Investigation of the association between young people's experiences of bullying and paranoia in clinical and non-clinical samples

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…And to all the wonderful people in my life - I thank you. Love always.

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Abstract

Bullying, estimated to effect up to 55% of young people worldwide, increases the risk of mental health difficulties, including psychotic experiences in adolescence and adulthood. There are different psychotic experiences, including paranoia and hallucinations, which have distinct aetiologies. The aims of this systematic review were to assimilate studies that investigated associations between bullying and hallucinations, and to assess their quality. Systematic searches were conducted using Medline, EMBASE, PsycINFO and CINAHL using derivations of bullying and hallucinations. Citation searches were subsequently completed on eligible studies. In total, there were 14 studies identified for review. Assessment of quality reflected variation across studies, including sampling bias, cross-sectional designs, heterogenous methods to asses, particularly, bullying, and a lack of confounding factors. The lower quality studies reported significant and non-significant findings, which suggested the quality did not, at least in part, affect the key findings. There were inconsistent results found in support of the association between bullying and hallucinations. There were nine studies that found an association, however four found only weak associations and several studies suggested bullying is indirectly linked to hallucinations via dissociation, depression and persecutory delusions. Results from cohort non-clinical studies found that bullying predicted later development of hallucinations but was influenced by pre-existing vulnerabilities. Taken together, the findings are less consistent than previous support of an association between bullying and paranoia; highlighting the distinct aetiologies of psychotic experiences, which may relate more strongly than others to different traumatic events. Higher quality studies are recommended to further explore the robustness of the association between bullying and hallucinations with the inclusion of theoretically relevant covariates. This endeavour will help establish firmer conclusions and inform clinical practice.

Keywords: Bullying, victimisation, hallucinations, psychotic symptoms

The association between bullying and hallucinatory experiences in clinical and non-clinical samples: A systematic review

It is well-established that adverse life events, affecting up to a third of the general population, increase the risk of mental ill-health, including psychotic experiences, in adolescence and adulthood (Varese et al., 2012). Psychotic experiences, which alter perception and interpretation of stimuli and/or events in forms of paranoia, delusions, grandiosity, and/or hallucinations, exist across a continuum of severities (Wigman et al., 2009). Previous research has found that bullying is associated with psychotic experiences (van Dam et al., 2012). Bullying is repeated and intentional negative actions – typically verbal, relational, physical and/or cyber forms - whereby the victim is perceived to have less power, or dominance, than the perpetrator (Olweus, 1993). Bullying is estimated to affect up to 55% of young people, worldwide (Nielsen, Hetland, Matthiesen, & Einarsen, 2012). Bullying increases the risk of mental-ill health, including depression, dissociation, and anxiety, and psychotic experiences which can persist into adulthood (Neilsen et al., 2015).

Studies have provided evidence in support of an association between bullying and the development of psychotic experiences across clinical and non-clinical young people and adult samples (Cristóbal-Narváez et al., 2016; Lopes, 2013; van Dam et al., 2011). For example, severity of psychotic experiences is associated with greater frequency (Lataster et al., 2006) and severity (Schreier et al., 2009) of bullying. Longitudinal studies have found evidence in support of a causal role of bullying in the development of psychotic experiences at follow-up (Cunningham, Shannon, & Hoy, 2015). Furthermore, research has investigated the association between bullying and specific psychotic experiences. This is important because specific psychotic experiences may represent different, at least in part, developmental pathways and have distinct aetiologies (Gracie et al., 2007). In their systematic review, Jack and Egan (2017) found reasonably consistent evidence in support of the association between bullying and paranoia, in which only one study did not find a significant

association. There has been less attention paid to the other psychotic experiences in the bullying literature, including hallucinations.

