Developing a brief trauma screening tool for use in psychosis

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Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Overview

This thesis focusses on trauma and its relationship to psychosis. It is presented in three parts and was undertaken as part of a joint project with another DClinPsy trainee, Sophie Marsh-Picksley (Marsh-Picksley, 2016).

The literature review utilises meta-analytic techniques to quantifiably appraise research which has examined the relationship between insecure attachment and psychosis symptoms. High rates of insecure attachment styles were found in psychosis populations. Most notably, a fearful attachment style, known to develop in response to early experiences of trauma and adversity in relation to the primary care-giver, was most prevalent. A small association between psychosis symptom severity and attachment insecurity was also found.

The empirical paper describes the development and validation of the Trauma And Life Events checklist (TALE), a new trauma screening tool for use within psychosis services. A quantitative study which aimed to establish the psychometric properties of the TALE within a sample of individuals with psychosis. The TALE was found to have good test-retest reliability and moderate validity in relation to existing trauma screening tools, symptom severity and potential Post Traumatic Stress Disorder (PTSD) reactions. A qualitative analysis was also conducted to identify the broader implications of trauma and adversity revealing themes around changed views of self, and relationships with others were most frequently reported.

The critical appraisal reflects on the process of completing the research project. In particular, it discusses the costs and benefits of working as part of a research group as opposed to individually and the practical limitations of the research methodology before reflecting on the future direction of the research.

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Part 2: Empirical paper

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Part 1: Literature Review

A meta-analysis of the relationship between insecure attachment and psychosis

Abstract

Aims: There is growing evidence for the role of attachment in psychosis. Three recent reviews have summarised the assessment of attachment and its impact on recovery in psychosis (Berry et al., 2007b, Gumley et al., 2014; Korver-Nieberg et al. 2014), however, to date there has been no quantitative review of attachment in psychosis. The current study sought to systematically appraise studies investigating the prevalence of insecure attachment and the association with psychosis-spectrum experiences.

Method: A systematic search was carried out between January 1980 and 30th November 2015 producing a total 25 papers. Meta-analytic techniques were employed to synthesise findings on the prevalence of insecure attachment and explore the association between insecure attachment and psychosis symptoms.

Results: The prevalence of insecure attachment style was significantly higher in psychosis than in non-clinical samples, with fearful attachment the most most prevalent. Across the continuum, there was a small but significant relationship between increased symptom severity and insecure attachment. As with previous reviews, this relationship was more evident in sub-clinical samples. In contrast to previous reviews, the current analysis found a greater relationship between anxious attachment and positive symptom severity.

Conclusions: The prevalence of insecure attachment appears to be high in psychosis. Attachment theory may provide greater understanding of the development of positive symptoms than previously thought, however, research needs to include more at-risk samples and longitudinal research to fully understand this relationship.

1. Introduction

1.1 The role of early adversity in psychosis

Adverse events in childhood, including trauma and neglect, have now been recognised as significant risk factors for a wide range mental health problems (Read & Bentall, 2012). Furthermore, there is an established link between early childhood trauma, in particular victimisation, and psychosis (Morrison, Frame & Larkin, 2003) with a recent meta-analysis indicating that individuals with psychosis were at least twice as likely to have been exposed to childhood adversity as controls (Varese et al., 2012).

Theoretical models of psychosis have also begun to move away from a strictly biological understanding of the disorder to an epigenetic one that describes how early trauma and neglect impact brain development through the stress regulation functions of the HPA axis (Read, Bentall & Fosse, 2009). Evidence from non-clinical samples suggest psychotic-like experiences, in particular paranoia, are common within the general population and exist on a continuum of normal experiences (Berry, Wearden, Barrowclough et al., 2006; Freeman et al., 2005). This move towards the conceptualisation of psychosis as a continuum disorder, driven at least in part by early interpersonal experiences, has led researchers to theorise about the role of attachment in both the development and treatment of psychosis (Read & Gumley, 2010).

1.2 Attachment theory

Attachment theory proposes that one's interpersonal relating styles, psychological functioning and ability to regulate emotions develop as a result of early experiences with primary care-givers (Bowlby, 1969). These early significant relationships provide the infant with the first experience of an affectionate bond with an other, whereby the care-giver provides a safe space

from which the infant can explore the world. Through this the infant develops internal working models formed of representations of the self and others. Described as secure attachment this primary relating experience then serves as the foundation for future relationships (Bowlby, 1969; 1984). In adulthood, secure attachment is expressed through autonomy, an ability to reflect on and manage one's cognitive and emotional experiences and value close relationships. However, insecure attachments can develop when the care-giver is absent or not able to provide this safe space from which to explore the world and learn (Bowlby, 1988).

1.3 Insecure attachment

There are three main types of insecure attachment in adulthood; anxious (also referred to as anxious-ambivalent or preoccupied), avoidant (also referred to as dismissing) and fearful (Ainsworth & Bell, 1970; Bartholomew & Horowitz, 1991; Main & Solomon, 1986; 1990) which describe patterns of relating that individuals learn in response to early care experiences. An anxious attachment style is thought to develop as a result of inconsistent availability of the primary care-giver, leading the infant to learn to exaggerate emotional expression and explore their environment less to keep the attention of the care-giver. In adulthood this is represented by heightened emotional expression and a reduced sense of autonomy leading to increased dependence on others. Avoidant attachment style, characterised in adulthood by over-regulating emotions and avoiding experiences of close relationships, develops from experiences of rejection from care-givers, in particular when expressing distress. Fearful attachment, often described as disorganised in childhood, is thought to arise in adaptation from either disrupted care experiences, such as neglect and early

losses, or from frightening or frightened care-giver behaviour, including physical and sexual abuse in childhood. These experiences lead the child to respond to their caregiver with fear or contradictory behaviours, such as approach and avoidance or freezing when distressed and seeking comfort (Main & Solomon, 1986; 1990). In adulthood, fearful attachment is represented by an inconsistent sense of self and an inability regulate one's emotions. People who present with a fearful attachment style often present as both highly anxious and avoidant due to a conflicting desire for and resistance to emotional closeness (Bartholomew & Horowitz, 1991).

1.4 Attachment and psychosis

There is already a well-established link between disrupted attachment and several mental health problems, most notably emotionally-unstable personality disorder (Cassidy & Shaver, 2008) and in the last twenty years there has been a significant increase in papers reporting associations between attachment and psychosis. This has led to the incorporation of attachment theory into the model of psychosis as both a potential risk and protective factor (Harder, 2014). Reflecting this interest, three narrative reviews have been published in the last decade on the role of attachment in the development of, and recovery from, psychosis (Berry, Barrowclough & Wearden, 2007b; Korver-Nieberg, Berry, Meijer & de Haan, 2014; Gumley, Taylor, Schwannauer & MacBeth, 2014).

All three reviews concluded that attachment is associated with poorer outcomes in psychosis (Berry et al., 2007b; Korver-Nieberg et al., 2014; Gumley et al., 2014). In particular, disrupted attachment has been found to be associated with an earlier onset of illness, poorer therapeutic alliance, engagement with mental health services and less adaptive recovery styles. Individuals with

avoidant attachment styles also tended to have longer durations of hospitalisation compared to those with secure attachment styles (Ponizovsky, Nechamkin & Rosca, 2007).

1.5 Attachment and symptoms of psychosis

While the impact of disrupted attachment has been discussed in the literature, there has been less research focused specifically on the prevalence of attachment disruption in psychosis and the evidence of associations with psychosis symptoms is inconsistent. Higher rates of avoidant attachment style have been reported in psychosis populations compared to non-clinical controls (Berry et al., 2007b; Korver-Nieberg et al. 2014), however, this conclusion was drawn from a small number of studies. Furthermore, the majority of these studies assessed attachment style through the Adult Attachment Interview (AAI: Main, Kaplan, & Cassidy, 1985) which has been found to have poor validity within psychosis samples (Berry et al., 2007b).

A modest association between avoidant attachment style and positive and negative symptomatology has been found in clinical populations (Korver-Nieberg et al., 2013; Gumley et al., 2014), but the evidence for an association between symptom severity and anxious attachment style is more equivocal, and possibly confined to subclinical populations (Korver-Nieberg et al., 2014). Variability in findings could be due to inconsistencies in attachment assessment, small sample sizes and a limited number of studies (Korver-Nieberg et al., 2014; Gumley et al., 2014).

1.6 Rationale for the current review

Despite the mixed evidence regarding the role of attachment in psychosis, research continues to grow exponentially in this field. Since the most recent

review was carried out by Gumley et al. (2014) over twenty-five papers have been published. Additionally, the development and adoption by most researchers of the Psychosis Attachment Measure (PAM: Berry, Wearden, Barrowclough, & Liversidge, 2006), a measure specifically developed to measure attachment in people with psychosis, means more consistency in measurement across studies. While existing reviews have provided a comprehensive summary of the literature, to date there has not been a systematic quantitative review of attachment style in psychosis. Given the inconsistencies and limitations outlined in existing reviews, a quantifiable review of the literature is required to explore whether there is clear evidence for increased prevalence of attachment disruption within psychosis population and how attachment style relates to psychosis symptomatology.

Therefore, the current paper aims to present a quantitative review of the prevalence of reported attachment styles within psychosis populations and critically appraise the evidence for an association between insecure attachment styles and symptom severity in across the psychosis continuum. Specifically, the following questions were asked:

1. What is the prevalence of insecure attachment in people with psychosis and how does this compare to prevalence in non-clinical samples?
2. What is the prevalence of different insecure attachment styles amongst people with psychosis?
3. Is insecure attachment associated with increased psychosis-spectrum experiences within clinical and non-clinical samples?

2. Method

2.1 Inclusion criteria

Studies were included in the analysis if they (i) used a validated measure of attachment style (ii) used a measure of psychosis symptom severity or psychotic-like symptoms (ii) quantitative or mixed methodology (iv) published in a peer-reviewed journal (v) were published between January 1980 and 30th of November 2015 (vi) were written in English. Studies were included in the analysis if they employed one of the following methodologies: (i) prospective cohort studies (ii) cross-sectional studies which reported association between psychosis symptoms and attachment styles (iii) case control studies, which reported associations between psychosis symptoms and attachment styles regardless of whether this was the primary outcome of the paper.

2.2 Exclusion criteria

Studies were excluded if they were (i) presented as a conference extract or poster presentation (ii) book chapters (iii) unpublished studies (iv) solely presented qualitative data (v) single case studies or dissertations (vi) did not include a measure of attachment or (vii) psychosis symptomatology. As in a previous review (Korver-Nieberg et al. 2014) studies reporting parental bonding or other attachment-related concepts, such as relating styles, were excluded as they do not directly assess attachment style. Studies were also excluded if insufficient statistical information was reported in the paper to be included in the comparison, for example where only significant findings were presented or when authors contacted did not provide further statistical information (Figure 1).

2.3 Literature search

Relevant studies were identified through a systematic search of the databases Medline, PsycINFO and Web of Science. The following search terms

were used as keyword or heading searches: (ATTACHMENT or ADULT ATTACHMENT) in combination with psychosis related terms: (PSYCHOSIS or PSYCHOTIC or SCHIZOPHRENIA or SCHIZOTYPY). Hand searches were carried out in relevant journals and reference lists and search results were cross referenced with existing reviews (Berry et al. 2007b, Gumley et al. 2014, Korver-Nieberg et al., 2014) for any additional studies which may have been missed.

The current review followed the flow of information as suggested by the PRISMA statement (Moher, Liberati, Tetzlaff, Altman & the PRISMA group, 2009). Duplicate records were removed after the initial search and the above inclusion and exclusion criteria were applied (Figure 1).

2.4 Quality assessment

Studies were quality assessed using the Standard Quality Assessment Criteria for Evaluating Primary Research Papers (Kmet, Lee & Cook, 2004). A quality assessment tool which allows for a range of quantitative study methodologies to be compared and has been found to have good inter-rater reliability (Kmet, Lee & Cook, 2004). All papers were quality assessed by SC and a sample of 10 were also independently rated by a second assessor. High levels of agreement were found (80%) between the reviewers.

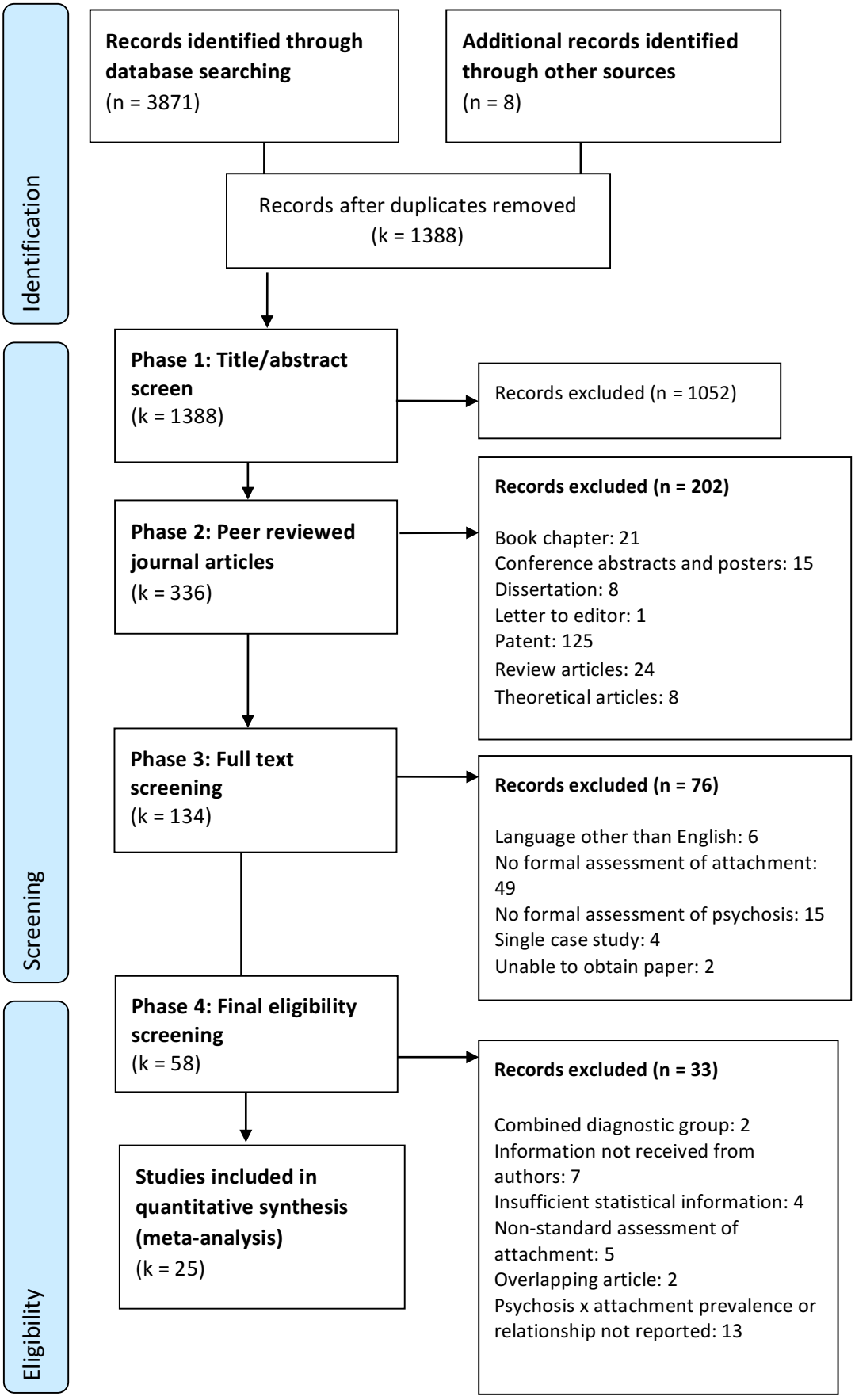


Figure 1. Flow diagram of systematic search (Moher et al., 2009)

2.5 Studies meeting inclusion criteria

Based on the inclusion criteria, 27 studies were eligible for inclusion in the final meta-analyses. Of those identified, two papers presented data on the same study (Huguelet et al., 2015; Rieben, Huguelet, Lopes, Mohr & Brandt, 2014). Once reviewed, the most appropriate article was selected based on the relevance of statistical data reported to the current analysis (Huguelet et al., 2015). A second paper was excluded (Korver-Nieberg, Berry, Meijer, Haan & Ponizovsky, 2015) because the majority of the data reported was from samples which were already presented in papers included in the analysis. Two further studies were identified as reporting data from samples which were recruited as part of a wider research project (Berry, Barrowclough & Wearden, 2008; Berry, Wearden, Barrowclough, Oakland & Bradley, 2012). When examined further, the data presented varied considerably between these papers and only a small number of participants (n = 28) were included in both study samples. Therefore, both papers were included meaning a total of 25 papers made up of 37 samples were including in the analysis. Two studies included comparison groups taken from different clinical populations (Macbeth, Gumley, & Schwannauer & Fisher, 2011; Michail & Birchwood, 2014) therefore these three subsamples were excluded from analysis. One further study compared men with psychosis against men with a diagnosis of HIV or AIDS, however, as this study did not report on the attachment styles of the men with a diagnosis of HIV or AIDs this subgroup was also excluded from analysis (Ringer, Buchanan, Olesek & Lysaker, 2014).

2.6 Analytic procedure

Multiple meta-analyses were conducted as part of the current review using Comprehensive Meta Analysis version 3.3 (Bornstein, Hedges, Higgins & Rothstein, 2014). The first meta-analysis was a quantitative synthesis of

prevalence rates of insecure attachment styles within clinical and non-clinical populations. Subsequent analyses were carried out on each of the insecure attachment styles reported in the included studies. The second set of analyses focused on the relationship between attachment style and symptom severity. Overall analysis of the relationship between self-reported avoidant and anxious attachment styles and the severity of positive and negative symptoms was calculated for all studies. Further sub-group analysis was carried out to examine these relationships within clinical and non-clinical groups.

2.7 Heterogeneity of effect sizes

For all analyses, heterogeneity statistics (Q test and I^2) were carried out to examine the amount of variance across the studies. Cochran's Q statistic assesses for heterogeneity due to sampling error, however it has been found to have poor power to detect true heterogeneity when analyses only include a small number of studies (Higgins & Thompson, 2002). As it is not possible to assume that all studies in the meta-analyses share a common effect size due to the heterogeneous samples reported on, a random effects model was adopted a priori for all meta-analyses (Borenstein, Hedges & Rothstein, 2007).

An alternative assessment of heterogeneity to Cochran's Q is I^2, which calculates the amount of variance in effect size accounted for by between-study variance (Higgins & Thompson, 2002). One study removed analysis was also carried out within the subgroup analysis of symptom severity and attachment style to examine whether any specific sample had increased impact on the pooled effect size (Ryan, 2013).

2.8 Effect size computation

Whilst meta-analysis techniques have traditionally been applied to effect size data, it is possible to apply the method to cumulative proportions and rates by treating the incident rate as the effect size (Borenstein, Hedges, Higgins & Rothstein, 2009). This technique was used in the current analysis to synthesise the reported prevalence rates in included studies.

All studies included in the analysis which reported a relationship between symptom severity and attachment style provided Pearson's *r* correlation coefficients which can be treated as the effect size. A number of studies included data from one or more subscales of positive and negative symptoms rather than a composite score (e.g. GPTS, LSHS). In these cases the subscale data were categorised as either positive or negative symptoms for the purposes of the analysis. To control for variance being influenced by the correlation coefficient, all the data was transformed using Fisher's *z* scale and analysis was carried out on the transformed data before being converted back to *r* (Borenstein et al., 2009).

2.9 Independence of effect size

As stated above, a number of studies reported correlations from multiple symptom subscales, such as hallucinations and delusions rather than a composite score of positive or negative symptoms. Reporting multiple effect sizes from the same study would violate the assumption of independence needed to carry out a meta-analysis. In these instances, an average correlation was calculated. When averaging correlations, it is necessary to control for potential bias by converting Pearson's *r* to Fisher's *z* before averaging the transformed correlations and then converting back to Pearson's *r* to be included in the analysis (Corey, Dunlap &

Burke, 1998). In studies where multiple measures of attachment or psychotic experiences were used the measure used for the current analysis is indicated in Tables 1.

3. Results

3.1 Characteristics of studies

Twenty- five papers made up of 37 samples were included in the analysis. An overview of the characteristics of studies is shown in Table 1. Demographic information as reported in the primary studies is shown for all participants, Based on the data available within published reports, there were 11,696 unique participants (clinical: n = 1305; non-clinical: n = 10,391), 30% of whom where female. The reported mean age ranged from 15.7-52 years with a composite participant mean age of 30.42 years (SD = 10.59), however, information about age and gender was not available from three large studies (MacBeth et al., 2011; Sitko, Bentall, Shevlin, & Sellwood, 2014). About half of the studies were based in the UK (k = 12) and included clinical samples from community mental health services (k = 11). Seven studies included clinical participants who were identified as ultra-high risk or experiencing psychosis for the first time and two studies included inpatient samples. Non-clinical samples were primarily made up of healthy adult volunteers (k = 10) and a small number were exclusively drawn from student populations (k = 4). The majority of studies were cross-sectional design (k = 17) while the remainder were case-control (k = 10).

3.2 Measures of attachment style

Six different measures of attachment were used within the included 25 studies, details of which are displayed in Table 1. The most commonly used were the Psychosis Attachment Scale (PAM; Berry, et al., 2006; k = 9) and the

Relationships Questionnaire (RQ; Bartholomew & Horowitz, 1991; *k* = 8). The PAM is a 16-item self-report scale derived from existing attachment measures (Bartholomew & Horowitz, 1991; Brennan, Clark & Shaver., 1998) for use specifically within psychosis populations to assess the dimensions of anxious and avoidant attachment in relation to non-romantic relationships. Respondents rate four statements which describe their current experience of relationships with significant people in their life. Scores are calculated for the two attachment dimensions, anxious and avoidant, and respondents are ascribed the attachment style on which they received the highest score. This was the most commonly used measure in studies investigating the relationship between symptom severity and attachment style (*k* = 8) followed by the RQ (*k* = 5). The RQ (Bartholomew & Horowitz, 1991) is a brief self-report questionnaire adapted from the Adult Attachment Questionnaire (Hazan & Shaver, 1987) based on four brief descriptions of experiences of relationships. It categorises adult attachment into four attachment styles; secure, fearful/avoidant, preoccupied (anxious) and dismissing/avoiding. Respondents rate how much each of the statements relates to them as well as selecting the one which they feel most appropriately describes their relationship style. When investigating prevalence, the RQ was most commonly used (*k* = 4). A full review of attachment measures used within psychosis research has been carried as part of the most recent in this field (Gumley et al., 2014).

3.3 Measures of psychotic experiences

Assessment measures for psychosis symptoms and psychotic experiences differed between clinical and non-clinical studies. In studies with clinical samples, ten measures of symptom severity were used (see Tables 1) the most

common of which was the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein & Opler, 1987; *k* = 13) an observer rated assessment of positive, negative symptoms of psychosis and general psychopathology. All but one of the clinical studies (Strand, Goulding, & Tidefors, 2015) utilised observer rated assessments of global psychosis symptoms, however, two of the case-control studies (Korver-Nieberg et al., 2013; van Dam, Korver-Nieberg, Velthorst, Meijer, & de Haan, 2014) also included self-report assessments of psychosis. In the six studies included which assessed psychosis symptoms in non-clinical samples, ten measures of psychosis symptoms and schizotypy were used. The most common being the revised Launay-Slade Hallucination Scale (rLSHS; Morrison, Wells & Nothard, 2000; *k* = 3) a self-report measure of hallucinatory experiences in non-clinical populations. Only one non-clinical study (Sitko et al., 2014) carried out a clinical interview with participants while the remainder used a combination of self-report questionnaires to assess positive and negative symptom experiences.

