams

The mean waiting times (Table 3; Figure 5)) between the referral being accepted and the client attending the assessment were compared across the four teams within the service for the control and pilot periods.

Table 3 Mean waiting times for the four teams between referral and assessment

Team	**Mean waiting time control period (days) [SD]**	**Mean waiting time pilot period (days) [SD]**
North East	71.2 [38.9]	34.9 [20.3]
North West	61.9 [33.1]	40.3 [24.8]
South East	40.1 [21.8]	32.0 [23.0]
South West	45.7 [27.1]	36.4 [22.2]

A 2x4 factorial ANOVA indicated a significant main effect of time period on the waiting time ($F_{(1, 710)} = 24.74$, $p<.001$). A Bonferroni *post hoc* test revealed that the waiting time in the pilot period was significantly lower than in the control period ($p<.001$). A significant main effect of team on the waiting time was also found ($F_{(3, 710)} = 6.29$, $p<.001$). Bonferroni *post hoc* tests indicated that waiting times were significantly lower in the SE team than the NE and NW team. The NE, NW and SW teams did not significantly differ in length of waiting time. There was no significant interaction between the condition and team on the waiting time ($F_{(3, 710)} = 0.66$, $p=.58$).

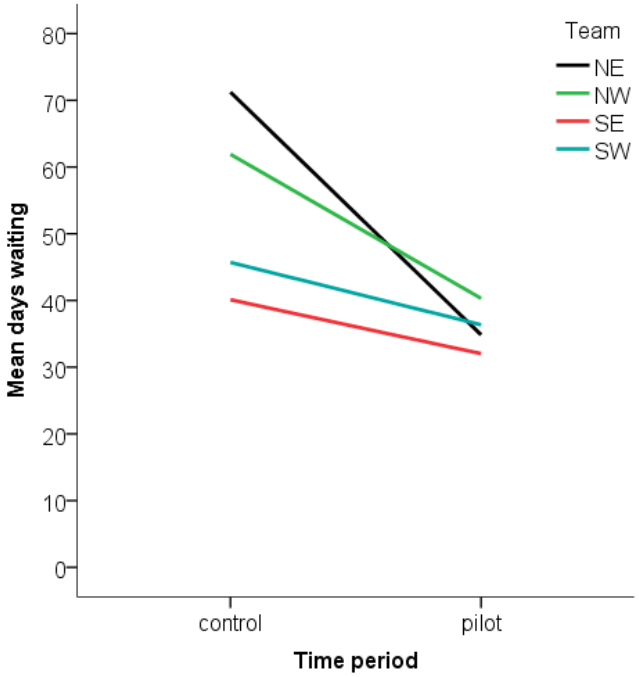


Figure 5 Mean number of days between referral accepted and assessment attended, all teams

3.3 Waiting time from client opt-in to assessment

3.3.1 NE team

The mean waiting times between the client opting in to the service and attending for an initial assessment for each of the three periods were compared (Table 4; Figure 6).

Table 4 Mean waiting times for the different time periods

Period	Number of clients	Mean waiting time [SD] (days)
Control	63	59.1 [19.8]
Between	298	27.1 [23.2]
Pilot	85	13.8 [8.7]

The waiting time between opting-in and attending the initial assessment was significantly different across the three time periods ($H_{(2)}$ = 108.0, p<.001). Subsequent pairwise analysis found a significant difference between the control and between period (U = 2720, p<.001, r=-.47), between the control and pilot period (U = 375 p<.001, r=-.74) and between the between and pilot period (U = 8775, p<.001, r=-.23).

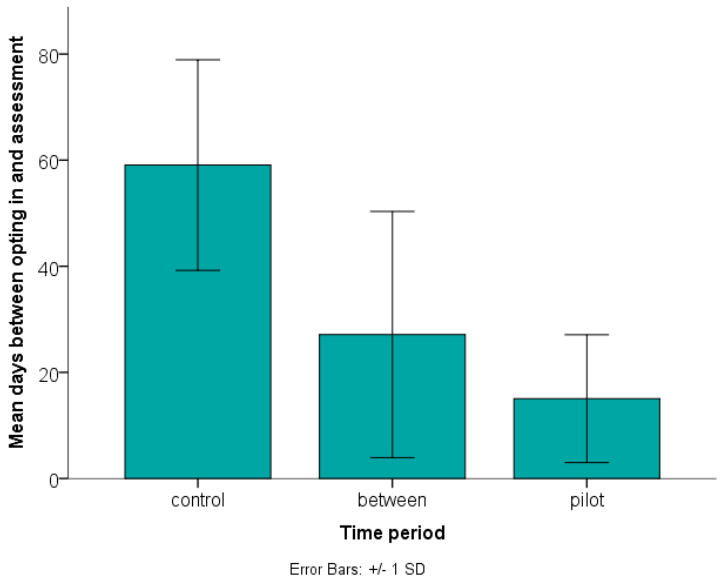


Figure 6 Mean number of days between opting-in and assessment attended, NE team

3.3.2 All teams

The mean waiting times (Table 5; Figure 7)) between the client opting in to the service and attending the assessment were compared across the four teams within the service for the control and pilot periods.