Hallucinations are described as altered perceptual experiences occurring in the absence of external stimuli/events (David, 2004). Hallucinations range on a continuum of severity and are reported in clinical and non-clinical samples of young people and adults (Shevlin, McAnee, Bentall, & Murphy, 2015). Prevalence rates vary across epidemiological studies (John & van Os, 2001), in which several studies have reported relatively high rates; 30% in a large youth sample (Wigman et al., 2009) and 10% in an adult sample (Bentall & Fernyhough, 2008). It is proposed that hallucinations develop from the misattribution of internal cognition (e.g. internal speech) to external sources (Larøi & Woodward, 2007), which can be distressing experiences leading to a sense of powerlessness (Carvalho, Motta, Pinto-Gouveia, & Peixoto, 2015). The existing research has shown that childhood trauma, particularly sexual abuse, is associated to hallucinatory experiences in young people and adults (Read, van Os, Morrison, & Ross, 2005). Bentall, Wickham, Shevlin, and Varese, (2012) found that children who experienced sexual abuse were nine times more likely to experience hallucinations. Hardy et al. (2005) found that bullying and sexual abuse were the child adversities most strongly associated to hallucinations.

In light of reviews highlighting associations between trauma and psychotic experiences, including bullying and paranoia specifically, it would appear relevant to review bullying and its possible association with other psychotic phenomena. To my knowledge, the present paper is the first to assimilate quantitative research that has investigated bullying and hallucinations across clinical and non-clinical samples of young people and adults.

Aims

The aims of this study were to assimilate and systematically review clinical and non-clinical studies that have investigated associations between bullying and hallucinations and to assess their quality using an evidence-based quality appraisal tool.

Method

Search strategy

In order to establish a final search strategy, several preliminary searches were conducted. Search terms, based on relevant previous systematic reviews on adversities and psychotic experiences, were developed that comprised derivations of bullying and hallucinations. The preliminary searches highlighted the importance of including wider search terms of aggression and schizophrenia to ensure all relevant papers could be identified. A final systematic database search was performed on Medline (OVID), EMBASE (OVID), PsycINFO (EBSCO) and CINAHL (EBSCO) on the 29th of March 2018 (see Appendix 1.2). A subsequent citation search was conducted on each eligible article to identify additional studies not found in the systematic database search.

Eligibility Criteria

Inclusion criteria. (1) Original, peer-reviewed, quantitative studies published in English; (2) child, adolescent and/or adult clinical and/or non-clinical samples; (3) bullying variable assessed - at any time of occurrence -, reported and analysed; (4) hallucinatory experiences assessed, reported and analysed.

Exclusion criteria. (1) Single case, qualitative, unpublished and/or dissertations; (2) bullying experiences that were only part of a wider trauma/victimisation score; (3) hallucinatory experiences were only part of a broader psychotic experiences score; (4) the association between bullying and hallucinations was not explicitly analysed and/or reported.

Quality assessment

The quality of the 14 articles was appraised according to the criteria of the *Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies* (QATCCS), developed by the National Heart, Lung and Blood Institute (NHLBI) (see Appendix 1.3). The 14-item QATCCS is a rigorously

developed, evidence based, valid, reliable and accessible tool for assessing sources of bias. It covers the three fundamental domains that are reflected in a review of quality or quality tools; (1) appropriate selection of participants, (2) appropriate measurement of variables, (3) appropriate control of confounding variables (Sanderson, Tatt & Higgins, 2007). The QATCCS is developed for both cross-sectional and cohort studies and is therefore recommended for use in the present review as the identified studies included both these types of observational study designs.

The reviewers rated items with either *yes*, *no* or *not applicable/not reported*. In general terms, a *good* study has the least risk of bias and the results are considered to be valid. A *fair* study is susceptible to some bias deemed not sufficient to invalidate its results. The *fair* quality category is likely to be broad, so studies with this rating will vary in their strengths and weaknesses. A *poor* rating indicates significant risk of bias. The quality rating tool does not have cut-offs to determine the quality rating. Therefore, for this review, a score of 10 or above was rated *good*; 5 or above was rated *fair*; less than 5 rated as *poor*. An independent reviewer rated seven studies (50%) using the same quality rating scale.