Table 1. Summary of studies included in meta-analysis

Source (Author, date, country)	Mean age (S.D.)	Gender (% male)	Psychosis measure	Attachment measure	N	Participants	Prevalence of subtypes of insecure attachment reported?			Associations with symptoms reported?		Quality rating
							Anxious	Avoidant	Fearful	Positive	Negative	
Clinical studies												
Berry et al. (2008) UK	44 (12.8)	69%	PANSS	PAM	96	Community clinical sample				✓	✓	95%
Berry et al. (2012) UK	39.1 (11.3)	81%	PANSS PSYRATS [1]	PAM	73	Inpatient and community sample				✓		95%
Kvrgic et al. (2011) Switzerland	44.6 (11.53)	66%	PANSS	PAM	127	Community clinical sample				✓	✓	95%
Quijada et al. (2012) Spain	15.7 (3.1)	74%	PANSS	RQ	31	ARMS clinical sample	✓	✓	✓	✓	✓	87.5%
Gajwani et al. (2013) UK	19 (3.09)	65%	SIPS	RAAS	51	UHR clinical sample	✓	✓	✓			95%
Boyette et al. (2014) Netherlands	32.5 (8.48)	84%	PANSS	PAM	110	Community clinical sample				✓	✓	91%
Ponizovsky et al. (2014) Israel	37.5 (11.7)	90%	PANSS	RQ	101	Inpatient clinical sample	✓	✓	✓	✓	✓	91%
Strand et al. (2015) Sweden *	43.02 (12.54)	64%	SCL-90	RQ	47	Community clinical sample				✓		73%
Quijada et al. (2015) Spain	16.7 (5.9)	76%	PANSS	RQ	38	ARMS clinical sample	✓	✓	✓			87.5%
Case-control studies												
Couture et al. (2007) USA * **	23.7 (nr)	66%	BPRS	ASQ	96	FEP clinical sample	✓	✓	✓			86%
- Paquette et al. (2001)	30.18 (nr)	50%			353	Healthy volunteers						
Ponizovsky et al. (2007) Israel	38.4 (10.2)	100%	PANSS	AAQ	30	Community clinical sample	✓	✓				77%
	34.4 (10.0)	100%			30	Healthy volunteers						
Korver-Nieberg et al. (2013) UK *	17.1 (nr)	59%	PANSS	PAM	32	Adolescents with early psychosis						
	16.3 (nr)	64%	GPTS[1] CAPE		78	Healthy volunteers				✓		95%
Michail & Birchwood (2014) UK	24 (4.5)	77%	PANSS	RAAS	60	FEP (no social anxiety)						
	24.4 (5.1)	35%			20	FEP (with social anxiety)	✓	✓	✓			91%
	27.6 (5)	35%			31	Social anxiety controls						
	24.2 (5)	46%			24	Healthy volunteers						
Ringer et al. (2014) USA	46.64 (9.15)	100%	PANSS	ECR	52	Community clinical sample						
	52 (11.25)	100%			26	Men with diagnosis of HIV/AIDS				✓	✓	91%
van Dam et al. (2014) Netherlands	31.9 (10.58)	84%	SAPS[1]	PAM	131	Community clinical sample						
	30.89 (8.12)	47%	SANS[1]		123	Clinical sample siblings				✓	✓	100%
	30.89 (7.47)	64%	CAPE[1]		72	Healthy volunteers						
Huguelet et al. (2015) Switzerland	41.6 (10.05)	71%	BPRS	AAI	28	Community clinical sample	✓	✓				82%
	41.3 (12.01)	61%			18	Healthy volunteers						
Wickham et al. (2015) UK *	37.91 (11.55)	70%	PANSS	RQ	176	Community clinical sample	✓	✓	✓	✓		91%
	37.73 (12.11)	52%			113	Healthy volunteers						
MacBeth et al. (2011) UK **	23.32 (7.59)	59%	PANSS	AAI	34	FEP clinical sample						
- van Ijzendoorn & Bakermans-Kranenburg (1996)	-	-			227	Young adults	✓	✓				73%
- Tyrrell & Dozier (1997)	-	-			42	Chronic mental illness sample						

(continued on next page)

Table 1 *(continued)*

Source (Author, date, country)	Mean age (S.D.)	Gender (m/f)	Psychosis measure	Attachment measure	N	Participants	Prevalence of subtypes of insecure attachment reported?			Associations with symptoms reported?		Quality rating
							Anxious	Avoidant	Fearful	Positive	Negatiive	
Non-clinical studies												
Berry et al. (2006) UK *	21 (nr)	28%	PS LSHS SAS	PAM[1] RQ	323	Students				✓	✓	77%
Berry et al. (2007a) UK	21 (nr)	22%	O-LIFE	PAM	304	Students				✓	✓	82%
MacBeth et al. (2008) UK *	20.28 (2.82)	22%	PS LSHS PDI	RSQ	213	Healthy volunteers				✓		100%
Pickering et al. (2008) UK *	20.9 (5.22)	30%	rLSHS PADS	RQ	503	Students				✓		91%
Tiliopoulous & Goodall (2009) UK	46.9 (18.9)	32%	SPQ	ECR	161	Healthy volunteers				✓	✓	95%
Sheinbaum et al. (2013) Spain, USA	20.60 (4.11) 19.8 (3.93)	17% 24%	WSS	RQ	547 1425	Spanish students American students				✓	✓	91%
Sitko et al. (2014) USA *	-	-	UM-CIDI	AAQ	5877	National community sample				✓		95%

* Denotes studies where composite effect size was calculated for analysis ** includes data from existing studies [1]measure used for analysis

Abbreviations: ARMS = At-risk mental state; FEP = First Episode Psychosis; UHR = Ultra-high risk

Attachment measures: Adult Attachment Interview (AAI: Caplan & Main, 1996); Adult Attachment Questionnaire (AAQ: Hazan & Shaver, 1987); Attachment Style Questionnaire (ASQ: Feeney, Noller & Hanrahan, 1994); Experiences in Close Relationships (ECR: Brennan, Clark & Shaver, 1998); Psychosis Attachment Measure (PAM: Berry, Wearden, Barrowclough, & Liversidge, 2006); Revised Adult Attachment Scale (RAAS: Collins, 1996); Relationship Questionnaire (RQ: Bartholomew & Horowitz, 1991); Relationship Style Questionnaire (RSQ: Griffin & Bartholomew, 1994).

Psychosis measures: Brief Psychiatric Rating Scale (BPRS: Ventura et al., 1993); Community Assessment of Psychic Experience (CAPE: Stefanis et al., 2002); Green et al. Paranoid Thoughts Scale (GPTS: Green et al., 2008); Launay-Slade Hallucination Scale (LSHS: Launay & Slade, 1981); Oxford-Liverpool Inventory of Feelings and Experiences scale (O-LIFE: Mason, Calridge & Jackson, 1995); Persecution And Deservedness Scale (PADS: Melo, Corcoran, Shryane, & Bentall, 2009); Positive and Negative Syndrome Scale (PANSS: Kay, Fiszbein & Opler, 1987); Peters Delusion Inventory (PDI: Peter, Joseph, Day & Garety, 2004); Psychotic Symptom Rating Scales (PSYRATS: Haddock, McCarron, Tarrier & Faragher, 1999); Paranoia Scale (PS: Fenigstein & Vanable, 1992); Launay-Slade Hallucination Scale-Revised version (rLSHS: Morrison, Wells & Nothard, 2000); Scale for the Assessment of Negative Symptoms (SANS: Andreasen,1982); Scale for the Assessment of Positive Symptoms (SAPS: Andreasen,1984); Social Anhedonia Scale (SAS: Eckblad, Chapman, Chapman & Mishlowe, 1982); Symptom Checklist (SCL-90R: Derogatis, 1997); Structured Interview for Prodromal Syndromes (SIPS: Miller et al., 2002); Schizotypal Personality Questionnaire (SPQ: Raine, 1991); University of Michigan Composite International Diagnostic Interview (UM-CIDI: Wittchen & Kessler, 1994); Wisconsin Schizotypy Scales (WSS: Kwapil, Barrantes-Vidal, & Silvia, 2008).

3.4 Prevalence of insecure attachment

Ten studies reported prevalence rates of insecure attachment style in clinical (k = 11) and non-clinical (k = 6) samples. The results of the subgroup analyses are presented in Figure 2. Within the psychosis sample, the pooled estimate of prevalence was 0.763 (95% CI= .65-0.84), meaning 76% of individuals with psychosis were identified as having insecure attachment styles. This was significantly higher (Q = 29.24, df = 1, p<.001) than reported prevalence rates of insecure attachment in non-clinical samples (38%; 95% CI = .31 - .44).

3.5 Subgroup prevalence rates

Further subgroup analysis was carried out within the psychosis sample to examine the distribution of insecure attachment style (anxious, avoidant, fearful) within this population. Fearful attachment style was found to have the highest prevalence in the studies analysed with a pooled estimate of 0.38 (k = 7, 95% CI= .26 - .50) suggesting 38% of the sample displayed this attachment style. The second most prevalent was avoidant which accounted for 23% of the sample (k = 10, 95% CI= .134 - .37). Anxious attachment was only found to occur in 17% of individuals with psychosis (k = 10, 95% CI= .09 – .28).

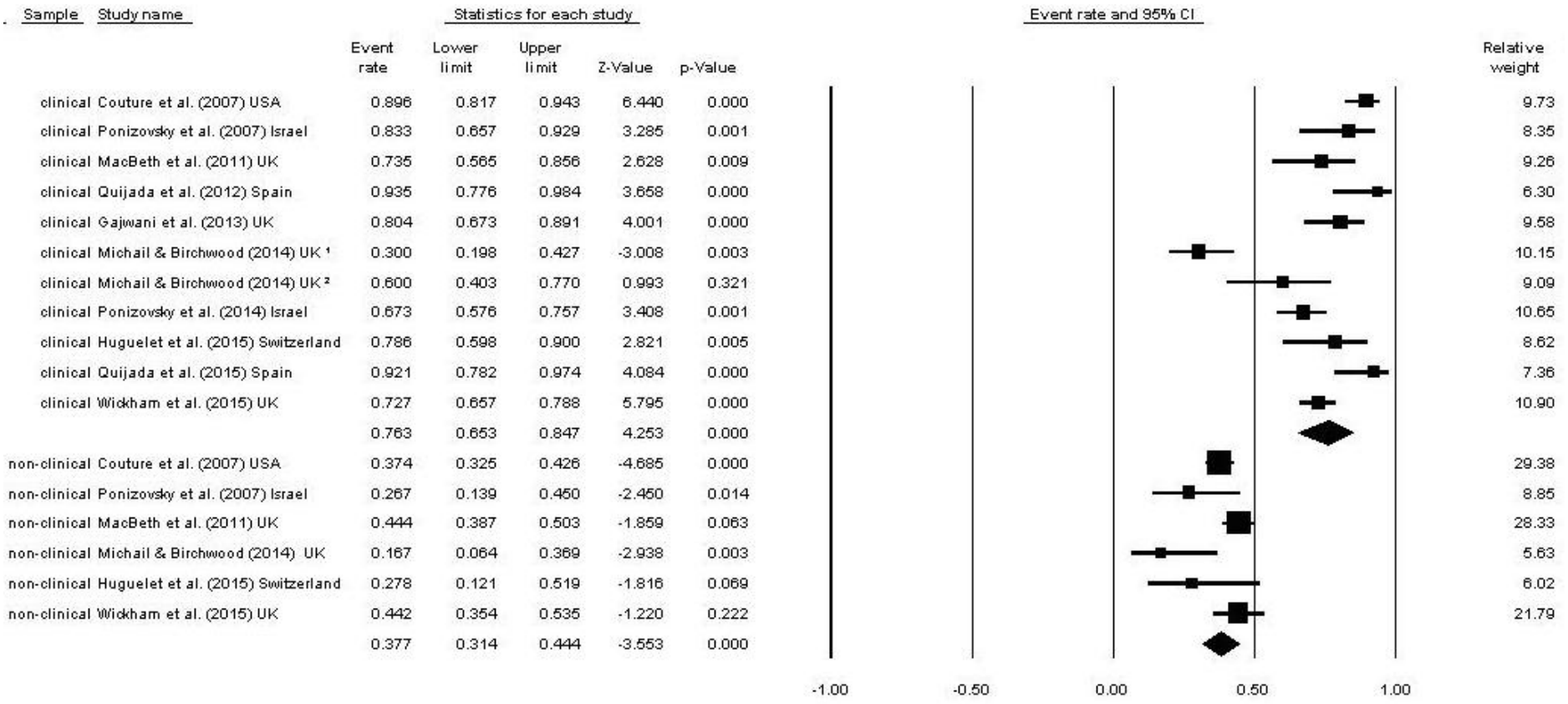


Figure 2. Prevalence of insecure attachment in clinical and non-clinical samples

3.6 Heterogeneity in prevalence studies

Heterogeneity between studies was assessed using the Q and I^2 statistics. Conventions suggest I^2 values of 25%, 50% and 75% can be interpreted as low, moderate and high, respectively (Higgins, Thompson, Deeks & Altman, 2003). As anticipated, the overall effect size for insecure attachment within the psychosis population appeared to be heterogeneous (Q = 72.47, df = 10, p <.001). Additionally, substantial variability was observed between the included studies (I^2 = 86.20) meaning that 86% of the variance in effect sizes was due to between-study variance.

Subsequent subgroup analysis of insecure attachment type within the clinical sample also displayed high variance (i.e., all I^2 ≥ 86.55), indicating considerable heterogeneity between studies. The non-clinical sample showed evidence of lower heterogeneity (Q = 12.15, df = 5, p <.001, I^2= 58.84) suggesting there was only moderate variability between these study samples.

3.7 Relationship to symptoms

Overall sample analysis was carried out in relation to positive and negative symptom severity and anxious and avoidant attachment dimensions (see Figures 3 & 4). As already stated, individuals who have a fearful attachment style present as both highly anxious and avoidant. Therefore, far fewer studies have looked at the association between symptoms and this third attachment style instead examining the relationship between the two underlying dimensions and symptom severity. Based on Cohen's (1988) criteria for effect size, the association between positive symptoms severity and anxious attachment style showed a small but significant effect, r = .27 (95% CI= .21 - .32, z = 8.91, p<.001). The relationship between positive symptoms and avoidant attachment style also

showed a small effect, r = .18 (95% CI = .12 - .23, z = 6.53, p<.001). There was also a significant but small effect found between the severity of negative psychosis symptoms and both anxious (r = .17, 95% CI= .08 - .25, z = 3.83, p<.001) and avoidant (r = .28, 95% CI = 0.20 - 0.36, z = 6.41, p<.001) attachment styles.

3.8 Heterogeneity in symptom severity studies

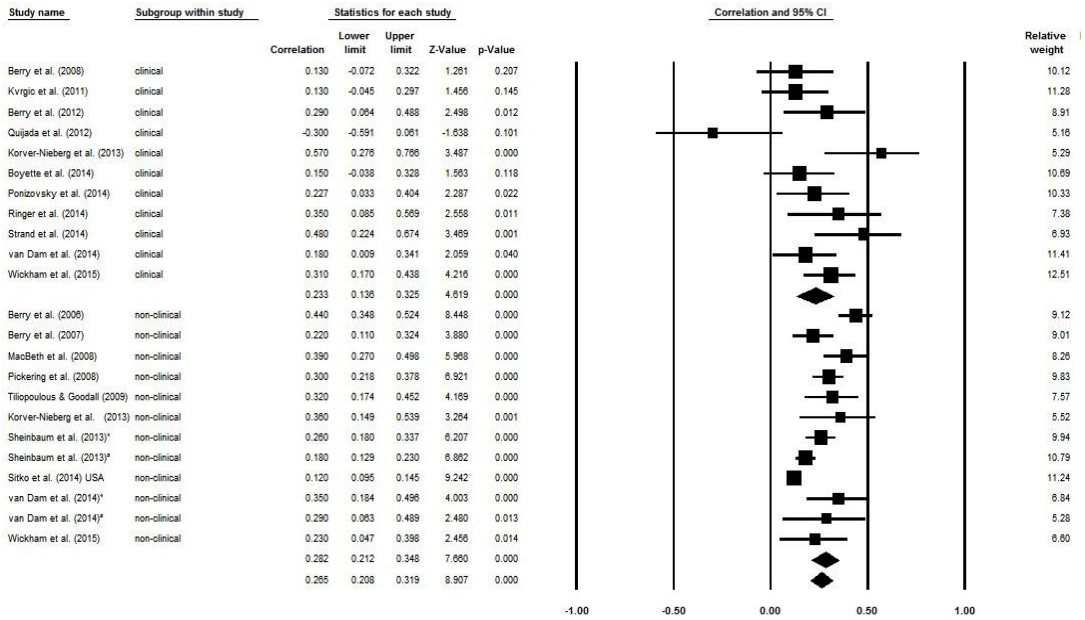
As was found in the analysis of prevalence rates, there appeared to be substantial variability between positive symptom severity and anxious (Q = 109.31, df = 22, p <.001, I^2 = 79.87) and avoidant (Q = 81.88, df = 22, p <.001, I^2 = 73.13) attachment styles. This was also found to be the case for negative symptoms and anxious (Q = 75.48, df = 13, p <.001, I^2= 82.78) and avoidant (Q = 81.84, df = 13, p <.001, I^2= 81.12) attachment styles.

3.9 Subgroup analysis of relationship with symptoms

Subgroup analysis was carried out on clinical and non-clinical samples to explore group differences in the reported relationship between symptom severity and attachment style and whether this may account for high levels of heterogeneity in the overall analysis (see Figures 3 & 4). Within the clinical subgroup small, significant associations were found between both anxious (r = .23, 95% CI = .14 - .33, z = 4.62, p<.001) and avoidant (r = .15, 95% CI = .04 - .25, z = 2.76, p<.01) attachment styles and positive symptoms. The largest association was between positive symptoms and anxious attachment style although this effect was small. The relationship between negative symptoms and anxious (r = .11, 95% CI = -.03 - .25, z = 1.90, p = .057) and avoidant (r = .11, 95% CI = -.03 - .25, z = 1.50, p = .133) attachment style were non-significant.

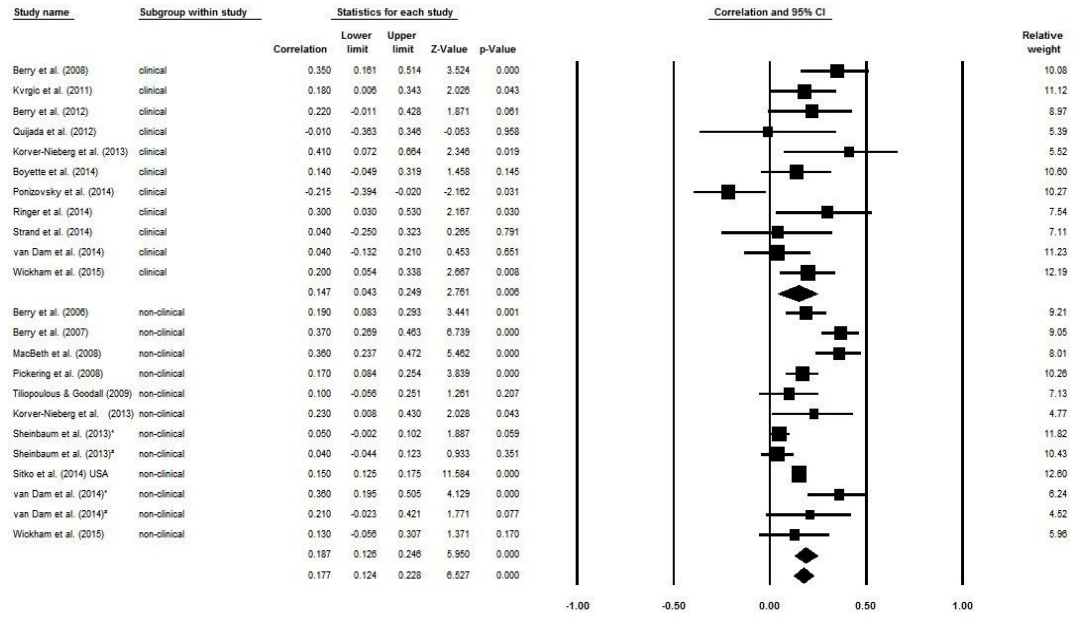
The relationship between positive and negative symptom severity and anxious and avoidant attachment styles appeared to be greater in the non-clinical subgroup analysis. Small, significant relationships were found between positive and negative symptoms and anxious attachment styles (positive: r = .28, 95% CI = .21 - .35, z = 7.66, p<.001; negative: r = .25, 95% CI = .12 - .37, z = 3.68, p<.001). This was also found to be the case for positive symptoms and avoidant attachment style (r = .19, 95% CI = .13 - .25, z = 5.95, p<.001) while a medium association was found to between negative symptoms and avoidant attachment (r = .38, 95% CI = .28 - .48, z = 7.01, p<.001).

Anxious attachment style x positive symptoms



Study name	Subgroup within study	Correlation	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Berry et al. (2008)	clinical	0.130	-0.072	0.322	1.261	0.207	10.12
Kvrgic et al. (2011)	clinical	0.130	-0.045	0.297	1.456	0.145	11.28
Berry et al. (2012)	clinical	0.290	0.064	0.488	2.498	0.012	8.91
Quijada et al. (2012)	clinical	-0.300	-0.591	0.061	-1.638	0.101	5.16
Korver-Nieberg et al. (2013)	clinical	0.570	0.276	0.766	3.487	0.000	5.29
Boyette et al. (2014)	clinical	0.150	-0.038	0.328	1.563	0.118	10.69
Ponizovsky et al. (2014)	clinical	0.227	0.033	0.404	2.287	0.022	10.33
Ringer et al. (2014)	clinical	0.350	0.085	0.569	2.558	0.011	7.38
Strand et al. (2014)	clinical	0.480	0.224	0.674	3.469	0.001	6.93
van Dam et al. (2014)	clinical	0.180	0.009	0.341	2.059	0.040	11.41
Wickham et al. (2015)	clinical	0.310	0.170	0.438	4.216	0.000	12.51
		0.233	0.136	0.325	4.619	0.000	
Berry et al. (2006)	non-clinical	0.440	0.348	0.524	8.448	0.000	9.12
Berry et al. (2007)	non-clinical	0.220	0.110	0.324	3.880	0.000	9.01
MacBeth et al. (2008)	non-clinical	0.390	0.270	0.498	5.968	0.000	8.26
Pickering et al. (2008)	non-clinical	0.300	0.218	0.378	6.921	0.000	9.83
Tiliopoulous & Goodall (2009)	non-clinical	0.320	0.174	0.452	4.169	0.000	7.57
Korver-Nieberg et al. (2013)	non-clinical	0.360	0.149	0.539	3.264	0.001	5.52
Sheinbaum et al. (2013)*	non-clinical	0.260	0.180	0.337	6.207	0.000	9.94
Sheinbaum et al. (2013)#	non-clinical	0.180	0.129	0.230	6.862	0.000	10.79
Sitko et al. (2014) USA	non-clinical	0.120	0.095	0.145	9.242	0.000	11.24
van Dam et al. (2014)*	non-clinical	0.350	0.184	0.496	4.003	0.000	6.84
van Dam et al. (2014)#	non-clinical	0.290	0.063	0.489	2.480	0.013	5.28
Wickham et al. (2015)	non-clinical	0.230	0.047	0.398	2.456	0.014	6.60
		0.282	0.212	0.348	7.660	0.000	
		0.265	0.208	0.319	8.907	0.000	

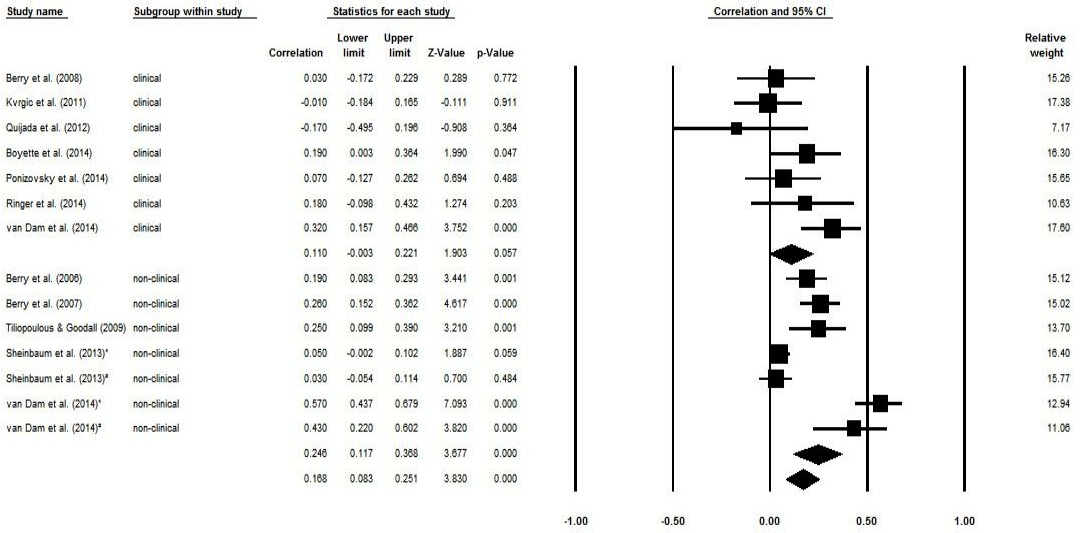
Avoidant attachment style x positive symptoms