Table 5 Mean waiting times for the four teams between client opt-in and assessment

Team	Mean waiting time control period (days) [SD]	Mean waiting time pilot period (days) [SD]
North East	59.1 [19.8]	13.8 [8.7]
North West	43.9 [22.7]	19.9 [12.1]
South East	15.0 [11.0]	11.5 [10.4]
South West	25.4 [18.3]	17.1 [14.5]

A 2x4 factorial ANOVA indicated a significant main effect of time period on the waiting time ($F_{(1, 591)} = 97.86$, $p<.001$). A Bonferroni *post hoc* test revealed that the waiting time in the pilot period was significantly lower than in the control period ($p<.001$). A significant main effect of team on the waiting time was also found ($F_{(3, 591)} = 35.58$, $p<.001$). Bonferroni *post hoc* tests indicated that waiting times were significantly lower in the SE team than the NE and NW team. The NE, NW and SW teams did not significantly differ in length of waiting time. Finally, there was a significant interaction effect between the time period and team on the waiting time ($F_{(3, 591)} = 13.54$, $p<.001$), indicating that the effect of the time period on waiting

times was different across teams. That is, the decrease in waiting time was greater for the NE team between the two time periods than the decrease in the other teams.

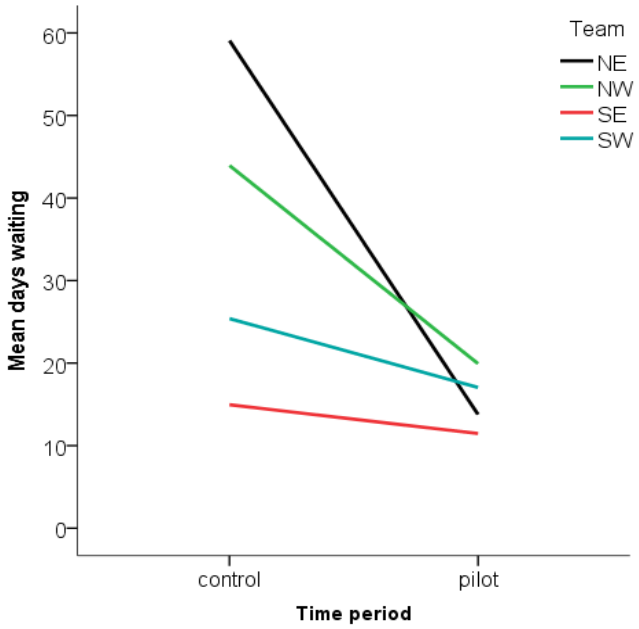


Figure 7 Mean number of days between referral accepted and opting-in, all teams

3.4 Client Satisfaction

Satisfaction data was reviewed for clients from the NE team for the control and pilot periods using a routine measure (Appendix 1). Completed forms were received for 11 clients in the control period and 4 clients in the pilot period. The results are summarised in Table 6, which shows the mean score out of five for each question. (0 = Never, 5 = at all times). Small sample sizes limit any conclusions that may be drawn from the data, however it is striking that the item with the largest change reflected clients' satisfaction with the length of time waiting for a first appointment with those in the pilot period reporting higher satisfaction.

Table 6 Satisfaction questionnaire results

Question	Mean score	
	Control	Pilot
Did staff listen to you and treat your concerns seriously?	5	5
Do you feel that the service has helped you to better understand your difficulties and start getting the help you need?	4.55	4.5
Did you feel involved in making choices about your treatment and care?	4.64	4.75
Were you satisfied with the time you waited for your first contact and this first appointment?	4.18	4.5
On reflection, do you feel that you will now get the care that matters to you?	4.55	4.5