Results

Results of search strategy

Figure 1 displays the results of the search strategy. The search strategy produced 4,178 articles. References were extracted from search databases and stored within reference management software (RefWorks). Citations were screened for duplicates, in which 738 were removed. The title and abstracts of the remaining 3,440 were screened and 3,377 were excluded based on no reference made to the series of key words (i.e. variations of psychosis, victimisation, bullying and/or hallucinations). A total of 65 articles were assessed for eligibility based on meeting the inclusion and exclusion criteria, which yielded 12 studies. Subsequent citation searches were conducted on these 12 studies; identifying a further two studies. This resulted in a total of 14 studies comprising 11 cross-sectional and 3 cohort studies. Table 1 and 2 display details of each study, including the sample characteristics, methodology and outcomes.

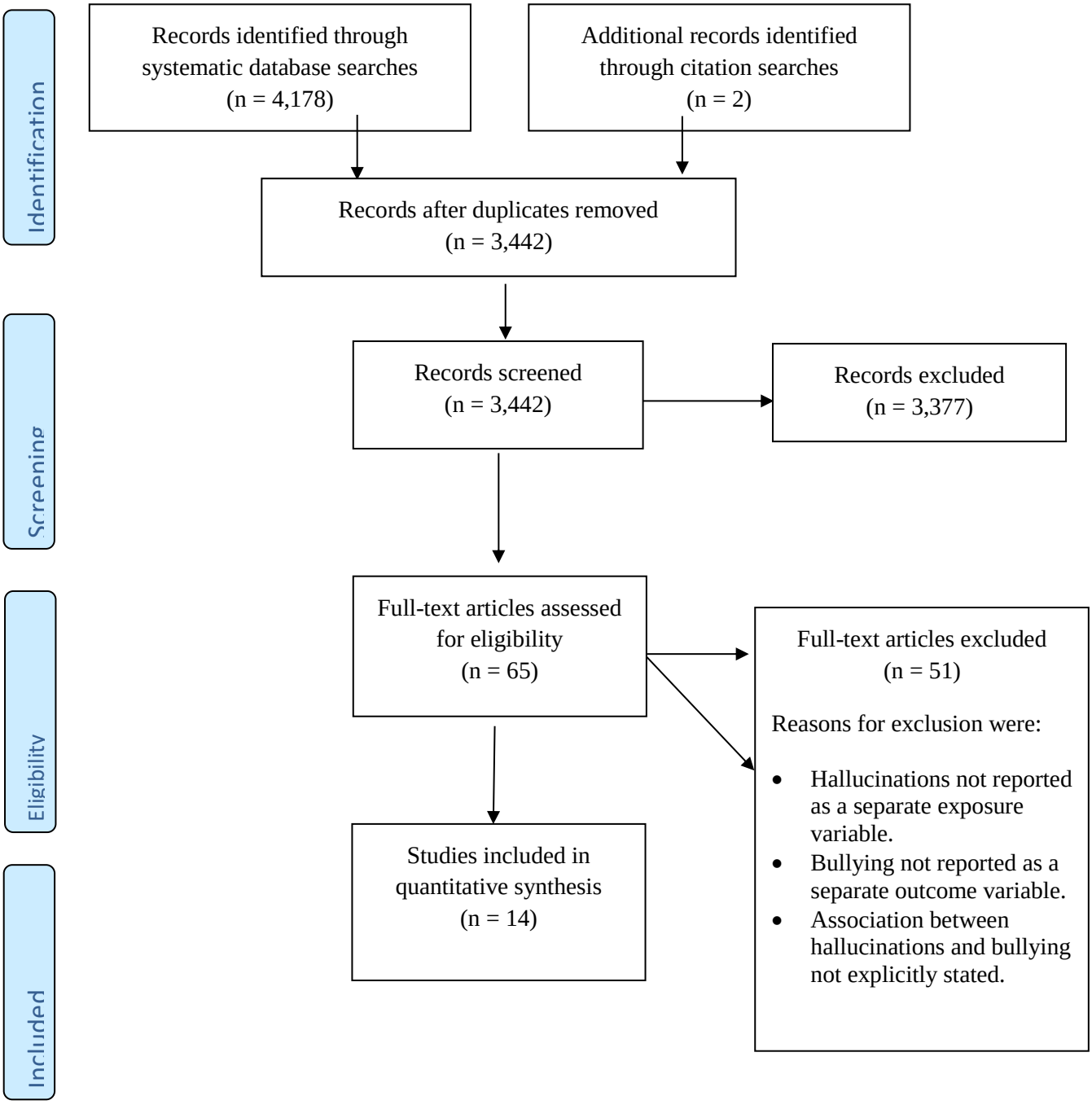

Figure 1. Flow chart of systematic search process and study selection

Table 1

Study design and sample characteristics

Author & Study Type	Project	Population (Age Group & Source)	Sample characteristics			
Cross-sectional			No. of cases	Age of cases	No. of controls	Age of controls
Bentall et al (2012) UK	*Adult Psychiatric Morbidity Survey (2007)*	• Adult • Non-clinical sample	7353	16+ *Mean not reported*		
Campbell & Morrison (2007) UK	-	• Child & Adolescent • Non-clinical sample • Recruited in a school	373	14-16 *M*=14.8 *SD*=.7		
Carvalho et al (2015) Portugal	-	• Adult • Clinical sample • Patients diagnosed with Paranoid Schizophrenia	48	*M*=43.3 *SD*=13.22		
Catone et al (2017) Italy	-	• Child & Adolescent • Clinical sample • Recruited in a clinical service assessed to have psychotic like experiences.	50	12-18 *M*=170 months *SD*=18.4		
Moffa et al (2017) UK	*Adult Psychiatric Morbidity Survey (2000; 2007)*	• Adult • Non-clinical • Recruited from the APMS 2000 and 2007 surveys	*7403 and replicated analysis in further sample of 8580 (cross-*	*Not reported*		