Study name	Subgroup within study	Correlation	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Berry et al. (2008)	clinical	0.350	0.161	0.514	3.524	0.000	10.08
Kvrgic et al. (2011)	clinical	0.180	0.006	0.343	2.026	0.043	11.12
Berry et al. (2012)	clinical	0.220	-0.011	0.428	1.871	0.061	8.97
Quijada et al. (2012)	clinical	-0.010	-0.363	0.346	-0.053	0.958	5.39
Korver-Nieberg et al. (2013)	clinical	0.410	0.072	0.664	2.346	0.019	5.52
Boyette et al. (2014)	clinical	0.140	-0.049	0.319	1.458	0.145	10.60
Ponizovsky et al. (2014)	clinical	-0.215	-0.394	-0.020	-2.162	0.031	10.27
Ringer et al. (2014)	clinical	0.300	0.030	0.530	2.167	0.030	7.54
Strand et al. (2014)	clinical	0.040	-0.250	0.323	0.265	0.791	7.11
van Dam et al. (2014)	clinical	0.040	-0.132	0.210	0.453	0.651	11.23
Wickham et al. (2015)	clinical	0.200	0.054	0.338	2.667	0.008	12.19
		0.147	0.043	0.249	2.761	0.006	
Berry et al. (2006)	non-clinical	0.190	0.083	0.293	3.441	0.001	9.21
Berry et al. (2007)	non-clinical	0.370	0.269	0.463	6.739	0.000	9.05
MacBeth et al. (2008)	non-clinical	0.360	0.237	0.472	5.462	0.000	8.01
Pickering et al. (2008)	non-clinical	0.170	0.084	0.254	3.839	0.000	10.26
Tiliopoulous & Goodall (2009)	non-clinical	0.100	-0.056	0.251	1.261	0.207	7.13
Korver-Nieberg et al. (2013)	non-clinical	0.230	0.008	0.430	2.028	0.043	4.77
Sheinbaum et al. (2013)*	non-clinical	0.050	-0.002	0.102	1.887	0.059	11.82
Sheinbaum et al. (2013)#	non-clinical	0.040	-0.044	0.123	0.933	0.351	10.43
Sitko et al. (2014) USA	non-clinical	0.150	0.125	0.175	11.584	0.000	12.60
van Dam et al. (2014)*	non-clinical	0.360	0.195	0.505	4.129	0.000	6.24
van Dam et al. (2014)#	non-clinical	0.210	-0.023	0.421	1.771	0.077	4.52
Wickham et al. (2015)	non-clinical	0.130	-0.056	0.307	1.371	0.170	5.96
		0.187	0.126	0.246	5.950	0.000	
		0.177	0.124	0.228	6.527	0.000	

Figure 3. Relationship between positive symptoms and attachment style

Anxious attachment style x negative symptoms



Avoidant attachment style x negative symptoms

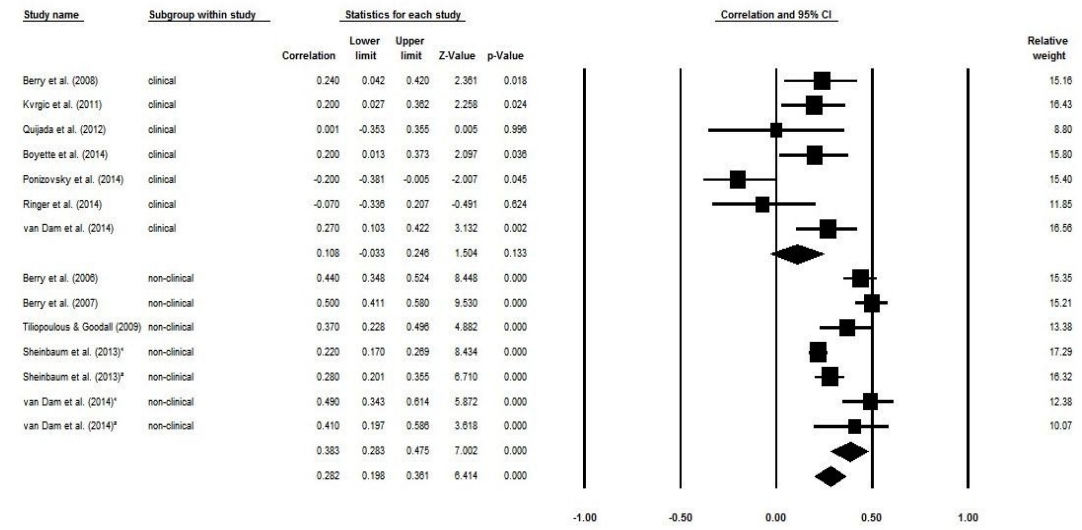


Figure 4. Relationship between negative symptoms and attachment style

3.10 Heterogeneity in subgroup analysis

Subsequent subgroup analyses displayed significant heterogeneity for all non-clinical samples (i.e., all $I^2 \geq 80.66$) while the clinical subgroups displayed moderate variance across the analyses (i.e., all $I^2 = 49.82 - 67.54$).

3.11 One study removed analysis

It was hypothesised that two studies may have been exerting undue influence over the meta-analytic results within the clinical subsamples as they were the only two papers to report negative relationships between symptom severity and attachment style (Ponizovsky, Arbitman, Baumgarten-Katz & Grinshpoon, 2014; Quijada, Tizón, Artigue, Kwapil & Barrantes-Vidal, 2012). The results of the one study removed analysis suggested that these studies may be outliers within specific subgroup analyses. Removal of Quijada et al. (2012) from the clinical subgroup analysis of the relationship between symptom severity and anxious attachment style changed the relationship from non-significant to significant for negative symptoms (adjusted $r = .13$, 95% CI = .02 - .24, $p<.05$, $I^2 = 47.11$) and strengthened the association in positive symptoms (adjusted $r = .25$, 95% CI = .17 - .33, $p<.001$, $I^2 = 37.04$). This was also found to be the case when Ponizovsky et al. (2014) was removed from the subgroup analysis of the relationship between symptom severity and avoidant attachment style (negative symptoms: adjusted $r = .19$, 95% CI = .10 - .27, $p<.001$, $I^2 = 10.64$; positive symptoms: adjusted $r = .19$, 95% CI = .11 - .26, $p<.001$, $I^2 = 15.55$). Further examination of the quality assessment of both papers did not highlight any methodological or sampling reasons to exclude the papers from analysis and given that they were not consistent outliers across all subgroup analysis it may be that these papers represent genuine heterogeneity within this field of research and were therefore kept within the analysis (Ryan, 2013), however, it is worth

noting that these studies were both drawn from Mediterranean cultures which may influence the presentation of attachment style (van Ijzendoorn & Kroonenberg, 1988).

4. Discussion

The current meta-analysis synthesised existing data on the relationship between attachment and psychosis and aimed to i) report and compare the prevalence of insecure attachment style in people with psychosis and healthy controls ii) explore the distribution of insecure attachment styles amongst people with psychosis and iii) examine the relationship between insecure attachment and psychosis-spectrum experiences in clinical and non-clinical samples.

4.1 Prevalence of insecure attachment in psychosis

The results of the meta-analysis suggest that the prevalence of insecure attachment style is significantly higher in individuals with psychosis than rates reported by non-clinical samples, almost 80% compared to just under 40% as found in general population samples (Mickelson, Kessler & Shaver, 1997). This finding makes sense given the high rates of attachment disrupting events that individuals with psychosis have been found to experience (Bentall et al., 2014; Varese et al., 2012). The majority of people with psychosis were shown to have a fearful attachment style, which is characterised by high response rates on both anxious and avoidant attachment subscales and indicates an internal working model that incorporate negative views of both self and others (Bartholomew & Horowitz, 1991). This finding is striking given that the majority of studies included in the analysis did not assess fearful attachment meaning that the prevalence rate reported in the current analysis could be a considerable under-estimation.

Fearful attachment style, more commonly referred to in childhood as disorganised, is understood to arise from early experiences of unresolved separation, loss and violence at home (van Ijzendoorn, Schuengel & Bakernsmans-Kranenburg, 1999) and is predictive of general psychopathology, social and cognitive difficulties (Green & Goldwyn, 2002; Kay & Green, 2013). Crucially, the types of events associated with disorganised attachment have all been found to contribute to the development of, and increase in, psychosis symptoms (Read et al., 2009; Trotta, Murray & Fisher, 2015).

The findings of the current review are in contrast to previous reviews which have suggested that the most common attachment style in psychosis populations is avoidant (Berry et al., 2007b; Korver-Nieberg et al., 2014; Gumley, et al., 2014). However, the attributes of fearful attachment align conceptually with the psychosocial model of psychosis which describes a fundamental role for negative cognitive biases about the self and environment in the development and maintenance of psychosis (Garety, Kuipers, Fowler, Freeman & Bebbington, 2001; Penn et al., 2004). Furthermore, it has been suggested that fearful attachment mediates the role between early trauma and the development of psychosis (Sheinbaum, Kwapil & Barrantes-Vidal, 2014). Fearful attachment has been associated with increased dissociative states (van Ijzendoorn et al., 1999), low self-esteem (Bentall & Fernyhough, 2008) and a greater number of maladaptive schematic views of the self and others in individuals with psychosis (Mason, Platts & Tyson, 2005) and high-risk clinical groups (Addington & Tran, 2009). Negative schematic views are thought to contribute to the development of positive symptoms through the misappraisal of anomalous experiences (Garety et al., 2001) and increased dissociation in response to childhood sexual abuse and

neglect may mediate the relationship between trauma and hallucinations (Perona-Garcelán et al., 2010; Varese, Barkus, & Bentall, 2012). While the mechanism through which hallucinations are mediated by dissociation remains unclear it has been speculated that individuals adopt a dissociative coping style to manage early trauma experienced (Kilcommons & Morrison, 2005).

However, there is also evidence that attachment style can change over time (Pinquart, Feußner, & Ahnert, 2013) and psychosis itself may be an attachment disrupting event as it has been conceptualised as a traumatic event which significantly changes interpersonal relationships (Morrison, Bowe, Larkin & Nothard, 1999; Rooke & Birchwood, 1998). However, evidence from a birth-cohort study found increased likelihood of developing psychosis if the mother reported that the child was unwanted during pregnancy (Myhrman, Rantakallio, Isohanni & Jones, 1996) and the inclusion of more at-risk and prodromal samples (Quijada et al., 2012; Quijada et al., 2015) suggest the relationship may be causal. Future research, including a greater number of longitudinal and at-risk samples, examining the role of fearful attachment in psychosis is needed to fully understand the impact that it has on the development and maintenance of positive symptoms in relation to other mediating cognitive factors.

4.2 Attachment anxiety and positive symptoms of psychosis

Across the continuum, there was a small but significant relationship between increased symptom severity and insecure attachment. As with previous reviews, this relationship was more evident in sub-clinical samples (Korver-Nieberg et al., 2014). The current analysis found a stronger relationship between positive symptoms and attachment insecurity, with the greatest relationship found between positive symptoms and anxious attachment styles. This finding is

in contrast to previous reviews which have more commonly reported a relationship between avoidant attachment style and increased symptom severity within psychosis populations (Berry et al., 2007b; Korver-Nieberg et al., 2014). However, anxious attachment style has been linked to low self-esteem and a negative self-image in psychosis (Ringer, Buchanan, Olesek & Lysaker, 2014) and there are high rates of comorbid social anxiety within this population (Michail & Birchwood, 2014). High levels of anxious attachment style have also been found in the carers of people with psychosis and is associated with emotional over involvement and increased critical comments from carers (Alvarez-Jimenez et al., 2010). Increased experiences of criticism at home may lead the individual to develop a greater number of negative cognitive biases (Berry et al., 2007b) known to contribute to the positive symptoms of psychosis (Garety et al., 2001). Additionally, positive symptoms could develop as a result of increased anxiety and poorer affect regulation in psychosis (Gumley & Schwannauer , 2006) as research in at risk groups has found high rates of interpersonal sensitivity and stress reactivity can predict positive symptoms, such as paranoia, in non-clinical and at-risk samples (Lataster, Valmaggia, Lardinois, van Os & Myin-Germeys, 2013; Masillo et al., 2012). Given the significant role that anxiety appears to have in development and maintenance of positive symptoms, particular attention should be paid to affect dysregulation and negative cognitive biases, such as shame and fear of stigma, when developing new interventions for psychosis (Michail & Birchwood, 2014).

4.3 Avoidant attachment style and symptom severity

A small relationship was found between attachment avoidance and positive symptoms across clinical and non-clinical samples. This finding supports

the hypothesis that there is a link between paranoia and avoidance, understood to be caused by distrust of others and increased social isolation (Freeman, Garety, Kuipers, Fowler & Bebbington, 2002). The relationship between negative symptoms and avoidant attachment style was found to be moderate within non-clinical groups, however, this relationship was found to be non-significant in the clinical group. This may be in part due to the fact that fewer studies examined the relationship between attachment style and negative symptoms and the influence of outliers. However, despite the relationship becoming significant once outliers were removed, the relationship remained smaller than the association between positive symptom severity and either anxious or avoidant attachment style.

The discrepancy in findings between the clinical and non-clinical groups may have been influenced by the increased use of schizotypy measures within non-clinical studies. Whilst high scores on measures of negative schizotypy are indicative of sub-clinical negative psychotic-like experiences, the constructs that are assessed (e.g. social anhedonia) could also be conceptualised as discomfort with, and decreased experiences of, intimacy which overlap significantly with the construct of avoidant attachment (Kwapil, Barrantes-Vidal & Silvia, 2008). However, avoidant coping styles have also been associated with increased "sealing over" or minimisation of symptoms and has been associated with poorer clinical outcomes (Gumley et al., 2014; Korver-Nieberg et al., 2014; Tait, Birchwood & Trower, 2003). Therefore, the group differences highlighted may be due to lower rates of symptom reporting by clinical participants with avoidant coping styles or an overall reduction in help-seeking and engagement in services by such individuals, meaning that they are not represented by clinical research samples.

4.4 Impact of culture on attachment

One study removed analysis suggested two samples were exerting undue influence over the meta-analytic findings (Quijada et al., 2012; Ponizovsky et al., 2014). Whilst there were no methodological reasons to exclude these papers, the difference in rates of attachment within these studies may be due to cultural variations in attachment style. Both took place in countries which are found to display more behaviours in line with collectivist societies, despite also holding individualistic values (Hofstede, Hofstede & Minkov, 1991). Research into the stability of attachment styles cross-culturally has shown that in countries which align with collectivist values children display less avoidant and anxious attachment behaviours when separated from their care-giver due to greater role of extended family and the local community within care-giving (van Ijzendoorn & Kroonenberg, 1988). Therefore, this may explain the difference shown in the relationship between attachment style and symptoms within these studies. It is worth noting, however, that other studies included in the analysis were also from Israel and Spain but were not identified as outliers (Ponizovsky, Nechamkin & Rosca, 2007; Sheinbaum, Bedoya, Ros-Morente, Kwapil, & Barrantes-Vidal, 2013). Intra-culture variability in attachment style has been shown to be greater than cross-cultural variability (van Ijzendoorn & Kroonenberg, 1988), especially in countries that are found to have a combination of individualist and collectivist values (Hofstede, Hofstede & Minkov, 1991). Therefore, this may account for differences in attachment style reporting across these studies.

4.5 Limitations of the review

There were several methodological limitations to the current meta-analysis which need to be considered when interpreting the findings.

4.4.1 Heterogeneity of effect size

The substantial levels of statistical heterogeneity displayed between studies means that any conclusions drawn from the analysis should be interpreted with caution and limits the generalisability of the findings of the review (Higgins, Thompson & Deeks, 2003). However, rates of insecure attachment in both the clinical and non-clinical samples are comparable to those reported in an extensive review of attachment assessment and categorisation suggesting that, despite small sample sizes and high variance in effect size, the results are consistent with existing research in this field (Bakermans-Kranenburg & van IJzendoorn, 2009).

4.4.2 Study methodologies and measurement

As in previous reviews, a key limitation of the current review is that the studies included were all cross-sectional and therefore no conclusions about the causal relationship between psychosis and attachment can be made (Berry et al., 2007b; Korver-Nieber et al., 2014). To fully understand this relationship, including whether attachment style is predictive of the symptoms of psychosis or whether attachment style changes as a result of psychosis, prospective longitudinal studies are essential. However, an increasing number of studies have included at-risk populations (Gajwani, Patterson, & Birchwood, 2013, Quijada et al., 2012; Quijada et al., 2015) which goes some way to address this methodological weakness.

Differences across clinical and non-clinical studies in the measures used to assess symptom severity also limit the generalisability of the findings. Whereas the majority of clinical studies used observer rated measures, the non-clinical and case-control studies were more likely to use self-report measures. Within clinical

samples, self-report measures are associated with reporting fewer psychiatric symptoms than when using observer rated measures, this was found to be especially prevalent amongst individuals with psychosis who had avoidant attachment styles (Gumley et al., 2014). The use of self-report measures within case-control studies included in the analysis may have influenced the level of association found between symptom severity and attachment styles and should be taken into consideration when designing future attachment research with individuals with psychosis.

In addition to using more self-report measures, non-clinical studies tended to use more measures of schizotypy symptoms than global psychosis symptom measures. There has been debate about whether these measures are assessing sub-clinical symptom experiences or instead assess trait characteristics. However, a recent review argued that existing measures of schizotypy are robust at assessing both sub-clinical psychotic like experiences and characterological traits (Mason, 2015) suggesting that these measurements are appropriate for assessing the symptoms of psychosis across the continuum.

4.4.3 Publication bias

A final limitation of the current analysis was lack of any formal assessment of publication bias. The need to assess publication bias when synthesising results from multiple papers developed as a result of meta-analytic techniques traditionally being used in intervention trials, in particular those funded by pharmaceutical companies, where non-significant results may influence whether or not papers are published (Rothstein, Sutton & Bornstein, 2005). Attempts to limit the effect of publication bias were carried out through making search terms and the process of exclusion and inclusion as transparent as possible to allow the

reader to draw conclusions about the validity of the data (Berlin & Ghersi, 2005) and by approaching authors when papers did not report non-significant results. Papers were excluded from the analysis if did not report, or provide when contacted, complete statistical data. However, as no formal assessment of publication bias was carried out, the current meta-analysis may be influenced by publication or other selection bias limiting the validity and generalisability of the findings.

4.5 Clinical implications: the role of attachment in recovery

The findings of the current review suggest that there is evidence of increased rates of insecure attachment in psychosis populations and that there is a small association with symptom severity across the continuum. Previous reviews have outlined the impact that insecure attachment has on engagement with services, and is associated with increased hospitalisation and lengths of stay on inpatient wards and recovery style (Korver-Nieberg et al., 2014; Gumley et al., 2014). However, contrary to the findings of these reviews, the current analysis found evidence that there are high rates of individuals with psychosis who have a fearful attachment style. This finding is important when considering therapeutic engagement and the subsequent impact that will have on recovery. As discussed above, fearful attachment is understood to contribute to the development of maladaptive schemas (Mason et al., 2005) which lead individuals to have increased difficulties with interpersonal relating and emotion regulation in adulthood (Young, Klosko & Weishaar, 2003). Maladaptive cognitive schemas developed as a result of early adversity are understood to influence the interpretation and emotional response to the symptoms of psychosis (Birchwood, 2003, Thomas, Farhall & Shawyer, 2013). Additionally, the

maladaptive schemas that individuals with a fearful attachment style would have developed in response to early care experiences mean they are more likely to experience services as simultaneously intrusive and rejecting and this may lead them to struggle with continued contact with services or to disengage at crucial points in their treatment (Bartholomew & Horowitz, 1991).

However, it is also important to remember that attachment can be a protective factor as much as it is a risk factor and a secure attachment can help to defend against symptoms and improve recovery outcomes through increased resilience (Harder, 2014). As already discussed, there is increased evidence that attachment style can change over the lifespan (Pinquart, Feußner, & Ahnert, 2013). Therefore, engagement with services may give individuals with an insecure attachment style the opportunity to develop alternative coping strategies and interpersonal relating styles which may in turn improve recovery outcomes. Finally, attachment is only one mechanism in a complex and heterogeneous disorder and it is important to think about within the context of multiple social and environmental factors which contribute to the development and maintenance of symptoms (Bentall et al., 2014). Therefore, the role of attachment should be incorporated into the broader bio-psycho-social model of psychosis to develop our understanding of the complex interplay between these factors.

4.6. Conclusion

The current review is the first to critically and systematically evaluate the relationship between attachment style and experience of psychosis within clinical and non-clinical samples. The aim was to quantitatively summarise the data from a variety of study samples and methodologies. In particular, the current

analysis built on previous reviews by including studies that reported on first episode psychosis and ultra-high risk groups (Gumley et al., 2014) as well as those with more enduring symptoms. The review found evidence for significantly higher rates of insecure attachment in psychosis populations. In particular, the majority of individuals were found to have fearful attachment styles which differed from previous findings. Insecure attachment styles were also found to be associated with positive and negative symptom severity in both clinical and non-clinical samples. The paper outlines a number of methodological limitations of the current review and the included papers. Moreover, given the high variability in the findings presented, any conclusions drawn should be tentative given that this is a fairly new area of research within psychosis. Nonetheless, there are important potential clinical implications, in particular in relation to engagement with services and subsequent recovery from psychosis, and the paper outlines consistent findings across both clinical and non-clinical samples supporting a continuum conceptualisation of psychosis. Future research in attachment should attempt to address the issue of how it relates to the development of psychosis and the interaction between attachment style and other social-environmental risk and protective factors.

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Part 2: Empirical Paper

Developing a brief trauma screening tool for use in psychosis

Abstract

Aims: NICE (2014) recommend trauma and PTSD should be assessed and treated in psychosis. However, routine assessment is rare due to the limitations of existing trauma measures making them less suitable for this population. The aim of the current study was to develop and validate a brief trauma screening tool for routine use in psychosis services, with the aim of improving identification and treatment of post-traumatic stress reactions.

Method: The Trauma And Life Events (TALE) checklist was developed in conjunction with clinical and research experts in trauma and psychosis. The psychometric properties (i.e. test-retest reliability, content validity and construct validity) of the TALE were evaluated in a psychosis sample (n = 39) and a non-clinical sample (n = 121). The broader impact of trauma was explored through exploratory thematic analysis of clinical participants' responses on the TALE.

Results: The TALE displayed moderate psychometric acceptability in the psychosis sample. Psychometric properties were less robust in the non-clinical sample, which may have been due to low baseline rates of trauma. In the clinical sample, psychosis-related traumas were reported to have the greatest impact. High rates of childhood adversity were reported, in particular bullying and social isolation. Thematic analysis of the broader impact revealed themes of low self-esteem, changed beliefs about the self and difficulties relating to others.

Conclusions: The TALE is the first screening tool specifically designed to meet the needs of routine trauma screening in psychosis services, in line with NICE recommendations. The psychometric results show promise. Further research should include validation of its use in routine clinical services.

1. Introduction

1.1 Trauma and adversity in psychosis

The role of early trauma in the development of psychosis is now well established (Morrison, Frame & Larkin, 2003). A recent meta-analysis found individuals with psychosis were at least twice as likely to have experienced childhood adversity and trauma as controls (Varese et al., 2012) and reported rates of childhood sexual abuse and maltreatment are found to be high within psychosis populations (Bebbington et al., 2011; Fisher, et al., 2014; Matheson, Shepherd, Pinchbeck, Laurens & Carr, 2013; Morrison et al., 2003; Read, Agar, Argyle & Aderhold; 2003; Schäfer & Fisher, 2011). Furthermore, early adversity has now been implicated as an environmental risk factor for psychosis with prospective studies suggesting that almost all types of trauma experienced in childhood and adolescence are associated with increased psychotic symptoms (Janssen et al. 2004; Kelleher et al., 2013; Spauwen Krabbendam, Lieb, Wittchen & van Os, 2006).

While research has traditionally focused on childhood experiences of physical and sexual abuse (Bebbington et al., 2011; Bendall, et al., 2011; Fisher et al., 2014; Matheson et al., 2013; Schäfer & Fisher, 2011) there is now a growing body of evidence to suggest psychosis is associated with a range of social adversities. In particular, experiences of loss, separation and witnessing interpersonal violence in childhood (Read et al., 2009; Trotta et al., 2015) are all thought to play a role in the development of psychosis and exposure to systematic bullying from peers has also been linked to the development of persistent psychotic experiences (Kelleher et al., 2013; Mackie, Castellanos-Ryan & Conrod, 2011; Mackie et al., 2013; van Dam et al., 2012). In addition to individual

experiences of victimisation, discrimination at a societal level has also been linked to psychosis. For example, socioeconomic adversities including economic deprivation (Harrison et al., 2001), growing up in care (Bentall et al., 2012) living in an urban environment (Vassos et al., 2012), and migration (Cantor-Graee & Selton, 2005), have also been associated with an increased risk of psychosis.

Potential pathways between specific adversities and specific symptoms are currently being investigated. Childhood sexual and emotional abuse have been associated with hallucinations in psychosis and bipolar disorder while neglect and physical victimisation have been linked to paranoia (Bentall et al, 2014; Daalman et al., 2012; Hammersley et al., 2003; Hardy et al., 2016; Read, van Os, Morrison & Ross 2005; Schäfer, Ross & Read, 2008). While there is some evidence of specific links between early adversity and specific symptoms there appears to be more consistent evidence to suggest a global effect of trauma within psychosis (Shevlin et al., 2008; Longden, Sampson & Read, 2015). There is now evidence of a dose-response effect of exposure to childhood abuse and victimisation, including peer bullying, leading to increased psychotic symptoms (Read et al., 2005; Varese et al., 2012; Wolke, Lereya, Fisher, Lewis & Zammit, 2014). Moreover, the combination of repeated trauma, adversity and lifetime stressors is believed to cumulatively increase the risk of developing psychosis to a greater degree than any one identified adversity (Morgan et al., 2014).