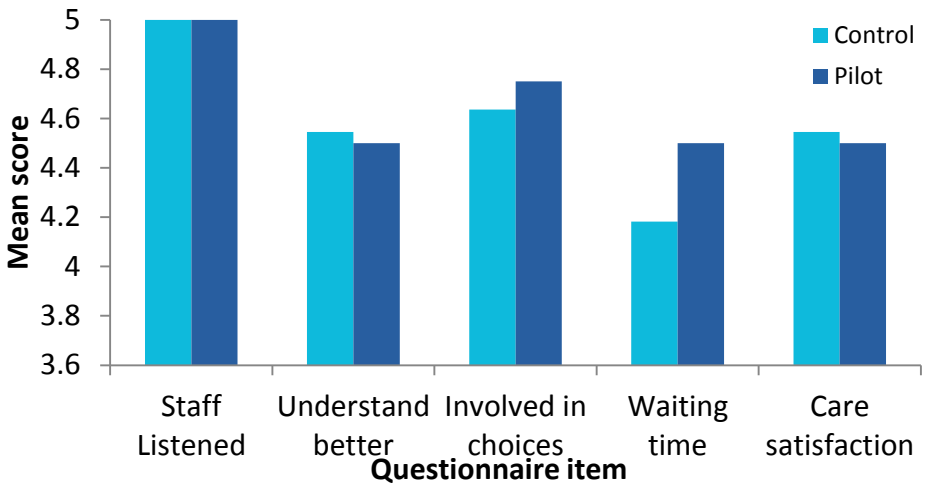


Figure 8 Client Satisfaction

3.5 Staff interviews

Four staff members from SPTS were interviewed to assess their views on the pilot process (Appendix 2). Two members of staff were senior members of the team (therapists) responsible for screening referrals and undertaking engagement calls (P1 & P2). The other two members of staff were PWPs (P3 & P4) who were involved in contacting clients to ascertain why they had not returned their opt-in questionnaire packs, to encourage clients to complete the pack, or to help clients complete the pack over the telephone. Whilst a formal thematic analysis was not conducted given the small number of staff involved in piloting the new system, the interviews were examined to identify the main ideas raised. These are demonstrated in Figure 9.

3.5.1 Referral screening

This process was already in place prior to the pilot period, however one member of staff reported that the amount of time spent had approximately doubled during the pilot period. Another member of staff reported that, as usually happens, not all referrals were screened due to limited capacity to complete this task and not wanting to create a bottleneck in the system.

3.5.2 Engagement calls

3.5.2.1 Client response

Staff commented that the calls were well always received by clients. In addition, staff felt a sense that clients committed to returning the opt-in pack having been given advanced warning.

They would say they were surprised to hear so soon… there was a sense that they liked it. [P2]

One member of staff reported that no-one she had contacted had refused the opt-in pack. The other member of staff doing the engagement calls estimated that around one in ten clients did not feel that they would be able to complete the pack. The therapist said that through discussion and problem solving, some clients were 'persuadable', however the new system enabled clients to be offered an assessment without needing them to opt in.

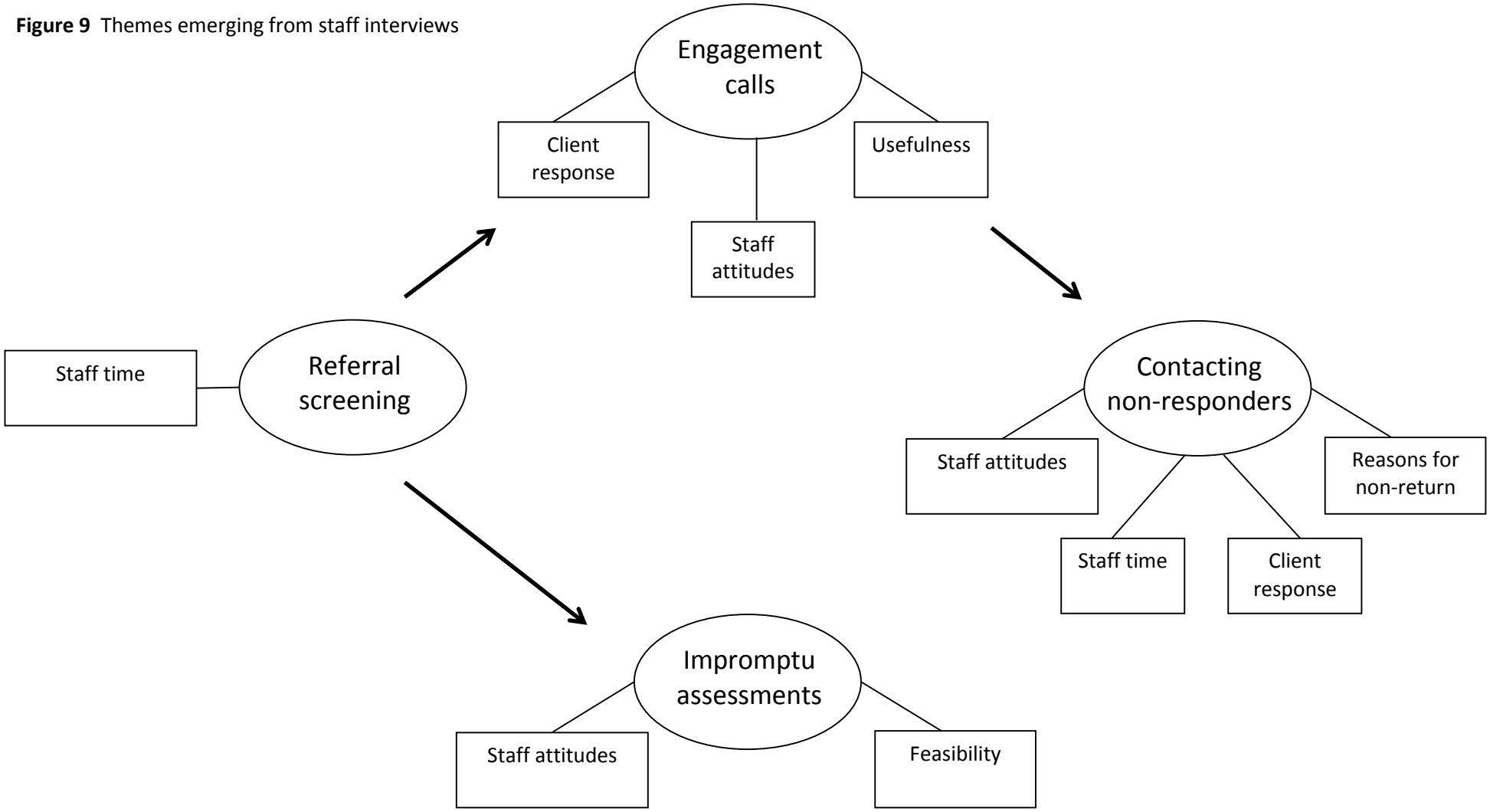
3.5.2.2 Staff attitudes

One therapist estimated that around half of those she called answered and this was occasionally frustrating. On the whole, both members of staff found the engagement calls acceptable and felt that it was a valuable use of their time.

3.5.2.3 Usefulness

One therapist commented that the engagement calls could be clinically helpful in determining how willing the clients are to engage with the service. The engagement call can act as a framework to explore the client's views and provide some information about the service. It allows clients to be discharged if they are not currently interested in receiving support from the service.

Figure 9 Themes emerging from staff interviews



3.5.3 Impromptu assessments

3.5.3.1 Staff attitudes

It was highlighted that this is an additional burden on staff time and is difficult to plan, without a clear idea of how long will be needed for the assessment. Despite this, staff reported that they felt these assessments were helpful in maintaining a smooth through-flow of clients into the service. In addition, this process enable identification of clients that were more suitable for another service and could facilitate speedy onwards referral in these cases.

3.5.3.2 Feasibility

Both members of staff reported that clients were generally eligible for an immediate assessment, with the main exception being the need for an interpreter. One clinician highlighted that;

> *"It could be difficult for complicated clients… there's not much time to think it through" [P2]*

3.5.4 Contacting non-responders

3.5.4.1 Staff attitudes

Several themes emerged from discussion with the PWPs involved in this process. Both members of staff indicated that they were unsure how helpful the new processes had been and whether it was a valuable use of their time.

> *"I spent lots of days chasing and I did wonder if time was being used well." [P3]*

One PWP expressed concerns about the effectiveness of the procedure;

> *"I got the sense that people said they would send it back but then wouldn't… I don't think it's been helpful... I've not enjoyed the chasing as I had to call lots of people and only got through to some." [P4]*

In contrast P3 felt that the option to conduct a telephone triage with clients without needing to process the opt-in pack made the process faster. She felt that the opt-in pack did not necessarily yield useful information above and beyond that gathered during an assessment. She felt that that completing the mandatory minimum data set questionnaires over the telephone was not particularly onerous. P3 also felt that 'going in blind' to assessment was

not always a negative and could make the assessor more receptive to understanding the client's experience.

3.5.4.2 Staff time

One PWP had allocated three half days a week to contacting non-responders, which she felt was a manageable proportion of her time. She explained that having specific times was useful, as a significant proportion of the time was spent trying to establish contact with clients, which may have been less easy to contain without ring-fenced time.