1.2 Psychological mechanisms

Epigenetic studies have highlighted the relationship between early deprivation of care and changes in the function and structure of the hypothalamus-pituitary-adrenal axis (HPA), involved in stress-response

regulation (Read, Bentall & Fosse, 2009) suggesting that the association between trauma and psychosis is due to changes in stress-regulation function. Early exposure to adversity is associated with increased emotional reactivity when faced with future adverse events and daily lifetime stressors (Lardinois, Lataster, Mengelers, van Os & Myin-Germeys, 2011; Mackie et al., 2011) suggesting adversity in adulthood is a moderating factor in the relationship between childhood trauma and the onset of psychosis (Read et al., 2005; Morgan et al, 2014). At the cognitive level, negative schematic views of the self and others have also been postulated as mediating the relationship between early trauma and later psychosis (Fisher, Appiah-Kusi & Grant, 2012; Gracie et al., 2007).

1.3 Psychosis and treatment as traumatic events

The experiences of psychosis and associated treatment are also conceptualised as potentially traumatic events (Morrison et al., 2003) that can markedly change an individual's perception of themselves and the world (Bayley, 1996). Treatment events identified as particularly distressing include coercion, involuntary hospitalisation, seclusion, restraint, witnessing violence on the ward and verbal abuse (Cusack, Frueh, Hiers, Suffoletta- Maierle & Bennett, 2003; Mueser, Lu, Rosenberg & Wolfe, 2010; Priebe, Bröker & Gunkel, 1998; Shaw, McFarlane & Bookless, 1997). A recent review also concluded that the symptoms of psychosis can be experienced as threatening and distressing, particularly those relating to command hallucinations and delusions of being controlled (Berry, Ford, Jellicoe-Jones & Haddock, 2013). While the experience of psychosis does not qualify as a criterion A event ("*exposure to actual or threatened death, serious injury or sexual violation*") to meet DSM-V (APA, 2013) diagnosis of posttraumatic stress disorder (PTSD), individuals' have reactions to their psychosis experiences

which would warrant a PTSD diagnosis (Beattie, Shannon, Kavanagh & Mulholland, 2009). Accordingly, current ICD-11 proposals include the recommendation that PTSD diagnosis is based on core re-experiencing symptoms, while abolishing the trauma stressor criterion (Brewin, 2015; Brewin, Lanius, Novac, Schnyder & Galea, 2009).

1.4 Impact of trauma in psychosis

Given the high rates of trauma within this population, it is unsurprising that PTSD and psychosis commonly co-occur. Prevalence rates are variable (0-57%), nonetheless, there is clear evidence that comorbid PTSD is associated with higher rates of positive symptoms and worse clinical outcomes, quality of life and recovery (Seow et al., 2016). Higher rates of dissociative symptoms, anxiety, depression and substance abuse are all associated with childhood trauma in individuals with psychosis (Perona-Garcelán et al., 2010; Schäfer & Fisher, 2011). Moreover, research suggests that trauma has a significant impact on the individual's relationships to others and that this affects therapeutic engagement (Berry, Barrowclough & Wearden, 2008; Pickens et al., 2010) through delayed help seeking and poor engagement with services (Haahr et al., 2016; Mueser, Rosenberg, Goodman & Trumbetta, 2002). Therefore, while exposure to adverse life events may lead to an increased risk of PTSD in individuals with psychosis there appears to be broader implications for the individual that need to be thought about when working clinically (Green, 1994).

1.5 Assessing trauma and its impact in psychosis

NICE guidelines now recommend that Early Intervention psychosis services assess for trauma (NICE, 2014), however, there is a lack of routine

assessment of both trauma history and its consequences across the spectrum of psychosis services, meaning persistent post-traumatic stress difficulties can often go untreated and have a detrimental impact on recovery (Berry et al., 2013; Read & Ross 2003; Read et al., 2006). Clinicians report a lack confidence and competence in assessing and treating trauma in psychosis services (Bendall, Jackson, Hulbert & McGorry, 2011) and this may partly be driven by a lack of appropriate clinical tools to comprehensively, but briefly, screen for relevant experiences of adversity and their impact.

While there are a number of methods of assessing trauma in the general population there is no one measure which comprehensively asks about the range of events which have been found to be associated with psychosis, meaning that clinicians need to undertake clinical interviews or use a variety of self-report measures to assess for these experiences.

1.6 Existing trauma screening tools

Brief trauma screening tools for use with adults can be categorised in two types; those that focus on childhood events and those that screen for lifetime trauma exposure. Retrospective childhood trauma screening measures, such as the Childhood Trauma Questionnaire (CTQ-SF; Bernstein et al., 2003) and the Childhood Abuse and Trauma Scale (CAT; Sanders & Beckers-Lausen, 1995), ask individuals about their experiences of childhood adversity incorporating experiences of neglect, physical and sexual abuse and bullying. However, they can be somewhat lengthy, do not include other lifetime traumas, and do not routinely explore the current significance of these events for the individual. Lifetime trauma screening tools normally focus on objective, "criterion A", trauma events

(e.g. combat exposure, physical violence, serious accidents or sudden death of a loved one) that could have occurred throughout the individual's lifespan (e.g. the Life Stressor Checklist Revised (LSC-R; Wolfe & Kimerling, 1997), Trauma History Questionnaire-Revised (THQ-R; Hooper, Stockton, Krupnick & Green, 2011), Trauma History Screen (THS; Carlson et al., 2011) but do not routinely ask about other lifetime stressors, such as victimisation and bullying. These screening tools are commonly used as a prerequisite to an assessment for PTSD. However, as already discussed, the impact of trauma is broader than just the symptoms of PTSD and in individuals with a vulnerability to stress, PTSD can emerge from trauma which does not meet objective PTSD criteria suggesting a need for a more comprehensive screening tool (Schäfer, Colin, Ross & Read, 2008; Schäfer et al. 2012).

To date, only one trauma checklist measure has been specifically validated for use in a psychosis population. The Trauma Experience Checklist (TEC; Cristofaro et al., 2013) was developed to assess for experiences of abuse and neglect alongside stressful life events experienced in childhood and adolescence for young people experiencing psychosis. It was found to have good psychometric properties when validated in a large first episode psychosis sample (Cristofaro et al., 2013). However, a limitation of the TEC for routine clinical use is that it is still fairly lengthy at 41 items and therefore may not be appropriate for use as a brief clinical tool. Furthermore, the TEC did not ask about the experiences of psychosis and hospitalisation and there are currently no brief trauma checklists which include items relating to these events.

Instead, researchers have either investigated these experiences through semi structured interviews (Priebe, Bröker & Gunkel, 1998) or developed their own measures, for which psychometric properties have yet to be fully established (Cussack et al., 2003). To date there is only one measure, the PTSD Assessment Tool for Schizophrenia (PATS; Mueser et al., 2010), which has been developed for assessing lifetime, symptom and treatment related trauma and PTSD in psychosis. However, as the PATS is a semi-structured interview designed for research it unsuitable or practical for routine clinical use. As it stands, there is currently no one screening tool that assesses for lifetime adversity and traumatic events as well as trauma relating to psychosis symptoms and treatment.

1.7 Aims

Therefore, the current paper describes the development and validation of a new, brief screening tool for use in routine clinical practice within a psychosis population – the Trauma And Life Events checklist (TALE). Importantly, the TALE will be relevant to the clinical population, simple and quick to administer to allow it to be feasibly used and routinely adopted by services (Slade, Thornicroft & Glover, 1999). The TALE aims to address the limitations of existing measures for use within psychosis services by:

1. Including a comprehensive checklist of trauma and adversity items, which could occur across one's lifetime and which have been identified in the literature as being causally linked to psychosis (e.g. childhood sexual abuse, bullying across the lifespan) as well as adverse psychotic and treatment experiences.

2. Offering a brief, easy to administer tool that will support clinicians in routine screening of trauma and adversity within psychosis services.

3. Incorporating a brief assessment of the impact of adverse events, specifically by enquiring if traumatic event(s) still affect the person 1-month after it occurred and by assessing the severity and nature of such impact. The TALE will also be administered alongside an existing PTSD screening tool.

2. Methodology

2.1 Design and structure of the TALE

The TALE (Appendix 3) is a brief checklist for use with individuals with psychosis which takes approximately 15 minutes to complete. The main section of the TALE, Part A, consists of a 20 item checklist covering a range of traumatic and adverse life events which people may have experienced across a range of familial, social and environmental settings in both childhood and adulthood. Distinct from existing trauma checklists, the TALE has four items which cover experiences relating to psychosis which may be distressing, such as auditory hallucinations and persecutory beliefs, and contact with mental health services. Respondents are asked whether an event happened to them ('*yes*' or '*no*' response), whether there was repeated exposure ("*did it happen more than once?*") and the approximate age or age ranges. Respondents are then asked to identify any event or events that ended at least a month ago and still affect them now, and provide a global rating of impact on a scale of 0 (*not at all*) to 10 (*extremely affected*). In contrast to existing trauma checklists, this allowed for the assessment of post-traumatic stress reactions in relation to type II, complex

trauma. For the purposes of the psychometric validation, in Part B, individuals who reported being affected by event(s) were then assessed for potential PTSD symptoms on the Trauma Screening Questionnaire (TSQ: Brewin et al. 2002) (DSM-5; APA, 2013). Finally, Part C aimed to explore the broader potential impact of impact of the trauma beyond the core symptoms of PTSD included on the TSQ through an open-ended question, *"Please briefly describe any other ways the event or events currently impact on you?"*

2.2 Item generation and measurement design

A review of the literature examining the rates and types of trauma and adversity most commonly experienced by individuals with psychosis was carried out by the lead researchers. Based on this a long-list of adverse lifetime events found to be associated with psychosis was developed (i.e. childhood sexual abuse, bullying, discrimination) for inclusion in the checklist. Existing trauma questionnaires were also reviewed and events commonly included in these (i.e. accidents, serious illness, death of a loved one) were also included. These findings were pooled and the lead researchers generated an initial checklist of 16 items and an open item about "other events" to account for any experiences not yielded by the checklist items.

In accordance with Slade et al. (1999) and following discussion with staff in services working with people with psychosis, it was decided that the length of the TALE should be kept to a minimum so as not to discourage clinicians from routinely using it within clinical services. Therefore, it was agreed that the TALE would not be longer than two sides of A4 paper to aid the ease of administration.

Item order was planned so as to aid rapport and reduce stigma or shame by asking about experiences of abuse and unwanted sexual experiences in the second half of the checklist (Beck at al., 2004). The question format was designed to allow the person administering it to collect information on the types and rates of trauma experience (e.g. by giving several prompt examples for each item) whilst minimising the demand on the respondent to recall and disclose specific details of trauma or stressful event exposure by only requiring yes/no responses and details of approximate ages or age ranges.

2.3 Expert opinion and piloting

Expert clinicians and researchers within the fields of trauma, measure development and psychosis were consulted in the development of the TALE. The TALE was also reviewed by the FAST-R (Feasibility And Support to Timely recruitment for Research) service user research department at Kings College London. The lead researchers met with experts in the fields of trauma and psychosis to discuss their experiences of using existing trauma checklists in research and routine clinical work before being asked to provide feedback on the TALE (Appendix 4). Specifically, experts were consulted about ease of use, length, clarity of instructions and language, potential impact for respondent and clinical application. Experts were also invited to provide any further comments or feedback that they felt was pertinent to the development of the checklist.

Piloting of the TALE was carried out within routine service use by clinical psychologists in the Psychosis Recovery pathways of South London and Maudsley NHS Trust.

2.4 Item refinement

Following expert clinicians, researchers and service user feedback and piloting the measure within a routine clinical work, the TALE was expanded from 17 to 20. Questions relating to bullying and contact with health and justice systems were both expanded from one to two items and a question asking about exposure to war and civil unrest was included. Previously this item had been excluded because there was limited evidence from the literature that people seen in psychosis services have increased exposure to war and precedence had been given to items that focused on lifetime interpersonal trauma and victimisation. However, several experts commented on the relevance of this item in the general PTSD literature and therefore it was included in the final version of the TALE for comprehensiveness.

Minor alterations to the wording of items and more explicit examples for items were provided to help increase the accessibility of the measure for both the administrator and respondent. Item ordering and wording was reviewed at several points throughout data collection to aid the continual development of the measure. As a result of this the ordering of two items was changed, permanent loss and a period of separation, and additional examples were included for items relating to the symptoms of psychosis.

2.5 Psychometric Studies: Design, Statistical Analysis and Hypotheses

The psychometric properties of the TALE were investigated in a clinical sample to ascertain the reliability and validity of the TALE for use within psychosis populations (Study 1). A non-clinical sample (Study 2) was also recruited to further assess the convergent validity of items included on the TALE

and test-retest reliability. Study 3 assesses construct validity through hypothesis testing related to the literature. Finally, Study 4 was an exploratory analysis of the response to Part C of the TALE within the clinical sample.

2.5.1. Reliability

Test-retest reliability - Temporal stability was assessed for overall event reporting and item by item with a smaller sample of clinical and non-clinical participants two weeks after the initial assessment session. Agreement of overall event reporting at Time 1 and Time 2 were assessed through correlation coefficients. Item by item temporal stability was assessed using Cohen's (1960) kappa coefficients of agreement (κ) and absolute percentage agreement. The following conventions of agreement were used for the interpretation of kappa.

Table 1: Conventions of acceptable levels of measurement agreement

Kappa value		
< 0.00	Poor	Less than chance agreement
0.01 to 0.20	Slight	Slight agreement
0.21 to 0.40	Fair	Fair agreement
0.41 to 0.60	Moderate	Moderate agreement
0.61 to 0.80	Substantial	Substantial agreement
0.81 to 0.99	Almost Perfect	Almost perfect agreement

(Viera & Garrett, 2005)

Both percentage absolute agreement and kappa were used to assess reliability due to the fact that while percentage agreement allows for ease of interpretation it does not control for chance agreement (Hallgren, 2012). Kappa was developed in response to this limitation and therefore is not influenced by chance agreement, however, it is sensitive to low rates of reporting and cannot

be computed when variables present as a constant (Pett, 1997; Suen & Arey, 1989). Additionally, kappa is influenced by any symmetrical imbalance across marginal scores, which can lead to a reduction in kappa even when agreement is high (Feinstein, & Cicchetti, 1990).

Internal consistency - Internal reliability was not assessed as it is not found to be appropriate for inventories of events due to that fact that exposure to one event does not infer exposure to any other event per se and therefore measures of event exposure are not expected to show high internal consistency (Netland, 2001). Similarly, as the TALE is a self-report measure inter-rater reliability was also not assessed.

It was hypothesised that there would be high temporal consistency of trauma and adversity reporting in both the clinical and non-clinical samples as demonstrated by good test-retest reliability for overall event reporting and at item level. In line with other trauma measures, a minimum kappa of .40 was determined as acceptable and it was anticipated that overall event reporting would show greater reliability than at individual item levels (Carlson et al., 2004; Gray, Litz, Hsu & Lombardo, 2004; Hooper, Stockton, Krupnick & Green, 2011; Kubany et al., 2000).

2.5.2. Validity

Content validity – content validity was assessed as part of the development of the TALE through consultation with expert clinicians and researchers in the fields of trauma and psychosis as well as service user researchers, described in sections 2.2. (Item generation and measurement design) and 2.3. (Expert opinion and piloting).

Construct validity: convergence with other measures - Convergent validity with existing trauma screening tools was carried out for overall trauma event reporting through correlation coefficients. Like-item validation was also carried out by comparing selected items on the TALE against "best-matched" items from existing trauma checklists and scales (i.e. describing similar events or experiences) through percentage absolute agreement and kappa coefficients of agreement. A total of 13 items from the TALE were identified as part of the planned analysis for comparison against existing measure items. A full description of measures used is provided in section 3.2 (Measures), however, they are referred to here to aid understanding of the validation procedure.

As the TALE is a brief screening tool, it was often the case that one item on the TALE would be represented by several matched items on existing measures. For example, the TALE has one question for each subcategory of childhood adversity (emotional abuse, emotional neglect, physical abuse, physical neglect, sexual abuse), however, each of these items is accounted for by five items on the Childhood Trauma Questionnaire (CTQ-SF; Bernstein et al., 2003) which are calculated to produce a subscale score for each category. Therefore, endorsing any of the five items on the CTQ-SF was encoded as having experienced it and compared against endorsement of the equivalent one item on the TALE. In addition to the collapsing of items, scores were converted to the same metric to aid validation. Specifically, the CTQ-SF and PTSD Assessment Tool for Schizophrenia (PATS; Mueser et al., 2010) were collapsed down to dichotomous responses (no, yes) to allow for comparison against like items on the TALE. The Trauma History Screen (THQ; Green, 1996) already has a dichotomous metric and so no conversions of this measure were necessary. The THQ also has an

equivalent scaled rating system (i.e. no, once, more than once) to the TALE, which allowed cumulative trauma exposure at a global reporting level between the THQ and TALE.

It was hypothesised that convergent validity of the TALE would be moderate given that the measure includes several items that are not traditionally included in trauma checklists and therefore direct comparisons are restricted. This prediction was in line with the psychometric properties of existing trauma measures (Carlson et al., 2004; Gray et al., 2004; Hooper et al., 2011; Kubany et al., 2000).

In the clinical sample, it was predicted that items relating to unwanted sexual contact, psychosis symptoms and adverse treatment experiences would show the strongest relationship to existing trauma items as these items were most directly comparable against existing checklist items. Within the non-clinical comparison group, levels of agreement were expected to be lower due to the restricted range of likely trauma exposure in this sample influencing kappa.

Construct validity: relationship to outcomes – Validity of the TALE was also examined in relation to outcomes on symptom measures through correlational analysis. Individuals who reported more traumatic events were predicted to report higher rates of global impact, have more PTSD symptoms on the TSQ and PTCI, more frequent psychotic symptoms (clinical sample) or psychotic-like experiences (non-clinical sample).

Construct validity: hypothesis testing – The final method of measure validation, described in Study 3, was evaluating the construct validity through hypotheses testing (COSMIN; Mokkink et al., 2010). It was anticipated that, in line

with the current literature, the psychosis sample would be found to have experienced significantly more trauma and adversity than the non-clinical sample when assessed using the TALE. As a result, the clinical sample would also have significantly higher stress response symptoms overall compared with the non-clinical sample.

2.6. Exploratory analysis of other impacts

In addition to establishing psychometric properties of the TALE for use within a psychosis sample, study 4 reports data from an exploratory thematic analysis of clinical participants' answers to the question "*Briefly describe any other ways the event or events currently impact on you?*". This was carried out to investigate whether individuals with psychosis experienced any further impact as a result of trauma and adversity which may not have been captured through measurements of symptom severity and post-traumatic reactions (Berry et al., 2008; Haahr et al., 2016; Mueser et al., 2002 Perona-Garcelán et al., 2010; Pickens et al., 2010 Schäfer & Fisher, 2011).

2.7 Power calculation and sample size

Power analysis for the current study was informed by Cristofaro et al. (2013). The authors examined the psychometric properties of the Trauma Experiences Checklist (TEC; Nijenhuis, van der Hart & Kruger, 2002) in a first-episode psychosis population by correlating responses to items relating to interpersonal abuse and family stress against comparable items on the CTQ-SF (Bernstein et al., 2003). Scores from the TEC were substantially associated with the CTQ-SF on physical (r=.42, p<.001), emotional (r=.57, p<.001) and sexual abuse (r=.46, p<.001). Based on these findings and a desired power = 80%, a

power calculation was carried out using "G*Power 3" (Faul, Erdfelder, Lang & Buchner, 2007). The required clinical sample size for the current study was estimated at $N = 63$.

A post hoc power calculation using the same subscales as reported by Cristofaro et al. (2013) was used to calculate the obtained power within the clinical sample TALE validation study. A total of 39 participants were recruited and matched item scores on the TALE were substantially correlated with the CTQ-SF on physical (Cramer's $V = .44$, $p<.05$), emotional ($V = .55$, $p<.05$) and sexual abuse ($V = .95$, $p<.001$). Based on the lowest relationship reported (physical abuse) with α set at 5%, $\beta = .82$ or 82% meaning the minimum desired power was achieved.

2.8 Data collection

Recruitment and data collection was carried out in conjunction with another UCL DClinPsy candidate, Sophie Marsh-Picksley (Marsh-Picksley, 2016) with the overarching theme of investigating the relationship between trauma and psychosis (Appendix 10). Participants recruited in the current study were screened for PTSD symptoms as part of the validation analysis. Individuals who were found to currently be experiencing reliving symptoms (i.e. intrusive trauma memories, re-experiencing) were then interviewed about their intrusive trauma memories as part of research project carried out by the fellow trainee.

2.9 Data analysis

All quantitative analysis was carried out using SPSS v.21 (IBM, 2013) and thematic analysis was carried out using NVivo v.10 (QSR International, 2012).

Due to positive skew and outliers within the non-clinical data, all non-clinical variables were transformed before being analysed.

2.10 Ethics

All participants needed to provide written consent to take part in the research. The study was reviewed by London Queens Square NHS Research Ethics Committee and granted favourable opinion (ref: 15/LO/1486). See appendices 6 – 9 for all ethics documentation.

3. Study 1: Clinical sample

The aim of this study was to investigate the reliability and validity of the TALE within a sample of the population for whom it was designed, namely individuals with psychosis.

3.1 Sample and setting

A total of 39 participants were recruited between December 2015 and April 2016 from eight community mental health teams in North East London and East London NHS Trusts. The majority of participants were recruited from Early Intervention Services (n = 22) while the remainder were from Secondary Care Psychology (n = 10) or Psychosis Recovery Services (n = 7). Criteria for inclusion in the study were that all participants had experience of psychosis or were being treated by a service which worked exclusively with individuals who were experiencing psychosis, were aged 16 years or over, did not have a primary diagnosis of learning disability, head injury or substance misuse, could speak English and were able to provide written consent to take part in the research.

3.2 Measures

Trauma assessment – In addition to the TALE, trauma event exposure was assessed by completing the Trauma History Questionnaire (THQ; Green, 1996), Childhood Trauma Questionnaire (CTQ-SF; Bernstein et al., 2003) and appropriate parts of the PTSD Assessment Tool for Schizophrenia (PATS; Mueser, Lu, Rosenberg & Wolfe, 2010) for trauma events relating to hospitalisation and symptoms.

The THQ is a 24 item checklist of common traumatic events categorized into events relating to crime, general disaster and physical and sexual experiences. The measure asks about exposure (i.e. 'yes' or 'no') rate (i.e. approximate number of times, repeated) and for respondents to report ages at which the events occurred. The THQ has been found to have fair to good test-retest reliability and good inter-rater reliability (Hooper et al., 2011). Convergent and construct validity have also been found to be robust across a range of studies, including clinical and non-clinical samples in the USA and non-English speaking countries (Hooper et al., 2011).

The CTQ-SF is a 28 item questionnaire which asks to rate how a list of statements relating to their childhood experiences on a five-point scale ranging from 'never true' to 'very often true'. Once scored the questionnaire provides subscales of severity of exposure to emotional, physical and sexual abuse and emotional and physical neglect. Good internal consistence and validity have been demonstrated across gender and ethnicity (Bernstein et al., 2003; Thombs Lewis, Bernstein, Medrano & Hatch, 2007) and good test-retest reliability (Paivio & Cramer, 2004).

The PATS is semi-structured interview which was modified for use by the authors from the unpublished PTSD Assessment Tool for Schizophrenia (Williams-Keeler, 1999). The interview was designed to specifically ask about post-traumatic reactions to experiences of psychosis and its treatment. The first part asks about symptom events (e.g. "Did you believe that groups of people wanted to hurt you?") while the second part focuses on treatment experiences (e.g. "Have you ever been held down and forced to take medication?"). Interviewees are then asked to briefly describe any of the events that they have experienced before being asked about continued distress and PTSD symptoms in response to these events. Permission was sought from the authors to use parts of the interview in the current study. Specific questions relating to symptoms and treatment were included in the current study but further descriptive detail was not sought as part of the current research.

Impact of trauma – The Trauma Screening Questionnaire (TSQ; Brewin et al., 2002) is a brief ten item screening questionnaire to assess for the presence of PTSD by asking about core symptoms of re-experiencing and hyperarousal. The questionnaire is in yes/no format and a score of six or more has been found to show good predictive validity for PTSD diagnosis in the general population (Walter, Bisson & Shepherd, 2007) and in psychosis (de Bont et al, 2015), and found to be comparable to clinical interview in diagnostic capability (Brewin et al., 2002).

Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, David & Orsillo, 1999) is a 33-item questionnaire where respondents are asked to rate how much they agree with a list of statements focused on negative perceptions of

the world, themselves and experiences of self-blame on a scale of 1 (totally disagree) to 7 (totally agree). In the original study the PTCI was found to have excellent internal consistence and good test-retest reliability as well as correlating with other symptom measures (Foa et al., 1999).

Symptom severity – Psychosis symptom severity was assessed with the Community Assessment of Psychic Experiences (CAPE: Stefanis et al., 2002). The CAPE consists of 42 symptom items on which respondents rate frequency of experience on a scale of 1 (never) to 4 (nearly always) and distressed (1: not distressed to 4: very distressed). The completed questionnaire produces frequency and distress scores for three dimensional subscales: positive, negative and depressive. The CAPE has been validated in clinical and non-clinical samples and found to reliably assess positive, negative and depressive symptoms (Hanssen, Peeters, Krabbendam, Radstake, Verdoux & van Os, 2003; Konings, Hanssen, van Os & Krabbendam, 2006).