> *"It felt manageable, a full day would have been too difficult, too monotonous, just info gathering, nothing's ever changing, but splitting it up into half days was ok." [P3]*

The other PWP allocated two and a half days a week to contacting non-responders, however she did not usually manage to commit this time due to other demands of the job. She reported that it was a frustrating task as it was often difficult to make contact with clients on the telephone and estimated that she generally spoke to 2-3 people in an hour.

> *"I spent a lot of time calling and not getting anyone. It's quite demoralising and you don' feel like you've achieved anything" [P4]*

Similarly, P3 reported one instance of making twenty-four telephone calls in one afternoon and speaking to only eight clients.

3.5.4.3 Client response

Both PWPs reported that the telephone calls were well received without exception and that many clients appreciated the contact. No negative feedback was received about the contact.

3.5.4.4 Reasons for non-return

A variety of reasons were given from clients for not returning the opt-in pack. These included:

- The pack was too long with too many questions
- Client not yet had chance to complete the pack
- Client had not received the pack
- They had already returned the pack but it had not yet arrived at the service

4 Discussion

This study examined an alternative system for processing clients referred to a team within an IAPT service. Data were examined to establish the impact of the new process on the waiting time for clients from referral to their initial assessment in the service and the waiting time from the client opting-in to the service and their initial assessment. These waiting times were compared with those from a control period in the same team and to waiting times in other teams within the service. Staff feedback was obtained to assess the acceptability and feasibility of the alternative system. These results are discussed below.

4.1 Impact on proportion of clients seen

The analyses indicated that the number of assessments attended in the pilot period was higher than in the control period. Unfortunately it was not possible to assess the number of non-attended assessment appointments in each period, however the number of referrals was comparable across the two periods. It is possible that the early contact following referral to the service facilitated engagement. In addition, the number of assessments is likely to have increased as the service was not waiting for the forms to be returned by clients unable to do so. In this way, it seems plausible that the pilot system for processing referrals can help increase the proportion of clients seen for an assessment and reduce possible discrimination against those unable to complete the pack (Grant et al., 2012; Houghton et al., 2010). This in turn should help the service work towards achieving the KPI 4 target of 12.5% and 15% of the prevalence rate entering psychological therapy by 2014 and 2015 respectively.

4.2 Impact on waiting times

During the pilot phase significantly more people attended an assessment who were also referred during that time, than in the control period. This may have been due to clients being offered an assessment without needing to opt-in and as a result of the impromptu assessments conducted by the team leaders. In addition, it is possible that being forewarned about receiving the opt-in pack meant that clients returned them more quickly. It is not possible to determine which of these factors accounts for this finding and it is likely that a combination of all is responsible for the change.

The waiting time for clients receiving an assessment was significantly reduced in the pilot phase compared to the control period, with the mean waiting time falling from 71 days to 35 days. The other cluster teams also demonstrated a decline in waiting times during the pilot period; however the decrease was more marked in the NE team.

A similar decrease was recorded in the length of time between clients opting-in and receiving an assessment, indicating that the decrease in wait between referral and assessment is not simply due to the initial screening process being faster. Again, the other cluster teams also recorded a decline in waiting time during the pilot period, however the decrease was significantly greater in the NE team. This suggests that the engagement calls and follow-up calls to non-responders had the effect of increasing the speed with which clients are assessed by the service and that the service was able to offer an appointment more quickly once clients had opted-in. This reduction in waiting time from referral to assessment should help the service move towards meeting the KPI3 target of clients not waiting longer than 28 days following referral.

4.3 Staff attitudes

The interviews with the members of staff who implemented the pilot system indicated a mixed response to the new procedure. The team leaders responsible for the engagement calls and impromptu assessments both reported that the pilot process was feasible. They highlighted that staff undertaking this aspect of the process need to be somewhat flexible when doing unplanned assessments with clients and that time management was an important consideration of the new process.

The PWPs involved in the calls to non-responders reported finding the process more difficult. One member of staff in particular highlighted the often frustrating nature of the process of trying to make contact with clients and the anticipation that clients would not return the packs. This response is understandable in the context of a role which is time-pressured and target-driven. Having specified, ring-fenced times to make these calls, ensuring a variety of activities during a working day, was suggested by one PWP as being helpful in managing the monotony of this work. If possible, the use of this strategy should be encouraged in other staff members involved in contacting non-responders. In addition, having clear rules around the procedure, such as trying clients a set number of times, may help staff to feel more in control of the process.

4.4. Client response

Overall, client response to the new process seemed positive. The staff interviews indicated that all stages of the pilot process appeared to be well received by clients. Clients expressed pleasant surprise at early initial contact following referral. In addition, staff reported that clients appreciated being given a choice about completing the opt-in pack. Clients responded well to being contacted about not returning the pack, and gave them an

additional stage to be able to report that they did not feel able to complete the questionnaires.

The client satisfaction questionnaire data, although limited by a small number of clients who responded, suggested that in the pilot period clients were more satisfied with the waiting time from referral to assessment.

4.5 Limitations

One limitation of this study is that due to the audit nature of the project it was not possible to control for other independent variables which may have influenced waiting times in the service. Inclusion of the 'between' period to help explore the impact of increased staff levels was an important aspect of the design of the study. This demonstrated that although increased staff levels did reduce waiting times, the new pilot system decreased them further. The data point towards the new system being more inclusive and efficient at processing referrals, however the conclusion is weakened by not being able to control for other factors.

Another limitation of the present audit is that clients were not directly involved in the design of the new procedure and indirect feedback was gained from only a small number of clients. Involvement of clients in research is increasingly recognised as a valuable resource (Telford & Faulkner, 2004) and service-user consultation may have been valuable when developing the pilot procedure and designing the audit. Further research should consider involving clients in developing service design and using 'expertise by experience' (Faulkner & Thomas, 2002; National Institute for Mental Health England, 2003) to ensure that the service can best meet client needs. In addition, collecting more explicit feedback on the two processes, using a specific measure, would have been beneficial in assessing the impact of the new system on patient experience.

A more detailed exploration of the reasons for non-return of the questionnaires may have been a useful addition to this audit and may have helped in further developing the procedure of processing referrals. Furthermore, this study did not examine any demographic factors linked to non-return. An analysis of which client groups are least likely to opt-in to the service, including variables such as age, sex, ethnicity and diagnostic group, may increase understanding of factors which may hinder opt-in to services and facilitate better engagement of 'hard to reach' clients. In addition, the impact of the new process on engagement in treatment was not assessed and may have been another useful outcome to consider.

4.6 Implications for the service

The results of this study were presented to and discussed with a clinical lead in the service. This audit suggests that the new pilot procedure is a beneficial service development to undertake and that it should be adopted across all the cluster teams. The analysis indicates that the new process should improve client experience and help the service meet KPI targets. The referral process retains the benefits gained by using an opt-in system but is also moving towards a more client-led service which takes client preference into account. It enables faster identification of inappropriate referrals and prompt onward referrals where appropriate.

One important implication of this audit is consideration of staff attitudes when implementing this process more widely. Communication of the rationale for the new system to staff should emphasise that although the process will help with meeting KPI targets, ultimately the design is clinically driven and will improve client experience. There should be recognition that it is a labour-intensive process for staff and ongoing communication with the team will be important. Supervision will be important in giving staff space to acknowledge the sometimes demoralising nature of the work and helping staff to manage their time and integrate this role into their other tasks.

The feedback from the team leaders suggests that the engagement calls do not need to be undertaken by such senior members of staff and that it may be more efficient for the service if this role is given to an honorary assistant. In addition, these members of staff highlighted that although there is a clear procedure for processing referrals, team members will need to employ some flexibility in deciding to undertake impromptu assessments or booking an assessment for a client without sending them an opt-in pack.

Finally, this audit highlighted that satisfaction data is not always routinely collected following assessments in the service. The importance of this process should be communicated with the team and clear procedures put in place to ensure clients are given the opportunity to give feedback.

4.7 Conclusion

In conclusion, this audit found that adapting the procedure for processing new referrals to an IAPT service to be more flexible and include an element of patient choice reduced waiting times and increased satisfaction. The study suggests that the new referral process can be considered in the other teams of the service and that the rationale for the new design should be clearly communicated with staff.

References

Aubrey, R., Self, R. & Halstead, J. E. (2003). Early non-attendance as a predictor of continued non-attendance and subsequent attrition from psychological help. *Clinical Psychology, 32*, 6-10.

Bandelow, B., Seidler-Brandler, U., Becker, A., Wedekind, D., & Rüther, E. (2007). Meta-analysis of randomized controlled comparisons of psychopharmacological and psychological treatments for anxiety disorders. *The World Journal of Biological Psychiatry, 8*, 175-187.

Bebbington, P., Brugha, T., Cold, J., Crawford, M., Deverill, C. D'Souza, J. et al. (2009). *Adult psychiatric morbidity in England, 2007: Results of a household survey*. The Health & Social Care Information Centre, Social Care Statistics.