3.3 Procedure

Eligible participants were identified by their clinical teams and provided with brief information about the study before being contacted by one of the study researchers to discuss the research in more detail. Once verbal consent had been obtained, participants were met at either the mental health team that they attended or at home by one of the researchers. Researchers then asked participants to provide demographic information and details of the length of time in service, duration of illness and diagnosis. Measures were then completed by the researcher asking the participant the questions on each of the questionnaires. The interview was structured so that all participants completed the TALE first

and individuals who reported a current impact of any of the events were then screened for PTSD using the TSQ. They then completed the remaining trauma exposure questionnaires before the PTCI and CAPE. All participants received £10 for their participation.

A sample of participants were also asked to meet with the researcher again two weeks later to complete the TALE again as part of the retest reliability, for which they were paid a further £5.

Participants were monitored throughout both sessions and once questionnaires were completed, researchers spent 10 to 20 minutes with participants practicing relaxation and breathing techniques. Each participant was provided with copies of the exercises as well as information about services they could contact if necessary. No participants experienced significant distress during or following taking part in the research.

3.4 Results

3.4.1 Participant and TALE characteristics

The clinical sample characteristics are described in Table 2. The sample was predominantly male (51.3%), White British (35.9%) and the majority had a diagnosis of unspecified psychosis (ICD 10 code F29: 43.6%). The average age of participants was 32.59 (*SD* = 13.54) years and the average time since onset of psychosis was 3-4 years with an average time of in contact with mental health services of 1 -2 years.

Table 2: Demographic and clinical characteristics

Variable		***N* = 39**
Age		*M* = 32.59 (*SD* 13.54)
		%
Gender	Male	51.3
	Female	48.7
Ethnicity	White British	35.9
	White Other	12.8
	Black/Black British	25.7
	Asian/British Asian	18.1
	Mixed	7.7
Education	No qualifications	15.4
	Secondary	20.5
	Further education	41
	Higher education	23
Service type	Early Intervention	56
	Secondary Care Psychology	26
	Psychosis Recovery Services	18
Duration of illness	< 1 year	17.9
	1 – 2 years	17.9
	3 – 4 years	20.5
	5 – 10 years	17.9
	> 10 years	25.6
Time in current service	< 1 year	30.8
	1 -2 years	25.6
	2 – 4 years	15.4
	> 5 years	28.2
ICD10 diagnosis	F20 Schizophrenia	20.5
	F21 Schizotypal disorder	2.6
	F25 Schizoaffective disorder	5.1
	F29 Unspecified psychosis	43.6
	F30-32 Affective disorders	28.2

The most commonly endorsed events in the clinical sample were those relating to psychosis symptoms (82%, *n* = 32) and treatment (74.4%, *n* = 29) followed by bullying (66.7%, *n* = 26) and discrimination (61.5%, *n* = 24). The least frequently endorsed was exposure to war and civil unrest (7.7%, *n* = 3) followed

by unwanted sexual experiences in adulthood (20.5%, *n* = 8) and physical violence or aggression by a stranger (25.6%, *n* = 10). Other events captured by Item 20 included miscarriage, burglary, and witnessing an accident or death.

Table 3: Frequencies of item reporting on the TALE in a psychosis sample

TALE Item	Frequency (%)	Repeated exposure (%)
1. Exposure to war and civil unrest	3 (7.7)	1 (33.3)
2. Permanent separation or loss	21 (58.8)	13 (61.9)
3. Period of separation from caregiver	19 (48.7)	10 (52.6)
4. Unexpected move or loss of home	24 (61.5)	13 (54.2)
5. Bullying	26 (66.7)	25 (96.2)
6. Discrimination	25 (64.1)	22 (88)
7. Emotional abuse	25 (64.1)	22 (88)
8. Physical abuse	17 (43.6)	15 (88.2)
9. Witnessing violence at home	22 (56.4)	21 (95.5)
10. Violence outside of home	18 (46.2)	11 (61.1)
11. Emotional neglect	17 (43.6)	17 (100)
12. Physical neglect	10 (25.6)	9 (90)
13. Childhood sexual abuse	18 (46.2)	13 (72.2)
14. Unwanted sexual experiences in adulthood	8 (20.5)	5 (62.5)
15. Psychosis (symptoms)	32 (82)	28 (87.5)
16. Psychosis (unusual behaviours)	22 (56.4)	16 (72.7)
17. Psychosis (treatment/hospitalisation)	29 (74.4)	19 (65.5)
18. Other experiences with health/justice service	14 (35.9)	11 (78.6)
19. Accidents and illnesses	18 (46.2)	4 (22.2)
20. Any other events	19 (48.7)	13 (68.4)

3.4.2.Reliability

Test-retest reliability – To ascertain temporal stability the TALE was re-administered to a subsample of clinical participants who researchers met with between 7 and 28 days (*M* = 19, *SD* = 6.13) after the initial study meeting. Of the 39 original participants, 51% (*n* = 20) took part in the second assessment, 18% (*n* = 7) refused, 15.5% (*n* = 6) researchers were unable to reach to arrange a

follow up and 15.5% (n = 6) were not invited back due to there not being enough time to arrange a second meeting before the end of data collection. The two groups were compared to ascertain whether there were any significant differences between those who attended the follow up session and those who were not followed up. No group differences were found in age, gender, illness duration, length of time in service, symptom severity or number of events reported. The groups did differ significantly on impact of trauma with the retest group having significantly more symptoms on the TSQ (retest: M = 6.47, SD = 2.65; non-retest: M = 4.37, SD = 2.83); $t(36) = -2.36$, $p<.05$.

The TALE appeared to be reasonably stable over time as assessed by overall event reporting and item-by-item comparisons. Test-retest correlation for the TALE total number of endorsed items based on dichotomised reporting (i.e. yes/no responses), r = .90, $p<.001$ and cumulative scores (i.e. never, once, more than once), r = .95, $p<.001$, showed good temporal consistency. Table 4 displays the absolute agreement and kappa statistic for each item. Absolute agreement across the items was high (≥70%) and all but four items showed moderate agreement or higher as indicated by kappa (all but four items: $\kappa \geq .47$, $p<.05$) based on dichotomised responses. The item assessing physical neglect showed perfect agreement across time (κ = 1.00, $p<.001$) while childhood experiences of sexual abuse (κ = .90, $p<.001$) and emotional neglect (κ = .89, $p<.001$) appeared to display almost perfect agreement. Four items did not meet conventional standards for adequate reliability. Items 18 and 19 both showed fair agreement based on kappa (Item 18: κ = .39, p = .07; Item 19: κ = .39, p = .08), however, absolute agreement on these items was moderate to high (Item 18 =

80%; Item 19 = 70%). This could be attributed to low base rates of event reporting for these items (e.g. Item 18 was only endorsed by 5 people at time 1) especially given that kappa is very sensitive to marginal values (Pett, 1997).

Table 4: Temporal stability of the TALE in a psychosis sample

TALE Item	Absolute agreement (%)	Kappa
1. Exposure to war and civil unrest	90	.61*
2. Permanent separation or loss	75	.43
3. Period of separation from caregiver	80	.60*
4. Unexpected move or loss of home	80	.47**
5. Bullying	90	.78*
6. Discrimination	75	.47**
7. Emotional abuse	80	.57**
8. Physical abuse	90	.80*
9. Witnessing violence at home	85	.70*
10. Violence outside of home	75	.50**
11. Emotional neglect	95	.89*
12. Physical neglect	100	1.00*
13. Childhood sexual abuse	95	.90*
14. Unwanted sexual experiences in adulthood	90	.79*
15. Psychosis (symptoms)	90	.62*
16. Psychosis (unusual behaviours)	75	.50**
17. Psychosis (treatment/hospitalisation)	75	.52*
18. Other experiences with health/justice service	80	.39
19. Accidents and illnesses	70	.39
20. Any other events	45	-0.038

*sig at <0.01 ** sig <0.05

3.4.3. Validity

Construct validity: convergence with other measures – Convergent validity was assessed through overall trauma reporting convergence and comparing items on the TALE against like-items or item groupings from existing trauma measures. Convergence rates of like items are displayed in Table 5. Overall and cumulative event rates were correlated between the TALE and THQ. Both were found to be strongly and positively correlated (total score: r = .69, p<.001;

cumulative score: r = .63, p<.001) suggesting that overall trauma reporting was comparative to existing trauma screening tools.

Of the 13 items assessed, 5 reached a kappa greater than .40, suggesting moderate item agreement. Items relating to sexual abuse were most strongly associated with existing trauma items, with both childhood and adult sexual abuse items indicating almost perfect item agreement (childhood sexual abuse: κ = .95, p<.001; unwanted sexual experiences in adulthood: κ = .93, p<.001).

As with test-retest reliability, some items appeared to be influenced by marginal scores meaning that they showed high absolute agreement but low kappa. This was the case for Item 1 which asks about exposure to war and civil unrest, which only three participants endorsed. This meant that while it had high convergence of absolute percentage (89.7%) it displayed less than chance convergence as assessed by kappa (κ = -.026, p = .78). This was also the case for Item 15 which asked about symptoms of psychosis, which 32 of the 39 participants reported as traumatic meaning that absolute agreement was high (82.1%) while kappa agreement was low (k = .17, p = .08).

A unique feature of the TALE is that it asked about experiences of psychosis symptoms and treatment as potentially traumatic events alongside other trauma and adversity experiences. The convergent validity of these three items was found to be variable, with treatment experiences showing substantial agreement with the corresponding items on the PATS (κ = .62, p<.001; 84.6%). However, the two items relating to psychosis symptoms performed less well. Item 15, which asks about experiences of psychosis showed high percentage agreement (82.1%) but only slight agreement according to kappa(κ = .17, p = .08)

and Item 16, which asked about behaviours relating to psychosis, was found to have only slight agreement (59%; $\kappa = .10$, $p = .20$).

Table 5: Convergence of like items on existing trauma exposure measures in a psychosis sample

	Percentage agreement	Kappa
TALE event item	**Trauma History Questionnaire (THQ)[1]**	
1. War/conflict exposure	89.7	-.026
2. Loss/death of loved one	46.2	-.03
8. Physical abuse	71.8	.42*
10. Physical aggression	56.4	.13**
14. Unwanted sexual experiences in adulthood	97.4	.93*
19. Accidents and illnesses	48.7	.03
	Childhood Trauma Questionnaire (CTQ-SF)[2]	
7. Emotional abuse	79.5	.51*
8. Physical abuse (childhood)	64.1	.38*
11. Emotional neglect	59	.24**
12. Physical neglect	25.6	NA[a]
13. Sexual abuse in childhood	97.4	.95*
	PTSD Assessment Tool for Schizophrenia (PATS)[3]	
15. Psychosis (symptoms)	82.1	.17
16. Psychosis (behaviours)	59	.10
17. Treatment and hospitalisation	84.6	.62*

*p<0.01 **p<0.05 [a] Unable to compute kappa because variables are constant
[1] Green, 1996 [2]Bernstein et al., 2003 [3]Mueser et al., 2010

Construct validity: relationship to outcomes – In addition to item analysis, TALE validation was evaluated through its relationship to outcomes (see Table 6). The relationship between TALE total scores and TSQ scores was found to be moderate ($r = .37$, $p<.05$) and this relationship was greater for the TALE cumulative score ($r = .45$, $p<.001$). Cumulative scores on the TALE were also positively correlated with PTCI total scores ($r = .41$, $p<.05$) and two of the subscales; beliefs about self ($r = .41$, $p<.05$) and beliefs about the world ($r = .50$,

p<.05), while the third; self blame was not significant. When examining the relationship between total TALE scores and the PTCI, all but beliefs about the world (r = .42, p<.05) were non-significant. Furthermore, when controlling for symptom severity all scores on the TSQ and PTCI were found to be non-significant, with the exception of beliefs about the world (r = .37, p<.05).

Cumulative scores on the TALE were significantly correlated with overall symptom severity as assessed by the CAPE (r = .37, p<.05). This was also the case for positive (r = .41, p<.05) and depressive (r = .39, p<.05) symptom subscales but not negative symptoms (r = .13, p = .42). There were no significant relationships between total number of events endorsed on the TALE and symptom severity and only the positive symptom subscale was found to have a significant relationship with number of events (r = .37, p<.05).

Table 6: Correlations between TALE and symptom severity (clinical sample)

		TALE total no. of events	**TALE cumulative score**
	TSQ	.37*	.45*
	PTCI total	.31	.41*
	PTCI self	.31	.41*
	PTCI world	.42*	.50*
	PTCI blame	.19	.27
	CAPE total	.28	.37*
	CAPE positive	.35*	.41*
	CAPE negative	.05	.13
	CAPE depression	.29	.39*
Controlling for symptoms	TSQ	.25	.29
	PTCI total	.17	.21
	PTCI self	.16	.20
	PTCI world	.33	.27
	PTCI blame	.03	.07

*p<0.05

CAPE (Community Assessment of Psychic Experiences; Stefanis et al., 2002) PTCI (Posttraumatic Cognitions Inventory, Foa et al., 1999) TSQ (Trauma Screening Questionnaire; Brewin et al., 2002)

As many of the events which people endorsed on the TALE had been experienced throughout their lifetime and often prolonged periods of time, it was possible that many would no longer feel that it was having an acute impact on them, especially as some were engaged in treatment within their services supporting them with these experiences. Therefore, responses to the questions "*Do any of the events you have mentioned, that ended at least 1 month ago, still affect you now?*" and "*Overall, how much are you affected now by the event or events selected in 21b?"* were also looked at in relation to TALE scores and and outcomes on other measures. A high proportion of participants reported still feeling affected by events (82%; *n* = 32).

Table 7 shows the range of events that participants reported feeling affected by still, with hospitalisation and psychosis symptoms being the most frequently endorsed. Individuals who had experienced higher rates of trauma on the TALE also felt more affected by these experiences currently (total: r = .44, p<.01); cumulative: r = .46, p<.01) and this relationship remained significant event when controlling for symptoms. The same was found for the TSQ (r = .67, p<.01) when controlling for symptoms. However, the relationship between scores on this question were not significantly associated with any of the PTCI scales.

Table 7: Frequency and type of events endorsed as still affecting clinical participants

Event type	**Frequency of response (%)**
Hospitalisation and treatment	12 (37.5)
Symptoms of psychosis	9 (28)
A combination of all events experienced	6 (18.7)
Childhood sexual abuse	4 (12.5)
Bullying	3 (9)
Emotional neglect	3 (9)
Behaviours relating to psychosis	2 (6.3)
Discrimination	2 (6.3)
Experiencing violence outside of the home	2 (6.3)
Physical abuse	2 (6.3)
Permanent separation or loss	2 (6.3)
Sudden or unexpected change in circumstance	2 (6.3)
Witnessing violence in the home	2 (6.3)
Accidents or illnesses	1 (3)
Period of separation from parent or caregiver	1 (3)
Physical neglect	1 (3)

3.5 Discussion

The aim of this study was to establish the psychometric properties of the TALE within a clinical sample of individuals with psychosis. Overall, the TALE appears to be an acceptable measure of trauma and adversity reporting within this population. In particular, the high rates of bullying and sexual abuse reported by participants supports the findings of existing literature that there is an association between exposure to these events and increased risk of psychosis (van Dam et al., 2012; Varese et al, 2012). Similarly, the number of participants who reported their symptoms and treatment experiences as traumatic or distressing was consistent with previous findings (Beattie et al., 2009; Cusack et al., 2003; Frame & Morrison, 2001; Meyer, Taiminen, Vuori, Äijälä & Helenius, 1999; Priebe et al., 1998; Shaw et al., 2002). The TALE showed good temporal stability across an average of 19 days. Stability was high for overall event reporting and reporting of cumulative events. Only four items failed to meet an acceptable level of consistency between the first and second assessment, however, high percentage agreement was found on these items. Low level of consistency for these items may have resulted from low base rates of event reporting, for example Item 18 was only endorsed by five participants at Time 1, as kappa is sensitive to marginal values (Pett, 1997). However, it may also represent a weakness with specificity of these items as they cover a range of potential event exposures, for example Item 19 asks about illnesses and accidents and Item 20 is an open question about any other adversities or traumas. Given the broad spectrum of potential events the respondent could report when asked these items, it is likely that they may recall different events at different times.

Further development may be needed for these items and the potential separation of these items to allow for more consistency of reporting across time.

Overall reporting of events was comparable to established trauma checklists on both total number of events endorsed and cumulative reporting. Convergence with like items was adequate with five items reaching acceptable levels of agreement. As predicted, unwanted sexual experiences across the lifespan and adverse treatment experiences were found to have the highest agreement with existing measures, however, symptoms of psychosis failed to reach a significant level of acceptability when compared against the PATS. This may be explained by a symmetrical imbalance of marginal scores on this item which can lead to a reduction in kappa even when agreement is high (Feinstein, & Cicchetti, 1990). What is more, the need to combine comparison items on existing measures so as to allow for comparison against one item on the TALE meant there were low levels of variance in the response rates on comparison measures. This was especially problematic for the CTQ-SF and PATS, with nearly all participants reporting unusual behaviour on the PATS, and the physical neglect subscale of the CTQ-SF.

A second cause of variable convergent validity displayed between the TALE and existing measures could be explained by the fact that while the comparison items were best-matched against items on the TALE, they tended to ask about similar or overlapping experiences rather than the same specific trauma events. For example, Item 2 on the TALE asks about permanent separation from significant others, either through death, migration, or loss of contact, while the THQ items most suitable for comparison were purely relating

to loss in relation to death. When agreement percentages for this item were examined further, it was found that the TALE had higher positive response rates (43.6%) than the THQ (10.3%), meaning that 43.6% of participants endorsed the item on the TALE but not the THQ and vice versa. This suggests that those individuals may have been responding to permanent losses that were not caused by death and therefore may account for the moderate percentage agreement and chance kappa agreement demonstrated by this item. As discussed in the test-retest analysis, Item 19 displayed very poor convergent validity this is most likely due to the item covering two distinct event types meaning that there was a lack of consistency over time and between participants regarding endorsement of this item. This finding highlights the challenge of developing a measure which is both brief enough to be useful in clinical settings and comprehensive enough to identify all relevant adverse events (Gray et al., 2004; Kubany et al., 2000). Further implications relating to these limitations are reflected on in the general discussion.

Increased symptom severity was associated with a higher rate of cumulative reporting rather than higher number of endorsed events. This finding suggests that it is not just the range of events that individuals are exposed to but the experience of repeated exposure which has prolonged effects for the person in relation to both traumatic-stress reactions and psychosis symptom severity and supports the dose-response relationship between trauma and psychosis (Read et al., 2005; Varese et al., 2012). When controlling for symptoms, all but one subscale of the PTCI was found to be non-significantly related to higher rates of trauma suggesting that the TALE did not show good convergent validity in relation to expected outcomes. However, there is some debate about whether

PTSD and psychosis are related spectrum disorders, which result in overlapping symptom characteristics and that the symptoms of psychosis could reflect more complex reactions to trauma which may result from repeated exposure to trauma and adversity (Briere & Spinazzola, 2005; Morrison, Frame & Larkin, 2003) Related to this was the finding that individuals who reported still feeling affected by trauma were associated with higher scores on the assessment of PTSD and posttraumatic cognitions as it has been suggested that trauma reporting rates are highly influenced by current stress-response symptom severity (Southwick, Morgan, Nicolaou & Charney, 1997). While the TSQ assesses stress response symptoms that capture the fundamental characteristics of PTSD (Brewin et al., 2002; Brewin et al., 2009), the PTCI assesses cognitive changes as a result of which are commonly associated with interpersonal victimisation in early life leading to the development of negative schematic views of the self and others after trauma (Briere & Spinazzola, 2005; Courtois, 2004). Furthermore, the finding that higher rates of trauma reporting were not related to higher rates of negative symptoms may be reflective of a difference in coping style in these individuals, as negative symptom severity has been associated with avoidance of traumatic memories and suppression of autobiographical recall relating to experiences of psychosis and treatment (Harrison & Fowler, 2004). Avoidant coping styles, described as "sealing-over" have been discussing in relation to attachment and recovery from psychosis (Gumley, Taylor, Schwannauer & MacBeth, 2014) with increased sealing over associated with poorer parental care in childhood (Tait, Birchwood & Trower, 2004) and therefore the lack of relationship between negative symptoms and trauma may reflect a minimisation of symptoms or reporting of traumatic events.

4. Study 2: Non-clinical sample

The aim of this study was to further investigate the reliability and validity of the TALE and to examine the psychometric properties of it within a larger, non-clinical sample.

4.1 Sample and setting

Study 2 consisted of 121 participants from the general population recruited for an online version of the study. Recruitment was carried out primarily through university circulars, online social media and an online participant recruitment site. Participants were asked to provide confirmation that they met the following eligibility criteria; aged 16 years or over, able to understand English to a good enough level to complete the study and provide written consent, did not have a primary diagnosis of psychosis, learning disability, head injury or substance misuse. The data was screened before analysis to exclude anyone who had completed the online study but did not appear to meet these criteria. Screening did not indicate that any responses needed to be excluded and therefore all participants were included in the analysis.

4.2 Measures

Participants completed online versions of all the measures which were included in Study 1 with the exception of the PATS. This was excluded as it was anticipated that only a very small number, if any, would report such events and therefore it was not deemed ethically justifiable to ask participants to take the time to complete questionnaires which were unlikely to be used in the analysis.

4.3 Procedure

Once consent was provided, participants completed online versions of all the questionnaires used in Study 1, bar the PATS. To manage any potential distress, participants were advised that they could exit the website at any time whilst completing the study and their results would be saved securely. They could then access these at a later date to resume the research. Once all the questionnaires were completed, participants were directed to an online version of the debriefing information and relaxation exercises which were provided in Study 1. An electronic copy of this was also emailed to all participants. Two weeks after completing the first part of the study, participants were emailed and asked to complete the TALE as part of the retest reliability. As in the first part of the study, participants were directed to a debriefing website and emailed a copy of the information provided. All participants were entered into a prize draw to win either £10, £20 or £30 online voucher as compensation for their time.

4.4 Results

Due to the fact that the non-clinical data was positively skewed and included outliers the data was transformed before being analysed as part of the psychometric validation of the TALE.

4.4.1 Participant and measurement characteristics

The non-clinical sample characteristics are displayed in Table 8. The sample was predominantly female (51.2%), White British (69.4%) and average age of non-clinical participants was 27.81 (SD = 11.88) years. Of the 121 non-clinical participants, 16.5% (n = 20) reported having experienced none of the events listed on the TALE with the mean number of items endorsed being 4.98

(*SD* = 5.59; range = 0 - 19). Due to high rates of missing data of reported ages for endorsed events it was not possible to calculate the frequency of event exposure across the lifespan.

Table 8: Demographic characteristics (non-clinical sample)

Variable		***N* = 121**
Age		*M* = 27.81 (*SD* 11.88)
		%
Gender	Male	48.8
	Female	51.2
Ethnicity	White British	69.4
	White Other	7.5
	Black/Black British	3.3
	Asian/British Asian	12.4
	Chinese	2.5
	Mixed	1.7
	Other/not stated	2.5

Frequency of item reporting is displayed in Table 9. The most commonly endorsed event in the non-clinical sample was experiences of bullying (46.3%, *n* = 56) followed by physical violence from a stranger (33.9%, *n* = 40) and witnessing violence at home (33.1%, *n* = 40). The least frequently endorsed was exposure to war and civil unrest (.8%, *n* = 1) followed by loss or permanent separation from loved ones (14.9%, n = 18) and physical neglect (16.5%, *n* = 20). Other events identified by Item 20 included miscarriage, death of significant figures outside the immediate family (e.g. friends, grandparents), the unexpected end of a relationship and living with alcoholic parents.

Table 9: Frequencies of item reporting on the TALE in a non-clinical sample

TALE Item	Frequency (%)	Repeated exposure (%)
1. Exposure to war and civil unrest	1 (.8)	0 (0)
2. Permanent separation or loss	29 (24)	10 (34.5)
3. Period of separation from caregiver	18 (14.9)	8 (44.4)
4. Unexpected move or loss of home	38 (31.4)	11 (28.9)
5. Bullying	56 (46.3)	27 (48.2)
6. Discrimination	31 (25.6)	10 (32.3)
7. Emotional abuse	37 (30.6)	11 (29.7)
8. Physical abuse	31 (25.6)	8 (25.8)
9. Witnessing violence at home	40 (33.1)	15 (37.5)
10. Violence outside of home	41 (33.9)	12 (29.3)
11. Emotional neglect	29 (24)	9 (31)
12. Physical neglect	20 (16.5)	1 (.05)
13. Childhood sexual abuse	32 (26.4)	7 (21.9)
14. Unwanted sexual experiences in adulthood	31 (25.6)	6 (19.4)
15. Psychosis (symptoms)	26 (21.5)	5 (19.2)
16. Psychosis (unusual behaviours)	29 (24)	7 (24.1)
17. Psychosis (treatment/hospitalisation)	22 (18.2)	3 (13.6)
18. Other experiences with health/justice service	24 (19.8)	2 (.08)
19. Accidents and illnesses	32 (26.4	5 (15.6)
20. Any other events	36 (29.8)	5 (13.9)

4.4.2. Reliability

Test-retest reliability – Of the 121 non-clinical participants who completed the TALE at Time 1, 46.3% (n = 56) completed the retest version between 13 and 28 days later (M = 18, SD = 4.21). As with the clinical sample, participants who completed the retest at Time 2 were compared against those who did not respond to the email inviting them to complete the retest version. No group differences were found in number of events reported or symptom severity as measured by the TSQ, PTCI and CAPE total scores. Significantly more female participants completed the second part of the study than male participants (X^2 = 9.98, p<.01) and the retest group was significantly older (M = 30.29, SD = 12.48) than

participants who did not complete the retest part of the study (M = 25.68, SD = 10.99), $t(119) = -2.16$, $p<.05$.