Car, J., Ng, C., Atun, R., & Card, A. (2008). SMS text message health care appointment reminders in England. Journal of Ambulatory Care Management, 31, 216-219.

Carey, T. A. & Spratt, M. B. (2009). When is enough enough? Structuring the organisation of treatment to maximise patient choice and control. *The Cognitive Behaviour Therapist, 2*, 211-226.

Centre for Mental Health (2010). *The economic and social costs of mental health problems in 2009/10*. London, UK: CMH.

Cuijpers, P., Sijbrandij, M., Koole, S. L., Andersson, G., Beekman, A. T., & Reynolds, C. F. III. (2013). The efficacy of psychotherapy and pharmacotherapy in treating depressive and anxiety disorders: a meta-analysis of direct comparisons. *World psychiatry: official journal of the World Psychiatric Association, 12*, 137–48.

Department of Health (2004). *Organising and delivering psychological therapies*. London: HMSO.

Department of Health (2007). *Commissioning a brighter future. Improving access to psychological therapies.* London: HMSO.

Department of Health (2011a). *No health without mental health: A cross- Government mental health outcomes strategy for people of all ages Supporting document – The economic case for improving efficiency and quality in mental health*. London: HMSO.

Department of Health (2011b). *No health without mental health: A cross- Government mental health outcomes strategy for people of all ages* London: HMSO.

Faulkner, A., & Thomas, P. (2002). User-led research and evidence based medicine. *British Journal of Psychiatry, 180*, 1-3

Gallucci, G., Swartz, W., & Hackerman, F. (2005). Impact of the wait for an initial appointment on the rate of kept appointments at a mental health center. *Psychiatric Services, 56,* 344-346.

Grant, K., McMeekin, E., Jamieson, R., Fairful, A., Miller, C. & White, J. (2012). Attrition rates in a low-intensity service: a comparison of CBT and PCT and the impact of deprivation. *Behavioural and Cognitive Psychotherapy, 40*, 245-249.

Greeno, C. G., Anderson, C. M., Shear, M. K., Mike, G. (1999). Initial treatment engagement in a rural community mental health center. *Psychiatric Services, 50,* 1634-1636.

Hawker, D. S. J. (2007). Increasing initial attendance at mental health out-patient clinics: opt-in systems and other interventions. *The Psychiatric Bulletin, 31*, 179-182.

Hennessy, P. M., & Kite, M. (2005, August 23). Missed appointments cost NHS £575m a year. *The Sunday Telegraph*. Retrieved from http://www.telegraph.co.uk.

Houghton, S., Saxon, D. & Smallwood, A. (2010). Effects of opt-in letter in a National Health Service psychotherapy service. *The Psychiatric Bulletin, 34*, 507-510.

McCrone, P., Dhanasiri, S., Patel, A., Knapp, M., & Lawton-Smith, S. (2008). *Paying the price: the cost of mental health care in England to 2026*. London: King's Fund.

Meadows, G., Burgess, P., Fossey, E., & Harvey, C. (2000). Perceived need for mental health care, finding from the Australian National Survey of Mental Health and Wellbeing. *Psychological Medicine, 30*, 645-656.

Mind; the We need to talk coalition. (2010). *Getting the right therapy at the right time*. London: Mind

Mitchell, A. J., & Sehnes, T. (2007). Why don't patients attend their appointments? Maintaining engagement with psychiatric services. *Advances in Psychiatric Treatment, 13*, 423-434.

National Collaborating Centre for Mental Health. (2004a). *Depression: Management of Depression in Primary and Secondary Care*. London: National Institute of Health and Clinical Excellence.

National Collaborating Centre for Mental Health. (2004b*). Anxiety: Management of Anxiety (Panic Disorder, with or without Agoraphobia, and Generalised Anxiety Disorder) in Adults in Primary, Secondary and Community Care*. London: National Institute of Health and Clinical Excellence.

National IAPT Programme Team (2012). *IAPT Key Performance Indicator (KPI) Technical Guidance for Adult IAPT Services 2012/13 V2.0*. London, UK.

National Institute for Health and Clinical Excellence (2009). *How NICE Clinical Guidelines are Developed: as overview for stakeholders, the public and the NHS* (4c). London: National Institute for Health and Clinical Excellence.

NICE (2011). *Common Mental Health Disorders: Identification and Pathways to Care*. London: National Institute for Health and Clinical Excellence.

NIMHE. (2003). (http://www.nimhe.org.uk).

Onken, S. J., Dumont, J. M., Ridgway, P., Dornan, D. H. & Ralph, R. O. (2002). *Mental health recovery: what helps and what hinders? A national research project for the development of recovery facilitating system performance indicators. Phase One research report: A national study of consumer perspectives on what helps and hinders mental health recovery.* National Association of State Mental Health Program Directors, National Technical Assistance Center for State Mental Health Planning: Alexandria, VA.

Paige, L., & Mansell, W. (2013). To attend or not attend? A critical review of the factors impacting on initial appointment attendance from an approach-avoidance perspective. *Journal of Mental Health, 22*, 72-82.

Richards, D. A. & Borglin, G. (2012). Implementation of psychological therapies for anxiety and depression in routine practice: two year prospective cohort study. *Journal of Affective Disorders, 133*, 51-60.

Sainsbury Centre for Mental Health (2003). *The economic and social costs of mental illness.* London, UK: SCMH.

Sharp, D. J. & Hamilton, M. (2001). Non-attendance at general practices and outpatient clinics: local systems are needed to address local problems. *British Medical Journal, 323*, 1081-1082.

Shoffner, J., Staudt, M., Marcus, S., & Kapp, S. (2007). Using telephone reminders to increase attendance at psychiatric appointments: findings of a pilot study in rural Appalachia. *Psychiatric Services, 58*, 872-875.

Singleton, N., Bumpstead, R., O'Brien, M., Lee A., & Meltzer, H. (2000). *Psychiatric morbidity among adults living in private households, 2000.* London: HMSO.

Stallard, P. & Sayers, J. (1998). An opt-in appointment system and brief therapy: Perspectives on a waiting list initiative. *Clinical Child Psychology and Psychiatry, 3,* 199-212.

Telford, R., & Faulkner, A. (2004). Learning about service user involvement in mental health research. *Journal of Mental Health, 13,* 549-559.

Van Voorhees, B. W., Wang, N. Y., & Ford, D. E. (2001). Managed care and primary care physicians' perception of patient access to high quality mental health services. *Journal of General Internal Medicine, 16,* 200.

Van Voorhees, B. W., Wang, N. Y., & Ford, D. E. (2003). Managed care organizational complexity and access to high-quality mental health services: perspective of U.S. primary care physicians. *Journal of General Internal Medicine, 25*, 149-157

Wang, P. S., Berglung, P. A., Olfson, M. & Kessler, R. C. (2004). Delays in initial treatment contact after first onset of a mental disorder. *Health Services Research, 39*, 393-415.

White, J. (2010). Bringing the public on board: health promotion and social marketing in deprived communities. In J. Bennett-Levy et al. (Eds) *Oxford Guide to Low Intensity CBT Interventions*, pp339-346. Oxford: Oxford University Press.

White, J., Ross, M., Richards, C., Manson, V. & Johnston, S. (2012). 'Callback': increasing access to, and improving choice in, a multi-level, multi-purpose low-intensity service. *The Cognitive Behaviour Therapist, 5*, 124-136.

World Health Organisation (2008). Global burden of disease report. Retrieved 30 April 2014 from http://www.who.int/healthinfo/global_burden_disease/estimates_country/en/index.htmlhttp://www.who.int/healthinfo/global_burden_disease/estimates_country/en/index.html

Appendix 1 – End of Assessment Patient Experience Questionnaire used in SPTS

Please help us to improve our service by answering some questions bout the service you have so far received. We are interested in your honest opinions, whether they are positive or negative. Please answer all of the questions. We also welcome your comments and suggestions.

	At all times	Most of the time	Sometimes	Rarely	Never
Did staff listen to you and treat your concerns seriously?					
Do you feel that the service has helped you to better understand your difficulties and start getting the help you need?					
Did you feel involved in making choices about your treatment and care?					
Were you satisfied with the time you waited for your first contact and this first appointment?					
On reflection, do you feel that you will now get the care that matters to you?					
Please use this space to tell us about your experiences of our service so far.					

Appendix 2 – Semi-structured questions for staff

Initials…….. Date…….

What has been your role in implementing the pilot opt-in system?

How much time per week would you estimate that you spent making engagement phone calls?

How much time per week would you estimate that you spent making chase-up phone calls?

Do you think the engagement calls were well received by clients? Why?

Did many people say that they were not happy to be sent the opt-in form? Why?

Were many clients eligible for immediate telephone assessment?

How were the chase-up calls received by clients? Why do you think this?

What reasons did people give for why they had not returned the opt-in form?

Do you think that the new system is too much of a burden on your time; do you think the time investment you put in was worthwhile?

Is there anything else you would like to tell me about your experience of running this pilot?