Within a non-clinical sample, the TALE was found to be relatively stable across time, although temporal stability appeared to be lower in this group than in individuals with psychosis. Dichotomised reporting of total number of events was significantly and positively correlated between Time 1 and Time 2 (r = .62, $p<.001$) as were cumulative scores (r = .65, $p<.001$). Table 8 displays the absolute agreement and kappa statistic for all dichotomised item responses. Absolute agreement was high across all items (≥76.8%). Thirteen items met acceptable kappa value (all 13 items: $\kappa \geq .40$, $p<.05$). Two items which fell below this were items which also failed to reach acceptable agreement in the clinical sample suggesting that these items may need further revision. The remaining four items may have failed to reach an acceptable level of kappa due to the low rates of endorsement at either Time 1 or Time 2.

Table 10: Temporal stability of the TALE in a non-clinical sample

TALE Item	Absolute agreement (%)	Kappa
1. Exposure to war and civil unrest	100	NA[a]
2. Permanent separation or loss	80.4	.41*
3. Period of separation from caregiver	87.5	.40*
4. Unexpected move or loss of home	83.9	.58*
5. Bullying	78.6	.57*
6. Discrimination	83.9	.58*
7. Emotional abuse	80.4	.33*
8. Physical abuse	89.3	.52*
9. Witnessing violence at home	78.6	.39*
10. Violence outside of home	80.4	.45*
11. Emotional neglect	91.1	.62*
12. Physical neglect	91.1	.41*
13. Childhood sexual abuse	89.3	.61*
14. Unwanted sexual experiences in adulthood	89.3	.70*
15. Psychosis (symptoms)	85.7	.29*
16. Psychosis (unusual behaviours)	82.1	.11
17. Psychosis (treatment/hospitalisation)	92.9	.47*
18. Other experiences with health/justice service	82.1	.09
19. Accidents and illnesses	89.3	.64*
20. Any other events	76.8	.37*

*sig at <0.01 ** sig <0.05 [a] Unable to compute because variables are a constant

4.4.3.Validity

Construct validity: convergence with other measures – Correlations of total item endorsement between the TALE and THQ showed a small significant relationship between the measures (r = .21, p<.05), however, the relationship between cumulative scores on each measure was not significantly correlated (r = .15, p = .15). Like items were compared for 10 items from the TALE and convergence rates are displayed in Table 11. None of the item comparisons reached an acceptable level of kappa when compared against existing trauma

items. Absolute percentage agreements were higher across the items assessed but also appeared inconsistent.

Table 11: Convergence of like items on existing trauma exposure measures in a non-clinical sample

	Percentage agreement	**Kappa**
TALE event item	**Trauma History Questionnaire (THQ)[1]**	
1. War/conflict exposure	97.5	-.011
2. Loss/death of loved one	76	.097
8. Physical abuse	75.2	.18**
10. Physical aggression	64.5	.22**
14. Unwanted sexual experiences in adulthood	96	.28*
19. Accidents and illnesses	66.1	.15
	Childhood Trauma Questionnaire (CTQ-SF)[2]	
7. Emotional abuse	30.6	NA[a]
8. Physical abuse	71.6	.31*
11. Emotional neglect	24	NA[a]
12. Physical neglect	18.2	.007
13. Sexual abuse in childhood	77.7	.27*

*p<0.01 **p<0.05 [a] Unable to compute kappa because variables are constant
[1] Green, 1996 [2] Bernstein et al., 2003

Construct validity: relationship to outcomes – Correlations between the TALE and symptoms are displayed in Table 12. There was a medium, significant relationship between the number of events reported on the TALE and scores on the TSQ (r = .40, p<.001) and a large relationship was found between the TALE and total score on the PTCI (r = .51, p<.001). These reduced when controlling for symptoms but maintained significance (TSQ; r = .31, p<.05; PTCI; r = .33, p<.05). A small significant relationship was also shown between cumulative scores on the TALE and the TSQ (r = .38, p<.01) and again this was maintained after controlling for symptoms (r = .28, p<.05). There was a greater relationship between cumulative scores on the TALE and overall scores on the PTCI (r = .46,

p<.001), however, this reduced to smaller than the relationship with the TSQ once symptoms were controlled for (r = .26, p<.05).

Total and cumulative scores on the TALE were also correlated with each of the subscales of the PTCI. All showed a medium, significant relationship (self x total; r = .49, p<.001; self x cumulative; r = .43, p = .001; world x total; r = .4, p<.001; world x cumulative; r = .42, p = .001; self-blame x total; r = .44, p<.001; self-blame x cumulative; r = .42, p = .001). After controlling for symptoms, all were found to be non-significant with the exception of beliefs about self and beliefs about the world in relation to total number of events reported on the TALE became non-significant (self x total; r = . .29, p<.05; world x total; r = . .29, p<.05).

Table 12: Correlations between TALE and symptom severity (non-clinical sample)

		TALE total no. of events	TALE cumulative score
	TSQ	.40*	.38*
	PTCI total	.51*	.46*
	PTCI self	.49*	.43*
	PTCI world	.47*	.42*
	PTCI blame	.44*	.42*
	CAPE total	.33*	.34*
	CAPE positive	.37*	.38*
	CAPE negative	.23**	.25*
	CAPE depression	.27*	.27*
Controlling for symptoms	TSQ	.31**	.28**
	PTCI total	.33**	.26**
	PTCI self	.29**	.20
	PTCI world	.29**	.23
	PTCI blame	.25	.23

*p<.01 **p<.05 CAPE (Community Assessment of Psychic Experiences; Stefanis et al., 2002) PTCI (Posttraumatic Cognitions Inventory, Foa et al., 1999) TSQ (Trauma Screening Questionnaire; Brewin et al., 2002)

The total number of events reported on the TALE was also moderately correlated with symptom severity as measured by the total score on the CAPE (r = .33, p<.001). A moderate relationship was also found with the positive symptom subscale (r = .37, p<.001) while a small relationship was found between negative (r = .23, p<.001) and depressive (r = .27, p<.01) symptoms and the number of events endorsed. This pattern of relationships was maintained for cumulative scores on the TALE with a moderate relationship between total score on the CAPE (r = .34, p<.001) and positive subscale (r = .39, p<.001) with a small relationship between negative (r = .25, p<.01) and depressive (r = .27, p<.01) symptoms and cumulative reporting.

As in the clinical sample, the relationship between participants' responses to how impacted they felt currently by events was examined in relation to scores on the TALE, TSQ and PTCI. Of the 121 participants, 39.7% (n = 48) reported still feeling affected by events identified in the TALE. Table 13 shows the range of events endorsed with loss or permanent separation from a loved one (i.e. through death) the most frequently endorsed as having a continued impact for the individual. A small number of respondents identified "other events" as the most significant. The majority of these responses were related to death of someone close outside the immediate family. Other responses included premature birth of a child, growing up with alcoholic parents, an unexpected breakup and being wrongfully accused of harassment.

Table 13: Frequency and type of events endorsed as still affecting non-clinical participants

Event type	Frequency of response (%)
Permanent separation or loss (e.g. death)	17 (35)
Emotional abuse	10 (21)
Other events not covered by TALE	8 (16.6)
Bullying	7 (14.6)
Emotional neglect	7 (14.6)
Physical abuse	7 (14.6)
Unwanted sexual contact in adulthood	7 (14.6)
Accidents or illnesses	6 (12.5)
Discrimination	6 (12.5)
Hospitalisation and treatment	6 (12.5)
Witnessing violence in the home	6 (12.5)
Period of separation from parent or caregiver	5 (10.4)
Childhood sexual abuse	4 (8.3)
Behaviours relating to psychosis	3 (6.3)
Experiencing violence outside of the home	2 (4.2)
Sudden or unexpected change in circumstance	2 (4.2)
War	1 (2.1)

After controlling for symptom severity as measured by the CAPE, there was a medium, significant relationship between the level of current impact and the total number of events reported (r = .30, p<.01) and a small relationship with cumulative reporting (r = .27, p<.01). A medium, significant relationship was also found between self-reported level of impact and TSQ scores when controlling for symptoms (r = .45, p<.001). A medium, significant relationship was also found between total PTCI scores and self-reported impact when controlling for

symptoms (r = .41, p<.001) as were all subscales (self; r = .38, p<.001; world; r = .37, p<.01; self-blame; r = .39, p<.01).

4.5 Discussion

The aim of Study 2 was to further establish the retest reliability and convergent validity of the TALE. Reported rates of trauma within the general population are highly variable, however, the rates of adversity reported in the current study are comparable with those reported by an equivalent population in previous trauma measure validation (Carlson et al., 2011). Furthermore, rates of childhood physical abuse were comparable with previous research in non-clinical populations (Briere & Elliot, 2003), however, rates of childhood sexual abuse and bullying were both higher in the current sample (Briere & Elliot, 2003; Craig & Harel, 2004).

Temporal stability was relatively good, with overall event reporting significantly correlated at Time 1 and Time 2. Item reliability was lower in the non-clinical sample than the clinical sample and convergent validity with other measures of trauma was very poor in this group with none of the items reaching an acceptable level of agreement. In addition, overall reporting rates on the TALE were only slightly associated with overall reporting on other trauma screening tools. These findings present a significant limitation in the use of the TALE within non-clinical samples, however, it mirrors previous findings in trauma validation, with young adults and students reporting low rates of trauma limiting the strength of relationship between new and existing measures (Carlson et al, 2011). As discussed previously, low base rates of reporting are known to influence kappa (Feinstein, & Cicchetti, 1990; Pett, 1997) and there were similar challenges

in the current study as discussed in Study 1 with relation to the compression of items on comparison scales leading to inflated reporting rate. This was particularly problematic for the emotional neglect subscale of the CTQ-SF, on which all participants were identified as having experienced emotional neglect meaning it was not possible to compare this item with the equivalent on the TALE.

A small convergent relationship was found between increased trauma reporting and PTSD symptoms when controlling for the symptoms of psychosis for both total number of events and cumulative exposures. When examining the specific subscale of beliefs as measured by the PTCI, however, only changed cognitions about the self and world were found to be associated with a higher number of events overall but not repeated experiences of trauma or adversity. The lack of relationship between trauma and self-blame may reflect a weakness with this subscale as previous validation papers have also found this subscale to be problematic and possibly only relevant to trauma experiences which may be associated with increased feelings of shame, such as unwanted sexual experiences (Beck, et al., 2004). There was also a small association between increased trauma and an overall increase in psychosis symptoms which again supports the idea of a dose-response to trauma in subclinical groups (Spauwen et al., 2006) and adding further weight to the continuum understanding of psychosis (van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). However, conclusions drawn from convergence with symptoms severity is limited by the lack assessment of other symptoms, such as anxiety, well-being and social circumstances, all of which could influence the findings (Carlson et al., 2011).

While the outcomes of the current study do not suggest that the TALE is suitable for use within the general population, it is important to remember that all validation is context and population specific and therefore poor psychometric outcomes in one population do not negate the findings in another (Hooper et al., 2011). Additionally, the limitations of the TALE in this population may in part be explained by the use of online data collection. Research into the differences in data quality gained from online studies compared with face-to-face research is limited, however, an increase in the likelihood of missing or skewed data has been found due to higher rates of boredom and frustration experienced by participants (Lefever, & Matthiasdottir, 2007). Skewed responses were managed through the removal of incomplete data and there was no evidence of central tendency reporting in the data. Efforts were also taken to reduce boredom through minimising the number of questionnaires, however, it may be that participants were bored or became frustrated. This reflects a wider limitation in online research which is the lack of opportunity for researcher-participant rapport building, which has been found to be associated with increased data quality (Guillemin & Heggen, 2009) and allows for monitoring of emotion dysregulation and the opportunity for clarification, which may be especially pertinent when assessing personal experiences of trauma and adversity. For the psychometric properties of the TALE to be established in a non-clinical population future studies need to take these methodological limitations into consideration as well as responding to the reliability and validity of specific items through measurement refinement.

5. Study 3: Construct validity: hypothesis testing

5.1 Procedure

Clinical participants (Study 1) were compared against the non-clinical sample (Study 2) as part of the validation of the TALE by comparing reported rates of trauma exposure, current impact, symptom severity and PTSD symptoms. Due to the non-clinical data being positive skewed, all variables were transformed to control for this and outliers.

5.2 Results

Independent t-tests were carried out to compare the two groups. There were no significant differences between the clinical and non-clinical samples when compared on age (adjusted $t(58) = 1.97$, $p = .053$ and gender ($X^2 = .08$, $p = .78$). Levene's tests for homogeneity of variance were non-significant in all but five of the analyses; TALE total scores, TALE cumulative scores, CAPE total scores and CAPE depression subscale and for the TSQ. For these analyses, adjusted t-tests are reported.

Clinical participants reported significantly more event types, adjusted $t(134) = 8.45$, $p<.001$, and cumulative events, adjusted $t(130) = 10.40$, $p<.001$, on the TALE. In response to the question 21a ("*Do any of the events you have mentioned, that ended at least 1 month ago, still affect you now?*"), 82.1% ($n = 32$) of clinical participants said that they were still affected compared to only 39.7% ($n = 48$) of the non-clinical sample. Furthermore, the clinical sample ($M = 6.23$; $SD = 2.91$) reported feeling significantly more severely affected currently by the events they had reported than the non-clinical sample ($M = 3.93$; $SD = 2.71$), $t(123) = 4.3$, $p<.001$.

Clinical participants also had significantly higher scores on the CAPE, adjusted $t(52) = 7.10$, $p<.001$, and each of the subscales; positive, $t(158) = 8.68$, $p<.001$, negative $t(158) = 6.57$, $p<.001$, and depressive , adjusted $t(53) = 4.05$, $p<.001$, symptoms. PTSD symptoms were also found to be significantly higher in the clinical group when assessed with the TSQ, adjusted $t(86) = 4.94$, $p<.001$ and the PTCI, $t(106) = 5.47$, $p<.001$. This was also the case for the PTCI subscales; beliefs about self, $t(106) = 5.14$, $p<.001$, beliefs about the world, $t(106) = 5.62$, $p<.001$, and self-blame, $t(106) = 2.91$, $p<.001$.

5.3 Discussion

The aim of Study 3 was to further validate the TALE through hypothesis testing. Individuals with psychosis reported significantly higher rates of trauma and adversity than the general population, in line with existing literature (Morgan & Fisher, 2007; Varese et al., 2012). In particular, a greater number of individuals in the psychosis group reported currently being affected by trauma which occurred at least one month before and these individuals reported significantly more PTSD stress response symptoms and post-traumatic cognitions. These findings support the previous studies, which have found higher rates of trauma are associated with increased global symptoms as well as specific trauma reactions (Kilcommons & Morrison, 2005; Mueser et al., 1998; Neria et al., 2002). Furthermore, it indicates that the TALE is potentially effective at briefly assessing for a range of adversities and their impact. However, several limitations have been discussing Studies 1 and 2 which limit the extent to which conclusions can be drawn about the psychometric validity of the TALE across different populations and are discussed in more detail in the general discussion.

6. Study 4: Exploratory analysis of other impacts

Thematic analysis of clinical participants' (Study 1) answers to the question "*Briefly describe any other ways the event or events currently impact on you?*" was carried out to explore impacts of trauma beyond those that can be captured with measures of symptom severity. Responses were examined and coded based on key words and the experiences participants described. The coded texts were then drawn together into subthemes, such as '*self blame'*, '*disconnection'* and '*feeling unwell*'. These were then grouped into broader related themes and are presented alongside illustrative quotes in Table 14.

Table 14: Other impact themes and quotes (psychosis sample)

Themes described	**Frequency of reporting (%)**	**Example quotes**
Beliefs about self	19 (49%)	*"The bullying impacts my self-esteem, feels as though it is was my fault. Terrible childhood made me feel like I'm a evil person because I've learnt their* [parents] *patterns of behaving and act on them"* *"Makes me feel weak, useless"* *"Stopped looking after myself and care in general less, also feel I have lower self-worth"* *"I am a different person than I used to be"* *"Trying to feel comfortable where I am. I feel like an 18 year old trying to balance how my illness has put me in a child role while I am an adult."*
Change in relationships	14 (36%)	*"It effects the way I deal with my children. I don't leave them with anyone, I don't let them go to other people's houses"* *"Lots of strain on my relationships"* *"Feel as though I can't let go of what happened and as though I don't have a normal life"* *"Had long periods of time not being with people that love you"* *"I'm an adult and people still treat me like a child"*

(Table 14 continues over page)

(Table 14 continued)

Themes described	Frequency of reporting (%)	Example quotes
Change in relationships (continued)	14 (36%)	*"I feel as though I'm not connected to these emotions and find it hard to connect to others"* *"Self worth, difficulties meeting new people and forming new friendships"*
Low self esteem	12 (31%)	*"Lost my confidence"* *"No self confidence or self-esteem"* *"Deep down I feel depressed but I try not to think about it. Taken away my confidence"*
Symptoms	10 (26%)	*"Schizophrenia has damaged me. Constantly hear voices and makes me feel like a loser"* *"I've started having panic attacks"* *"Makes me paranoid and jumpy, also depressed"* *"It has given me paranoia, making me always feel on edge and unsafe"*
Illness beliefs and experiences	9 (23%)	*"I feel sick and isolated. I'm not in reality sometimes and I can't believe myself."* *"This developed from something temporary that I thought would go away and now has become permanent. Constantly reminded of what happened"* *"Always worried and anxious that I might get high and end up in hospital again"* *"Medication makes me feel numb so I can't feel anything or have any thoughts about what has happened"*
Social anxiety	9 (23%)	*"Don't want to go out on my own. It has affected my confidence in going out and socialising"* *"Feeling insecure. Anxiety and worry are my default positions"* *"Lost my confidence and developed a fear of facing too many people"*

(Table 14 continues over page)

(Table 14 continued)

Themes described	Frequency of reporting (%)	Example quotes
Other impacts	7 (18%)	*"Makes me concerned about applying for jobs and makes me nervous about being back in employment"* *"Lead to me being involved with drugs and gangs and seeing people fighting."*
Changes in emotions	6 (15%)	*"I just get scared sometimes"* *"The need to be safe otherwise I get anxiety. I'm always wanting to make sure I am out at safe times i.e. on the school and work commute. I also don't like doors being locked."* *"So much anger, I could kill the abusers for what they did to me"* *"I'm lacking assertiveness and my frustration is ongoing"* *"Sometimes I'm overwhelmed with emotions and will just cry. I think it's a way to cope with all the emotions I blocked out from childhood but I feel as though I'm not connected to these emotions and find it hard to connect to others"*
Social isolation	5 (14%)	*"Keep things to myself"* *"Very shy and socially withdrawn"* *"I don't like people in my personal space"*
Fears of stigma and judgement	2 (5%)	*"I have an overwhelming feeling the discrimination will happen again and it is dictating how I look to move forward in my life"* *"If people have done things in past they will do the same again and I will be humiliated and criticised"*
Positive impact	1 (3%)	*"I am proud of my work and achievements, everyone is damaged so it gives me permission to speak out about it in my work"*

The most common impact described by participants was changes in how they viewed themselves. Several participants spoke about an overall sense of feeling changed in a way that they found difficult to articulate. Others in the

sample spoke about feeling weak or less capable while others spoke of blaming themselves. Following beliefs about self, the next most described theme was beliefs about others and how this influenced their relationships. Participants talked about feeling disconnected from others and distrustful as well as having to physically be separated from their loved ones as a result of treatment. Other key themes were around ongoing symptoms of psychosis and other mental health problems that people had developed as a result of becoming unwell. These experiences linked to the theme of social anxiety and low self-esteem as several participants spoke about struggling with confidence, difficulties going out and socialising and feeling as though they had lost confidence. These beliefs about themselves made some of the participants interviewed also talk about their worries about judgement from others and fears of stigma. These experiences were especially prevalent for individuals who expressed concerns about returning to work and spoke of feeling judged or not capable of engaging in work as they had done previously. Only one participant described a positive impact of their traumatic events as they felt that their experiences gave them permission to talk publically from a position of authority.

6.1 Discussion

The final study was an exploratory thematic analysis of broader impact of trauma and adversity within the psychosis sample. As reported in Table 13 the events which were found to have the most significant impact for individuals with psychosis were those relating to treatment, hospitalisation and psychosis itself and that the impact of these events lead people to worry about fear of relapse, low self-esteem and difficulties relating to others. These findings are consistent with research in complex trauma which identify affect regulation, mood and

schematic views of the self and others as disrupted as a result of trauma (Briere & Spinazzola, 2005) and the suggestion that the impact of trauma is broader than a stress response one (Grubaugh et al., 2011; Schäfer & Fisher, 2011).

In particular, participants described dissociative experiences, such as feeling disconnected from others, which are understood to mediate the relationship between childhood trauma and positive psychotic symptoms, especially hallucinations (Perona-Garcelán et al., 2010; Varese, Barkus, & Bentall, 2012). Dissociative responses are thought to arise as a result of trauma and disrupted care in early life leading to insecure attachment styles in adulthood (van Ijzendoorn, Schuengel & Bakernsmans-Kranenburg, 1999). In psychosis, insecure attachment has been associated with earlier onset of symptoms and worse clinical outcomes (Korver-Nieberg et al., 2014; Gumley et al., 2014). It has also been found to contribute to the development of maladaptive schemas relating to the self and others (Mason, Platts & Tyson, 2005) which in turn may exacerbate positive symptoms, such as paranoia, through the misappraisal of ambiguous social situations (Garety, Kuipers, Fowler, Freeman & Bebbington, 2001). Therefore, a limitation of the current study is the lack of any formal assessment of other impacts in relation to these findings. Nevertheless, the findings highlight the breadth of impact felt as a result of adversity and the potential significance that experiencing psychosis has in relation to the individual's view of themselves and how they relate to others (Dozier, Lomax, Tyrrell & Lee, 2001; Picken, Berry, Tarrier & Barrowclough, 2010). Future research should incorporate qualitative research to gain a better understanding of the origins, developments and nuances of these experiences for the individual alongside quantitative measurement of the potential impacts of trauma, such as

attachment style and dissociation, to allow for greater understanding of the global impact of trauma and adversity in psychosis.

7. General Discussion

The current paper has described the development and validation of the TALE, a new trauma screening tool, across several studies. The TALE aimed to address specific concerns regarding the assessment of trauma and adversity in psychosis (NICE, 2014). In particular, the TALE differs from existing trauma screening tools by being the first to briefly and comprehensively screen for a range of traumas and high stress events which are known to either contribute to the development of psychosis or develop as a result of the symptoms and subsequent treatment experiences. Furthermore, the TALE includes a brief screen of the potential impact of these events in the hope that clinicians will use it to guide treatment decisions within routine clinical practice (Berry et al., 2013; Read & Ross 2003; Read et al, 2005). To date, only one other trauma screening tool has been developed specifically for individuals with psychosis (Cristofaro et al., 2013). However, the TEC, while comprehensive, is relatively long at 41 items and does not ask about the psychosis related high stress events. Finally, the TALE was developed to respond to clinician lack of confidence regarding routinely asking about trauma (Bendall et al., 2011) and the need for measures to be brief, comprehensive, easy to use and free for them to be routinely adopted by services (Slade et al., 1999).

Based on the studies presented in the current paper, the TALE appears to show moderately acceptable psychometric properties within the population for which is was developed. Most notably it identified the impact that psychosis and

treatment has for the individual and supported the previous findings that childhood adversity, in particular bullying and social isolation are highly prevalent within this population (Kelleher et al., 2013; Mackie et al., 2011; Mackie et al., 2013; van Dam et al., 2012). Within the clinical sample, the TALE showed good temporal stability and was comparable to existing measures at identifying a range of traumatic and stressful events. Hypothesis testing also indicated that the TALE is capable of identifying group differences between individuals with psychosis and the general population in line with the literature.

7.1 Limitations

However, the TALE is not without its limitations and it is important to note that this was a preliminary investigation of its psychometric properties and clinical applications. The TALE performed poorly within the non-clinical sample and this has been discussed in relation to low base rates and the decision to recruit participants through an online study. The variability of the performance of the TALE across the two samples may indicate specific weaknesses in the use of the TALE in non-clinical populations. However, this may also reflect a methodological limitation in the decision to further validate the TALE through online self-report. While the TALE is designed as a self-report measure, it was designed to be completed by a clinician in discussion with the service user. The lack of another person when completing the TALE online limits the possibility for discussion or clarification around items. Moreover, the high rates of missing data relating to approximate age of exposure in the non-clinical sample may have been reduced if participants had completed the measures as part of a face-to-face research meeting. For any firm conclusions to be drawn about the appropriateness of the TALE for the general population, further validation needs

to be carried out with non-clinical participants in different settings to evaluate the impact that this had on data quality (Lefever, & Matthiasdottir, 2007).

A second methodological limitation was the lack of counterbalance across measures meant that order effects were not controlled for. Within both studies, the participants first completed the TALE before going on to complete other trauma screening questionnaires. It is possible that as the study progressed and participants completed more measures inquiring about trauma and stressful events that repeated questioning triggered memories of specific events or caused the suppression of others (Kubany et al., 2000). With hindsight it may have been beneficial to vary the order of questionnaires across participants to account for this as the current methodology means that there is no way of investigating whether this had an impact on the convergent validity with other measures.

A third challenge in establishing the psychometric properties of the TALE was the lack of verification of event reporting from other sources. Previous trauma measures have used this as a method of assessing under or over reporting of events, however, the ability to do this is greatly impacted by the available sources of information. While some studies have included veteran samples (Carlson et al., 2011) which allows for corroboration through military records others have described the challenges and limitations of police records or family interviews (Cristofaro et al., 2013; Kubany et al., 2000). The main limitation of these methods of corroboration is that a very high proportion of individuals who have experienced interpersonal trauma do not report this to the police and it can take years for individuals to feel ready to disclose these experiences to friends or family (Read et al., 2006) meaning that verification from family members or

official records are likely to vastly under-represent prevalence and types of trauma and adversity that people have experienced.

Associated with this challenge of measurement validation is the knowledge that individuals are much more likely to under-report or minimise experiences leading to higher rates of false negatives (Hardt & Rutter, 2004; Hooper et al., 2011; Kubany et al., 2000). This is particularly problematic when measurement tools are brief (Carlson et al., 2011) and in population such as psychosis, where people have been found to minimise and avoid spontaneous recall of difficult events (Harrison & Fowler, 2004). This posed a particular problem for validation of the TALE within the current studies as comparison measures were also brief screening tools meaning that there was no opportunity to gain a broader sense of adversity or trauma exposure beyond the items listed. Given that it has been shown that people are unlikely to report events unless asked (Read et al., 2006) it is likely any under-reporting on the TALE would be mirrored across other brief self-report measures. Furthermore, the limited number of like items and need to compare one item on the TALE to multiple items on comparison measures meant that there was no way of verifying the specificity of events identified (Kubany et al., 2000). The decision to use brief screening tools for comparison was to minimise the impact on participants, however, with hindsight a broader range of screening tools could have been used. For example, the Childhood Experiences of Care and Abuse Questionnaire (CECA-Q; Smith, Lam, Bifulco, & Checkley, 2002) asks about temporary and permanent separation from care-givers in a more comparable way with the TALE. Similarly, the Trauma Events Checklist (Cristofaro et al., 2013) has specific questions about bullying and harassment, which would have allowed for these items to be specifically

validated on the TALE. Additionally, to fully establish the psychometric properties of any new assessment tool, criterion validity needs to be compared against the "gold-standard" existing method of assessment (COSMIN; Mokkink et al., 2010). Therefore, ideally the validation of the TALE would have included a clinical interview of trauma exposure, such as the Evaluation of Lifetime Stressors – Interview (ELS-I; Krinsley, 1996). However, it was not feasible to carry out such interviews in the current research due to the need for comprehensive training in administering and interpreting these interviews and the burden of completion time for participants.

A final limitation of the TALE was born of the efforts to make it a checklist which is both brief and comprehensive. During the development of the TALE every effort was made to keep the number of items to a minimum so as to maximise the clinical utility of it, however, it became clear through the validation of the TALE that some items would require further development. At least one item asked about overlapping constructs (accidents and illnesses) which compromised the validation of this item. For any measure to have good content validity, items need to be clearly targeting specific constructs (Haynes, Richard & Kubany, 1995) or there is a risk that the events asked about are not specific enough to provide a cue for the respondent (Carlson et al., 2011). A lack of specificity also means that it is unclear which of the event types which is being asked about is being responded to. The dual demands of brevity and specificity have been much debated in trauma assessment but the general consensus is that people do not generally spontaneously disclose traumatic events (Read et al., 2006). Moreover, evidence suggests that list length also influences trauma reporting rates and a recent study found that while a single question measure is

highly likely to identify a traumatic event from which someone is currently experiencing PTSD symptoms, trauma checklists were better able to identify experiences which had a current impact beyond PTSD (Monson, Lonergan, Caron & Brunet, 2015). Given that the TALE is attempting to aid the assessment of trauma and adversity exposure and the broader impact of these events, this needs to be taken into consideration when reviewing items included on the TALE.

7.2 Conclusions

In summary, this paper marks the initial validation of the TALE for use with individuals with psychosis. It is important to remember that no one trauma measure addresses the specific needs of all clinicians and researchers and decisions about the most appropriate tool will be situation specific (Gray et al., 2004). Further development of specific items and more rigorous examination of the psychometric properties of the TALE are needed to fully establish it as a useful clinical tool. As already discussed, validation is an ongoing process and needs to be thought about within the context and culture for which an assessment tool is developed (Carlson et al., 2011; Hooper et al., 2011). With this in mind, the next stage of validation will need to be within routine clinical services and further feedback from clinicians and service users will be required to ensure that the TALE is a clinically relevant and useful tool for assessing trauma and adversity within this population.

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Part 3: Critical Appraisal

1. Introduction

This critical appraisal reflects on a number of theoretical, methodological and practical challenges which arose during the process of this research project. It will initially, briefly, outline my reasons for choosing the current project and how my understanding of the development of psychosis changed across the course of the project. I will then go on to discuss some of the challenges I faced in developing and implementing the research, with a particular focus on gate-keeping and working as part of a research team. Finally I will reflect on the practical limitations of the research methodology before reflecting on the future direction of the research.

2. Background to the research project

Having previously worked as a researcher prior to training, I felt less trepidation in undertaking a major research project than I did in my approach to the '*clinical*' elements of training and was looking forward to having the opportunity to develop my own ideas as a researcher. I had experience of working both clinically and in research with individuals with psychosis and had witnessed the numerous social and economic challenges that these individuals faced and how they often exacerbated symptoms and led to poorer clinical outcomes and longer periods of recovery (Sweeney, Air, Zannettino & Galletly, 2015). I also learned more about the importance of early detection and treatment of psychotic symptoms through my contrasting experiences of working in EI services compared with the high prevalence of recurring clients with long histories of mental health problems I had worked with in forensic services. From this I developed a strong belief that many of the issues the individuals I worked with

were facing were as a result of systemic socioeconomic challenges which may have been prevented through early detection, treatment and social support.

Although I had an awareness of the impact that these adversities had in terms of maintaining the symptoms of psychosis, I had not previously considered the extent to which early trauma and adversity were implicated as a risk factor to psychosis. Instead, based on teaching during my undergraduate degree and the models that the services used to formulate psychosis, I had understood the developmental trajectory of the onset of psychosis as being biologically driven and exacerbated or moderated by the environment through epigenetic processes (Picchioni & Murray, 2007). However, once I began researching the rationale for routine trauma screening within psychosis services my understanding of the development of psychosis shifted greatly and became much more closely aligned with my understanding and experiences of researching the neurodevelopmental model of personality disorder development (Putnam & Silk, 2005) in that many of the neurological differences, which are often ascribed to genetic factors in psychosis, are in fact as a result of adaptive changes in the developing brain in response to early adversity.

Over the course of this research the change in my conception of psychosis as a disorder driven by early adversity, mediated by adult experiences of trauma has only gained traction and consolidated my beliefs about the need for early intervention as well as the need to address broader socioeconomic factors, such as social isolation and discrimination driven by economic and social disparities (Harrison, Gunnell, Glazebrook, Page, & Kwiecinski, 2001; Vassos, Pedersen, Murray, Collier & Lewis, 2012). Despite being aware before undertaking this

research of the marginalisation and stigmatisation that individuals with psychosis face and the obvious impact which that has in maintaining mental health problems, I have been struck by the disparity in our conceptualisation of psychosis compared with other common disorders and a general reluctance until very recently to accept an environmental and social role in its aetiology.

Carrying out research which explores the impact of adversity during a politically contentious time of stringent austerity measures, particularly impacting the NHS and social care, and discussions regarding the impact of migration on the UK, has heightened my awareness of the important role that psychologists could play at a political and societal level. The reality of the impact that social policy has for our society was brought home to me through undertaking this research, in particular how current austerity measures will impact the mental health of future generations. On a professional level I align strongly with the ideas of community psychology, in particular the importance of social justice and "giving away" psychological ideas (Miller, 1969) and the privileged position that we hold as psychologists. While my research does not directly draw on these values in terms of the methodology, I hope the theoretical rationale will, at least in part, add to the growing body of literature which highlights the social and environmental factors that known to be causally related to psychosis. My hope being that as this body of evidence grows there will be a re-conceptualisation of psychosis and that these factors will be taken into consideration when developing future treatments and social policy. Additionally, on a personal level I hope that through being immersed in this literature for the last two years I will feel obligated to work at multiple levels to address social inequalities and their impact once qualified.

3. Developing meaningful research

A key competence of clinical psychology is evidence based practice (Spring, 2007) and a major facet of this skill is the ability to develop and implement research within the NHS which will be clinically useful and relevant. As someone who is passionate about the value of research in this sense, it was important that my research project fit with these ideals and was conscious of the need to be able to draw on clinical expertise, client views and the evidence base to develop high quality research (Spring, 2007). However, having already had several years of experience carrying out research in the NHS I was also conscious of the potential challenges that we may face in undertaking a research study and I will go on to describe specific challenges that were faced within the current research project.

3.1 Gatekeeping and the experience of joint research

A major concern I had from the project's inception was about the recruitment of participants from a hard to recruit population and the commonly-held belief that asking about trauma is unduly distressing for participants (Jaffe, Dilillo, Hoffman, Haikalis & Dykstra, 2015). As a result of this, I anticipated a great deal of gate-keeping (Sixsmith, Boneham & Goldring, 2003) at both a service level, in terms of gaining approval to carry out research in NHS Trusts, and at a clinician level, in supporting recruitment, promoting research and identifying potential participants. These concerns were allayed early on in the project due to the fact that my supervisors were both established clinical and research leads within psychosis services and would be able to promote the study within the trust at multiple levels. However, during the development stages of the research we learnt that to be able to utilise these links meant that additional applications would need to be made to the Trust's associate academic department prior to

seeking NHS ethical approval. After several months of working on this process it became clear that the application would not be accepted due to a number of factors, primarily bureaucratic ones, outside of our control and we needed to develop alternative plans for recruitment within different NHS Trusts. I think, on reflection, this experience marked a significant shift in how we then proceeded with the project and the experience provided us with an opportunity to develop our strengths and cohesion as a research team as well having to face many frustrations and challenging decisions.

A key challenge that I faced as a result of this experience was an amplification of the novice position that one regularly experiences early in their career (Thériault, Gazzola & Richardson, 2009). As a trainee you are in a dual position of being given high levels of responsibility and autonomy at the same time as being accountable to more senior clinicians and researchers. Within research this can mean that more credence is given to more experienced members of a research team and there is the potential for more junior members of the team, such as myself, to rely on their expertise more than one's own knowledge or views. Equally, legitimate concerns raised by less experienced members of any team can go unheard or misconceived as undue anxiety. At the time, I and my colleague expressed concerns about completing our research on time given the delays that the application was causing. However, the decision was made to continue to attempt to seek this additional approval as our supervisors were confident in the value of the project and we all felt that the additional process would strengthen our ethical application and ease recruitment in the long run. Reflecting back on how we could have done things differently, I think both I and my colleague could have been more confident about raising our

concerns and made more of a concerted effort to take ownership of the research at an earlier stage despite feeling inexperienced within the team. Additionally, the experience has indicated to me the importance of taking each stakeholder's views into consideration at all stages of planning a project. However, the challenge also helped highlight a crucial strength in carrying out a joint research project. At a time when I felt disappointed and worried about the future of the study it was invaluable to have a peer to be able to share this experience with as well as expert supervision to problem solve as a team. I think undoubtedly that being able to work together to seek out new NHS Trusts to recruit from and begin a new application for ethics at a very late stage was due to us having developed a good working relationship that allowed us to motivate each other and offer mutual support.

Having navigated these early challenges, all members of the research team were concerned about our ability to recruit an adequate number of participants in a short period of time. As already mentioned, concerns are often raised in relation to carrying out trauma research and my own experience of researching in psychosis populations is that it is an overresearched clinical population and it is often hard to recruit participants. With this in mind, I was again anticipating high levels of gate-keeping from service leads and clinicians (Sixsmith, Boneham & Goldring, 2003). However, once we began meeting with the services from which we were recruiting I was pleasantly surprised to see a great deal of enthusiasm and passion for the research project. Nearly all the clinicians we met with spoke of their own experiences of working with individuals who had experienced high levels of trauma and adversity. Clinicians reflected openly with us about the challenges of working with such individuals and raised concerns

about the impact that our research may have for clients in an uncontentious way. In return we were able to provide evidence that suggests participating in trauma research has been found to be a positive experience regardless of trauma history (Jaffe et al. 2015) and this appeared to be well received by staff. The predominantly positive experience of recruitment and support from key members of staff within the different services was a helpful motivating factor to continue to recruit participants and helped me to keep in mind the rationale for the study. Additionally, participants within the research often provided verbal feedback about the value that they saw in the research and commented that they found it personally helpful to speak about difficult experiences and their impact in a contained way. The experience of carrying out research in a clinical setting and gaining feedback from service users and clinicians has helped consolidate my understanding of evidence based practice and the need to draw on clinical expertise, client values and research findings to make meaningful service developments (Spring. 2007).

My final concern was regarding the feasibility of carrying out high quality research in the time available and in parallel to the many other demands that clinical psychology training asks of trainees. I feel I was lucky to be able to work alongside another trainee who had similar research experience and was also able to take a pragmatic approach to designing our research projects. Moreover, having two clinical researchers as our supervisors meant that we were all able to hold the dual requirements of developing theoretically rigorous research whilst being realistic about the feasibility of carrying out any such research within a clinical setting. Additionally, this shared understanding of the challenges of developing valuable research meant that from the start we were focused on

trying to develop a research project that would bridge the gap between theory and practice, with the hope that this would allow for the implication of our findings in routine practice (Proctor et al., 2008). While there were times in the project where each of our own interests took precedent in informing our views, be it the expectations of the course, implications for future publications or our personal beliefs as clinicians about the aim of our joint research, I believe that working as a group allowed to maintain a shared focus and rationale for our joint decision making. Furthermore, I think that maintaining a clear research rationale allowed us to communicate our ideas to others and this was one of key reasons that we did not face many of gatekeeping challenges I had anticipated.

3.2 Practical limitations of the research

As already discussed in my empirical paper, there were several methodological limitations which meant it was difficult to draw conclusions about the psychometric properties of the TALE. One major limitation was the decision to use existing self-report measures as a comparison rather than clinical interviews. There are numerous benefits to using self-report measures over interviews, for example they are usually quick to complete, low cost and do not requiring extensive training to administer. However, there are also many limitations to them. For one they are subject to confound variables such as mood and motivation (Cusi, MacQueen, Spreng & McKinnon, 2011: Negd, Mallan & Lipp, 2011) and in particular in trauma research, participants are known to under-report or minimise reporting of events (Hardt & Rutter, 2004; Hooper et al., 2011; Kubany et al., 2000) meaning that self-report measures may be an unreliable way of validating a new measure. However, the decision to use these instead of a clinical trauma interview reflects one of the many practical decisions that need to

be made with regards to what is feasible within both the scope of the project and the demands that one can realistically expect to place on participants. This is especially pertinent in the current research, given that although there is little evidence to suggest long term adverse effects of trauma research, the experience of disclosing highly personal events to another person can be challenging and in the short term it can be upsetting to reflect on these events and the impact that they have had for the individual.

One alternative to more in depth clinical interviewing would have been to include a broader range of other screening tools which would have allowed for great item comparison across the TALE and aided validation. Reflecting on this now, I am in a privileged position of having greater understanding of the process of measurement validation as well as a broader knowledge of the range and type of trauma screening tools in existence. With this hindsight I would have made different decisions regarding the measures I selected to validate the TALE and would have possibly argued for the inclusion of a greater number of measures to allow for more comprehensive validation. However, as already stated the study was part of a wider research project and it was necessary to take into consideration the needs of the other research project alongside my own. Therefore it was important that we both think carefully about the impact that each of our methodological choices had on the impact of the other's project. With this in mind, it would not have been feasible or ethical to expect participants to complete any more trauma screening tools in addition to assessing symptoms and carrying out a semi-structured interview as part of the wider research project.

4. Implications for future research and clinical applications

As I reflected on in my discussion, an ongoing challenge I faced throughout the research project was how to make the TALE a useful checklist which was also demonstrated robust psychometric properties. Throughout the development and testing of the TALE, the research team had many discussions about the purpose of the measure and discussed plans for future iterations. On one hand, there was a clear rationale for the TALE to be brief and future versions of the checklist to contain fewer items which were more relevant to psychosis. However, I was also aware of the literature regarding high rates of false negatives within trauma assessment (Carlson et al., 2011) and the need for each item to address a specific construct for it to be valid (Haynes, Richard & Kubany, 1995). The dilemma of knowing how to successful address both these needs did not reach any resolution during the current research project, however, having established ourselves as research group we will continue to work together to develop the TALE. My hope for future iterations of the TALE is that it will be comprehensive enough to withstand rigorous psychometric evaluation without becoming a measure that clinicians do not wish to use because it is too long or complex to complete.

Finally, a challenge that all trauma assessment faces which I have touched on here and in the empirical paper and one that I do not know how to address is how to assess for trauma and its impact in individuals who do not want to divulge such histories. Avoidance of trauma memories is a fundamental feature of PTSD, and it has been found that individuals who have an avoidant coping style in psychosis are more likely to suppress trauma memories relating to their diagnosis and are more reluctant to voluntarily recall them (Harrison & Fowler, 2004). Moreover, an avoidant coping style, referred to as “sealing over” in

psychosis is associated with poorer clinical outcomes and quality of life (Drayton et al, 1998; McGlashan, 1987; Thompson et al, 2003) while at the same time evidence suggests that individuals develop a sealing over coping style in response to early adversity and attachment disruptions (Tait, Birchwood & Trower, 2004). Knowledge of this posed not only a question over the validity of the current research to accurately identify individuals with a trauma history but a broader challenge of clinical practice. Having worked across a range of settings in which early trauma is a contributing factor to current presentation of clients, I am unclear about how best to address this dilemma. The hope is that in therapy one is able to build enough rapport through the therapeutic alliance to allow the person to feel able to voluntarily share these experiences so that they may be understood and addressed. However, I think I am still unsure about the process of this within research or how best to manage the risk of disengagement in therapy before that point is reached where the client feels able to share these experiences.

5. Conclusions

In summary, the experience of carrying out the current research has impacted upon my understanding of causes of psychosis and I now view it not as a biologically driven disorder but one very much born of socioeconomic deprivation and early interpersonal trauma and victimisation. Psychology has a duty to address these issues if we are to successfully tackle mental health problems for future generations.

Reflecting on the process of developing and implementing clinical research has highlighted the numerous challenges that we face when planning research as well as some of the limitation that I experienced throughout the

process. Overall, I hope that this appraisal shows that often the challenges that one anticipates, such as recruitment difficulties, are not the ones that end up having the greatest impact and it is only with the benefit of hindsight that we are able to reflect on these processes. Additionally, that process of reflecting and feeding back is crucial to the maintenance of evidence based practice, which is an integral part of clinical psychology. In describing the challenges that I faced in the development of the research project, I was able to learn a great deal about the implementation of research and ultimately how the value and strengths of working in a research team outway the challenges that one may face regarding decision making.

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Appendix 1: Standard Quality Assessment Criteria for Evaluating Primary Research Papers

	Criteria	Yes (2)	Partial (1)	No (0)	N/A
1	Question/objective sufficiently described?				
2	Study design evident and appropriate?				
3	Method of subject/comparison group selection or source of information/input variables described and appropriate?				
4	Subject (and comparison group, if applicable) characteristics sufficiently described?				
5	If intervention and random allocation was possible, was it describe?				
6	If interventional and blinding of investigators was possible, was it reported?				
7	If interventional and blinding of subjects was possible, was it reported?				
8	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?				
9	Sample size appropriate?				
10	Analytic methods described/justified and appropriate?				

11	Some estimate of variance is reported for the main results?				
12	Controlled for Confounding?				
13	Results reported in sufficient detail?				
14	Conclusions supported by the results?				

Appendix 2: Table with interrater scores for quality assessment

Study	Rater 1	Rater 2
Gajwani et al. (2013) UK	21/22	21/22
Boyette et al. (2014) Netherlands	20/22	18/22
Ponizovsky et al. (2014) Israel	20/22	20/22
Couture et al. (2007) USA	19/22	19/22
Ponizovsky et al. (2007) Israel	17/22	18/22
Korver-Nieberg et al. (2013) UK	21/22	21/22
Berry et al. (2006) UK	17/22	17/22
Berry et al. (2007a) UK	18/22	18/22
MacBeth et al. (2008) UK	22/22	22/22
Pickering et al. (2008) UK	20/22	20/22

Appendix 3: Trauma And Life Events checklist (TALE)

Part A. TALE Checklist

(Trauma And Life Events Checklist, Version 9, Carr, Hardy & Fornells-Ambrojo, in prep)

This checklist includes a list of common traumatic or stressful life events. We would like to know whether or not you have ever experienced these events and, if so, which has the most impact on you now. If you chose to answer, please just indicate which events you experienced, if they happened more than once, and how old you were when they happened. Thank you.

Have you ever experienced…? (Please see brackets for some examples)	**Yes (✓) or No (✕)**	**More than once? Yes (✓)/ No (✕)**	**Age(s) -** range if repeated
1. Exposure to war, either in the military or as a civilian? (e.g. combat, ongoing civil unrest, torture, becoming a refugee or political prisoner)			
2. Loss of, or permanent separation from, someone close to you such as a parent or caregiver? (e.g. due to death, being placed in care, conflict, divorce)			
3. A period of separation from someone close to you such as a parent or caregiver? (e.g. due to being placed in care, illness, conflict, divorce)			
4. Sudden or unexpected move or change in circumstances? (e.g. changing school, loss of home)			
5. Bullying or harassment at school, work or on the street? (e.g. people saying hurtful things, hitting or shoving)			
6. Discrimination at school, work or on the street? (e.g. being ignored or treated differently)			
7. Someone close to you insulting you, putting you down or humiliating you? (e.g. someone you live with / partner / family member/ caregiver)			
8. Someone close to you being physically violent or aggressive towards you? (e.g. parent / partner, hitting / kicking / throwing things)			
9. Witnessing physical violence or verbal aggression in your home? (e.g. parents fighting, seeing siblings being beaten or hurt)			
10. Someone you did not know being physically violent or aggressive towards you? (e.g. mugging, assault, fight)			
11. Feeling unsafe, unloved or unimportant during childhood? (e.g. no one to look out for you)			
12. Going hungry or thirsty, not having clean clothes or a safe place to stay during childhood?			
13. Someone having any sexual contact with you, before your 16th birthday, that either at the time or looking back on it now was unwanted? (e.g. talking, looking, touching, penetration)			

Have you ever experienced…? (Please see brackets for some examples)	**Yes (✓) or No (✕)**	**More than once? Yes (✓)/ No (✕)**	**Age(s) -** range if repeated
14. Someone having any sexual contact with you, since your 16th birthday, that either at the time or looking back on it now was unwanted? (e.g. talking, looking, touching, penetration)			
15. Unusual experiences, such as hearing voices, seeing visions or having worries about other people causing you harm, that made you feel in danger or distress?			
16. Acting in ways that put you or someone else in danger or were strange or embarrassing? (e.g. wandering the streets at night, violence, risky sexual behaviours)			
17. Contact with mental health services (e.g. being admitted to hospital) that involved threatening or upsetting events? (e.g. being restrained, coerced, secluded, assaulted, forced to take medicine, or witnessing such events)			
18. Any other contact with health or criminal justice services which was upsetting or frightening?			
19. Any other events that were accidental or did not involve people intending to cause you harm? (e.g. serious illness, accidents, fire, natural disaster)			
20. Apart from the above, has anything else happened in your life that you found distressing? Please specify:			

21a. Do any of the events you have mentioned, <u>that ended at least 1 month ago</u>, still affect you now? Yes / No
21b. Which event or events currently affect you most? Event number(s):
21c. Overall, how much are you affected now by the event or events select in 21b (from 0 = not at all to 10 = extremely)?

Part B. Trauma Screening Questionnaire (TSQ)

(Brewin et al. 2002)

Please briefly describe the event or events reported above in 21b:

_____

_____

_____

Please consider the following reactions which sometimes occur after traumatic events. This questionnaire is concerned with your personal reactions now to the traumatic event or events you described above. Please indicate (Yes/No) whether or not you have experienced any of the following at **least twice in the past week**.

1. Upsetting thoughts or memories about the event that have come into your mind against your will	Yes	No
2. Upsetting dreams about the event	Yes	No

3. Acting or feeling as though the event were happening again	Yes	No
4. Feeling upset by reminders of the event	Yes	No
5. Bodily reactions (such as fast heartbeat, stomach churning, sweatiness, dizziness) when reminded of the event	Yes	No
6. Difficulty falling or staying asleep	Yes	No
7. Irritability or outbursts of anger	Yes	No
8. Difficulty concentrating	Yes	No
9. Heightened awareness of potential dangers to yourself and others	Yes	No
10. Being jumpy or being startled at something unexpected	Yes	No
Number of yes responses		

Part C. Impact of event – Other

Please briefly describe any other ways the event or events currently impact on you?

_____

_____

_____

_____

Appendix 4: Expert clinician, researcher and service user feedback questionnaire

Please review or complete the TALE checklist, then answer the following questions:

1. I found the TALE checklist easy to use

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

2. The instructions were clear

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

3. The questions were clearly worded

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

4. The TALE checklist is too long

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

5. Items on the TALE checklist could be too upsetting for service users

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

6. The TALE checklist could be used in routine clinical practice

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

7. The TALE checklist assesses the relevant types of trauma and stressful life events for people with psychosis

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

8. Are there any items that should not be included or experiences not asked about which you think would be important to include?

9. Please note any other problems with or improvements that could be made TALE checklist, or any other comments?

Thank you for taking the time to provide feedback

Appendix 5: Ethical approval

Health Research Authority

National Research Ethics Service

London - Queen Square Research Ethics Committee

HRA NRES Centre Manchester

Barlow House

3rd Floor 4 Minshull Street Manchester

M1 3DZ

09 October 2015

Dr Miriam Fornells-Ambrojo

University College London

1-19 Torrington Place

London

WC1E 7HB

Dear Dr Fornells-Ambrojo

Study title:	**Development of a brief clinical screening tool for trauma**
REC reference:	**15/LO/1486**
IRAS project ID:	**187370**

Thank you for your letter of 30 September 2015, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Rachel Heron, [redacted]

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first

participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett ([redacted]), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Recruitment Poster]		12 June 2015
Copies of advertisement materials for research participants [Recruitment Poster]	1.2	25 September 2015
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor Insurance]		28 July 2015
GP/consultant information sheets or letters [Clinician Information Sheet]	1.0	13 March 2015

Interview schedules or topic guides for participants [Intrusive Trauma Memory Interview]	1.0	12 June 2015
IRAS Checklist XML [Checklist_07082015]		07 August 2015
IRAS Checklist XML [Checklist_30092015]		30 September 2015
Letter from sponsor [Sponsor Letter]		28 July 2015
Letters of invitation to participant [Recruitment Poster]	1.1	12 June 2015
Non-validated questionnaire [Trauma and Life Events Checklist]	9	12 June 2015
Other [Sophie M-P CV]	1.0	17 July 2015
Other [Debrief Sheet]	1.1	12 June 2015
Other [Non-Clinical warning notice]	1.0	26 September 2015
Other [Ethics Covering Letter]		30 September 2015
Other [NELFT Lone Worker Policy]		
Other [NELFT Lone Working Procedures]		
Participant consent form [Clinical Participant Consent Form]	1.1	12 June 2015
Participant consent form [Non-Clinical Consent Form]	1.0	12 June 2015
Participant information sheet (PIS) [Clinical Participant Information Sheet]	1.1	12 June 2015
Participant information sheet (PIS) [Non-Clinical Participant Information Sheet]	1.1	12 June 2015
REC Application Form [REC_Form_07082015]		07 August 2015
Referee's report or other scientific critique report [UCL Peer Review - Sarah Carr]		08 January 2015
Referee's report or other scientific critique report [UCL Peer Review - Sophie Marsh-Picksley]		20 October 2014
Research protocol or project proposal [Research Protocol]	1.0	12 June 2015

Summary CV for Chief Investigator (CI) [Chief Investigator CV]	1.0	17 July 2015
Summary CV for student [Sarah Carr CV]	1.0	17 July 2015
Summary CV for supervisor (student research) [Supervisor CV]	1.0	17 July 2015
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Protocol Flowchart]	1.0	12 June 2015
Validated questionnaire [Questionnaire Battery]		

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

15/LO/1486 **Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

Signed on behalf of

Dr Yogi Amin Chair

Email: [redacted]

Enclosures: "After ethical review – guidance for researchers" *[SL-AR2]*

Copy to: *Mr David Wilson*

Appendix 6: Clinical information sheet and consent form

NELFT NHS
NHS Foundation Trust

UCL

Developing a brief clinical screening tool for trauma and its impact

Clinical Participant Information sheet

We would like to invite you to take part in a research study. Before you decide, you need to understand why the research is being done and what it will involve. Please take time to read the following information carefully and talk to others about the study 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.

Thank you for reading this information.

Part 1

Why is the study being done?

We know that many people have experienced difficult or upsetting things during their lifetime. We want to develop a brief questionnaire that helps clinicians routinely assess these experiences in mental health services. We hope the questionnaire will help people to report these experiences more easily and access support if needed. In addition to this, we would also like to find out about any ways in which events have impacted on people and their memories. This will contribute to improving the care provided to people experiencing trauma-related difficulties.

Why have I been invited?

We are inviting you to participate because a member of your care team has checked with you that it would be okay for us to approach you to provide information about this project. Alternatively you may have seen an advert for this research and contacted us, or previously indicated you are willing to be contacted about research. At this point we have no other information about you unless you have consented for this to be accessed. We will not access any further information without your consent.

Do I have to take part?

No, it is up to you whether or not you decide to take part and you can take your time to consider this. If you decide to take part we will describe the study and go through information sheet which we will then give to you to keep. We will also ask you 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. If you withdraw from the study, all your personally identifiable information will be destroyed.

What will happen to me if I take part?

If you are interested in taking part you will meet with a researcher to complete some questionnaires about traumatic and difficult experiences you may have had in your life, and other common difficulties and problems. If you experience memories of traumatic events that pop into your mind when you do not want them to, we will also ask you questions about this using a short interview. We expect that this meeting will take between 1 hour 30 minutes and 2 hours in total. You can take breaks as needed throughout the meeting. This can be completed in one session, or spread over more sessions if you prefer.

We will also invite you to come back two weeks later to complete one of the brief questionnaires about difficult experiences again. This will last for approximately 15 minutes and it will be an optional part of the study.

Will I be reimbursed for any expenses?

Yes. You will receive £10 for completing the first part of the research assessment, to cover any time and expenses, and £5 if you return for the second part.

What are the disadvantages and risks of taking part?

As described above, you will be required to answer questions about difficult life experiences and memories. However, you will not be required to describe in detail any difficult past experiences. For some people talking about the past and their memories might bring up some thoughts or feelings which are distressing. You will be free to withdraw from the project at any time. In the event that you do become upset, we will help you to manage these feelings by using relaxation strategies commonly used to reduce distress (e.g. controlled breathing or muscle relaxation) at the end of the meeting. If necessary the researcher will seek further support for you through healthcare services. You will be provided with contact details for the research team and other support services, should you need support after you have taken part.

What are the possible benefits of taking part?

Some people have said that they have found it helpful to be able to talk about experiences which they find upsetting and be listened to in a caring way. If you feel that it would be helpful, we can provide 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 difficulties you might experience will be addressed. The detailed information on this is given in Part 2.

Will my taking part in the project be confidential?
If you are under the care of a team, we will inform them that you are taking part in the study. Otherwise, all the information about your participation in this study will be kept confidential. 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. The details to this are included in Part 2.

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

Part 2
What if there is a problem?
If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated by members of staff due to your participation in the research, UCL mechanisms are available to you. Please ask your researcher if you would like more information on this.

In the unlikely event that you are harmed by taking part in this study, compensation may be available. If you suspect that the harm is the result of the Sponsor's (University College London) or the hospital's negligence then you may be able to claim compensation. After discussing with your researcher, please make the claim in writing to Dr Miriam Fornells-Ambrojo who is the Chief Investigator for the research and is based at University College London. The Chief Investigator will then pass the claim to the Sponsor's Insurers, via the Sponsor's office. You may have to bear the costs of the legal action initially, and you should consult a lawyer about this. You of course would be supported throughout this process.

Will my taking part in the project be confidential?
Yes. All 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 and electronic recordings 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?
We will aim to publish the results in a scientific journal as part of Doctorate in Clinical Psychology educational projects. 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 favorable opinion by London Queens Square Research Ethics Committee (REC reference: 15/LO/1486)

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
Dr Amy Hardy	Investigator	[redacted]
Dr Miriam Fornells-Ambrojo	Chief Investigator	[redacted]
Sophie Marsh-Picksley	Researcher	[redacted]
Sarah Carr	Researcher	[redacted]

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

You will be given a copy of this information sheet and a copy of the signed consent form to keep.

Study Number:
Patient Identification Number:

CLINICAL CONSENT FORM

Title of Project: Developing a brief clinical screening tool for trauma and its impact
This study has been approved by the (x) Ethics Chair
Name of Researchers: Sarah Carr and Sophie Marsh-Picksley

Thank you for your interest in taking part in the research study. Once you have read the information sheet and discussed the study with the researcher please read through and complete the form below. You will be given a copy of the consent form to keep and refer to at any time. A copy will also be kept by the research team. This will be kept securely and separately from the responses you provide as part of the study.

Please initial all boxes:

1. I confirm that I have read and understand the information sheet dated 12/06/2015 (version 1.1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I consent to the processing of my personal information for the purposes of this study only and that it will not be used for any other purpose. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998. ☐

3. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected. ☐

4. I understand that sections of my medical notes may be looked at by the researchers, only if it is relevant to my taking part in this research (for example, to get an address, or confirm clinical information). I give permission for these individuals to have access to my records for this purpose. ☐

☐

5. I give consent for the research interview to be audio recorded for the purpose of ensuring that we are presenting the interview and questionnaires in the same way for each person taking part. Declining to do so at any time will not affect my participation in the research in any way.

6. I give additional consent for quotations to be extracted from the audio recordings for use in future publications. I understand that these quotations will be anonymous. Declining to do so at any time will not affect my participation in the research in any way. ☐

7. I agree that a member of the research team can contact me about coming in for a second, brief assessment session in approximately 2 weeks' time. ☐

6. I understand that information relating to me taking part in this study will be stored on an anonymised electronic database for up to 7 years by the research team ☐

7. I would like to receive a summary of the research results ☐

8. I agree to take part in the above study ☐

Name of Participant	Date	Signature

I ……confirm that I have carefully explained the purpose of the study to the participant and outlined any reasonably foreseeable risks or benefits.

Name of Person taking consent	Date	Signature

Appendix 7: Non-clinical information sheet and consent form

Developing a brief clinical screening tool for trauma and its impact

Participant Information sheet

We would like to invite you to take part in a research study. Before you decide, you need to understand why the research is being done and what it will involve. Please take time to read the following information carefully and talk to others about the study 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.

Thank you for reading this information.

Part 1

Why is the study being done?

We know that many people have experienced difficult or upsetting things during their lifetime. We want to develop a brief questionnaire that helps clinicians routinely assess these experiences in mental health services. We hope the questionnaire will help people to report these experiences more easily and access support if needed. In addition to this, we would also like to find out about any ways in which events have impacted on people and their memories. This will contribute to improving the care provided to people experiencing trauma-related difficulties.

Why have I been invited?

You may have seen an advertisement online via social media or through the UCL university email circular about the research and contacted us.

Do I have to take part?

No, it is up to you whether or not you decide to take part and you can take your time to consider this. If after reading this information sheet and asking questions you decide to take part, you will be asked to sign a consent form. If you decide to take part you can leave the study at any time, without giving a reason or penalty. If you withdraw from the study, all your personally identifiable information will be destroyed.

What will happen to me if I take part?

If you are interested in taking part you will be asked to complete some questionnaires online about traumatic and difficult experiences you may have had in your life, and other common difficulties and problems. If you experience memories of traumatic events that pop into your mind when you do not want them to, we will also ask you questions about this. We expect that this will take approximately 45minutes. You can do this in a single or multiple sittings.

We will also invite you two weeks later to complete one of the brief questionnaires about difficult experiences again online. This will last for approximately 10 minutes and it will be an optional part of the study.

Will I be reimbursed for any expenses?
You will be entered into a prize draw with the opportunity of winning a first, second or third prize voucher (£30, £20 and £10).

What are the disadvantages and risks of taking part?
As described above, you will be required to answer questions about difficult life experiences and memories. However, you will not be required to describe in detail any difficult past experiences. For some people thinking about the past and their memories might bring up some thoughts or feelings which are distressing. You will be free to withdraw from the project at any time. You will be directed to a webpage which will including some audio progressive muscle relaxation and controlled breathing techniques. We will also provide you with information on what to do if you feel distressed, including the contact details of non-statutory support agencies.

What are the possible benefits of taking part?
There are no direct benefits of taking part, however some people find it valuable experience to contribute to research which may lead to improved assessment and treatment for people why have experienced traumatic life events.

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

Will my taking part in the project be confidential?
All the information about your participation in this study will be kept confidential.

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

Part 2
What if there is a problem?
If you wish to complain, or have any concerns about any aspect of the way you have been treated due to your participation in the research, UCL mechanisms are available to you. Please ask your researcher if you would like more information on this.

In the unlikely event that you are harmed by taking part in this study, compensation may be available. If you suspect that the harm is the result of the Sponsor's (University College London) then you may be able to claim compensation. After discussing with your researcher, please make the claim in writing to Dr Miriam Fornells-Ambrojo who is the Chief Investigator for the research and is based at University College London. The Chief Investigator will then pass the claim to the Sponsor's Insurers, via the Sponsor's office. You may have to bear the

costs of the legal action initially, and you should consult a lawyer about this. You of course would be supported throughout this process.

Will my taking part in the project be confidential?

Yes. All 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 and electronic recordings will be kept securely by the researchers in a locked filing cabinet in a locked office.

What will happen to the results of the study?

We will aim to publish the results in a scientific journal as part of Doctorate in Clinical Psychology and Masters educational projects. 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 favorable opinion by X Research Ethics Committee.

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
Dr Amy Hardy	Investigator	[redacted]
Dr Miriam Fornells-Ambrojo	Chief Investigator	[redacted]
Sophie Marsh-Picksley	Researcher	[redacted]
Sarah Carr	Researcher	[redacted]

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

You will be given a copy of this information sheet and a copy of the signed consent form to keep.

Study Number:
Patient Identification Number:

CONSENT FORM

Title of Project: Developing a brief clinical screening tool for trauma and its impact
This study has been given favourable opinion by London Queens Square Research Ethics Committee
(REC reference: 15/LO/1486)
Name of Researchers: Sarah Carr and Sophie Marsh-Picksley

Thank you for your interest in taking part in the research study. Once you have read the information sheet and discussed the study with the researcher please read through and complete the form below. A copy will be kept by the research team. This will be kept securely and separately from the responses you provide as part of the study.

Please initial all boxes:

8. I confirm that I have read and understand the information sheet dated 12/06/2015 (version 1.1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

9. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty if I so wish. ☐

10. I consent to the processing of my personal information for the purposes of this study only and that it will not be used for any other purpose. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998. ☐

11. I agree that a member of the research team can contact me about completing a second, brief assessment session in approximately 2 weeks' time. ☐

12. I understand that information relating to me taking part in this study will be stored on an anonymised electronic database for up to 7 years by the research team ☐

13. I would like to receive a summary of the research results ☐

14. I agree to take part in the above study

Name of Participant	Date	Signature

Name of Person taking consent	Date	Signature

Appendix 8: Participant debrief sheet

Developing a brief clinical screening tool for trauma and its impact

Clinical Participant
Follow-on support and information sheet

Thank you for taking part in our study, we appreciate that you gave up your time to take part and hope that you found it interesting. Some of the topics discussed in the course of the study may have brought about difficult thoughts and feelings. Therefore, we have prepared some exercises which people have found helpful in the past for managing any such feelings. We will spend some time talking you through these exercises and give you a copy of them to take away with you to use later if you need to.

What to do if you continue to feel concerned

If you continue to feel concerned after taking part in the study we recommend that you talk to your key worker or named member of the clinical team. If you think it may be helpful and give your consent for your clinician to know any of the information that we have discussed as part of the research we can also support you in doing this by providing them with a summary.

It may be useful to talk to a family member, friend or your GP. Additionally the following helplines and websites provide support and advice for people who have had traumatic experienced in their life and may be useful for managing any difficult feelings you may have.

Telephone Helplines

Samaritans - 08457 90 90 90 – Open 24 hours, 7 days a week but call charges apply. These can be found on their website below.

National Rape Crisis Helpline - 0808 802 9999 – Run by Rape Crisis South London (RASASC), a Croydon-based organisation who provide support for female survivors of sexual violence. The helpline is open 12pm – 2:30pm and 7pm – 9:30pm 365 days of the year and is free of charge.

National Association for People Abused in Childhood helplines:
0800 085 3330 for free from landlines, 3, Orange and Virgin mobile phones.
0808 801 0331 for free from O2, T-Mobile and Vodafone mobile phones

SurvivorsUK: 0845 122 1201 A service designed for male survivors of rape and sexual abuse.

General Websites

www.samaritans.org– Samaritans can give you someone to talk to at any time, as well as in times of distress and crisis. Their website has information about local branches or you can call them 24 hours a day, 7 days a week on the number below.

www.mind.org – the Mind website has lots of useful information about a variety of things people may struggle with including trauma.

Trauma Websites

http://www.rcpsych.ac.uk/expertadvice/problems/ptsd/copingafteratraumaticevent.aspx - Information about how to cope after a traumatic event. This website also has information about PTSD and various other problems that people can struggle with.

http://oneinfour.org.uk/ - A London based charity designed to help those who have experienced sexual abuse and/or violence. They have numerous exercises designed to aid recovery as well as listings of other potentially useful websites for support.

http://www.havoca.org/HAVOCA_home.htm - A non-profit organisation who support adult survivors of child abuse. They have lots of information about the effects of abuse and related psychological distress. They also have forums where survivors can support each other and offer advice (http://www.havoca.org/phpBB3/).

http://www.dabsbooks.co.uk/ - Directory of support for those concerned with abuse and sexual violence.

http://www.napac.org.uk/ - National Association for People Abused in Childhood (NAPAC) has a helpline and leaflets about identifying and dealing with child abuse.

http://www.survivorsuk.org/ - A service designed for male survivors of rape and sexual abuse.

Progressive Muscle Relaxation

Our bodies respond automatically to stressful situations and thoughts by becoming tense. The opposite relationship also works: a good way of relaxing the mind is to deliberately relax the body.

In a progressive muscle relaxation each muscle group is tensed in turn, and the tension is then released. This relaxes the muscles and allows you to notice the contrast between tension and relaxation.

Relaxation should be enjoyable so if any part of the exercise is too difficult skip it for the moment. If you have any injuries you may wish to leave out that part of the exercise.

Preparation

Lie down flat on your back, on a firm bed, a couch, or on the floor. Support your head and neck with a pillow or cushion. Alternativelty sit in a comfortable chair with your head well-supported. Close your eyes if you are comfortable doing so.

Instructions

Focus your attention on different parts of your body in sequence. Go through the sequence three times:

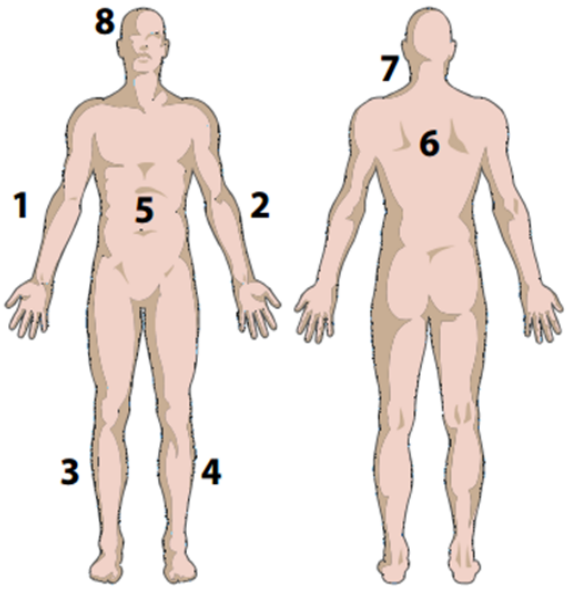
1) Tense & release: Tense that body part, hold it for a few moments, then relax

2) Lightly tense & release: Tense that body part with just enough tension to notice, then relax

3) Release only: Just pay attention to each muscle group and decide to relax it

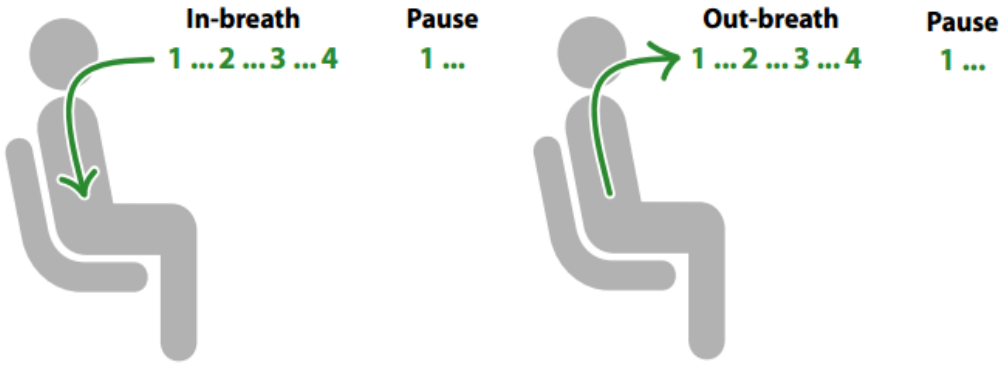
Recommended sequence

1 Right hand & arm
(clench the fist & tighten the muscles in the arm)
2 Left hand & arm
3 Right leg
(tense the leg, lifting the knee slightly)
4 Left leg
5 Stomach & chest
6 Back muscles
(pull the shoulders back slightly)
7 Neck & throat
(push the head back slightly into the pillow/surface)
8 Face
(scrunch up the muscles in your face)



Relaxed Breathing

When we are anxious or threatened our breathing speeds up in order to get our body ready for danger. Relaxed breathing (sometimes called abdominal or diaphragmatic breathing) signals the body that it is safe to relax. Relaxed breathing is *slower* and *deeper* than normal breathing, and it happens lower in the body (the belly rather than the chest).



How to do relaxed breathing

- To practice make sure you are sitting or lying comfortably
- Close your eyes if you are comfortable doing so
- Try to breathe through your nose rather than your mouth
- Deliberately slow your breathing down. Breathe in to a count of 4, pause for a moment, then breathe out to a count of four
- Make sure that your breaths are *smooth*, *steady*, and *continuous* - not jerky
- Pay particular attention to your out-breath - make sure it is smooth and steady

Am I doing it right? What should I be paying attention to?

- Relaxed breathing should be low down in the abdomen (belly), and not high in the chest. You can check this by putting one hand on your stomach and one on your chest Try to keep the top hand still, your breathing should only move the bottom hand
- Focus your attention on your breath - some people find it helpful to count in their head to begin with (*"In ... two ... three ... four ... pause ... Out ... two ... three ... four ... pause ..."*)

How long and how often?

- Try breathing in a relaxed way for at least a few minutes at a time - it might take a few minutes for you to notice an effect. If you are comfortable, aim for 5-10 minutes
- Try to practice regularly - perhaps three times a day

Variations and troubleshooting

- Find a slow breathing rhythm that is comfortable for you. Counting to 4 isn't an absolute rule. Try 3 or 5. The important thing is that the breathing is slow and steady
- Some people find the sensation of relaxing to be unusual or uncomfortable at first but this normally passes with practice. Do persist and keep practising

Appendix 9: Summary of Joint Project and Each Researcher's Contribution

The design and development of the TALE was carried out by Sarah Carr in conjunction with her supervisors, Drs. Amy Hardy and Miriam Fornells-Ambrojo. During the later stages of development, Sophie Marsh-Picksley provided feedback on the structure of the measure and wording of specific items. The research design, planning and measurement choices were led by Sarah Carr under the supervision of Drs. Amy Hardy and Miriam Fornells-Ambrojo, but decisions were discussed throughout with Sophie Marsh-Picksley to coordinate and ensure feasibility of proposed data collection. Ethical approval was sought jointly for the two research projects. Both researchers attended meetings with involved NHS services to introduce the projects and recruit participants. Continued liaisons with involved services was carried out by both researchers, as was all data collection for both studies. The write up of this thesis was conducted entirely by Sarah Carr.