			sectional data)			
Morrison & Peterson (2003) UK	-	• Adult • Non-clinical • Recruited from undergraduate students and warehouse operatives	64	18-59 *M*=21 *SD*=6.9		
O'Connor et al (2017) UK	-	• Adolescent and adult • Clinical • Clinical sample was an 'ultra-high risk' (UHR) for psychosis group recruited from a specialist UHR clinic. • They were matched with healthy controls	77 *Perceptual abnormality group*	15-25 *M*=18.3 *SD*=2.8	41 *No perceptual abnormality group*	15-25 *M*=18.4 *SD*=2.7
Shevlin et al (2015) UK	*Survey of Psychiatric Morbidity among Prisoners in England and Wales*	• Adult • Participants recruited from prison	3142	*Modal age =* 25-29 *no mean reported*		
Stowkowy et al (2016) USA	*North American Prodromal Study*	• Adult • Clinical sample (UHR group) • Health controls	764	*M*=18.50 *SD*=4.23	280	*M*=19.73 *SD*=4.67
Wickham & Bentall (2016) UK	-	• Adult • Clinical sample (diagnosis of Schizophrenia Spectrum Disorder) • Healthy controls	72	*M*=43.46 *SD*=11.17	72	*M*=39.94 *SD*=12.07

Yamasaki et al (2016) Japan	*Tokyo Early Adolescence Survey*	• Child • Non-clinical	4478	*M*=9.8 *SD*=.4
<u>Cohort</u> Catone et al (2015) (UK)	*Adult Psychiatric Morbidity Survey (2000, 2007)*	• Adult • Non-clinical	T1= 8580 T2=7403	T1=16-74 T2=16+
Singham et al (2017) UK	*Twins Early Development Study*	• Child & adolescent • Non-clinical	11,108	T1 *M*=11.3 T2 *M*=16.3
Shakoor et al (2014) UK	*Twins Early Development Study*	• Child & adolescent • Non-clinical	T1 4972 T2 4926	T1 *M*=11.56 T2 *M*=16.22

Table 2

The methodology and key findings of each study

Author & Type of Study Cross-sectional	Assessment of Bullying	Assessment of Hallucinations	Assessment of relevant covariates	Key findings
Bentall et al (2012)	*List of Life Threatening Experiences (Brugha et al., 1985)* • Self-report • Dichotomous • Non-specific, behaviour-based with no definition of bullying reported. • Childhood & Lifespan	*Psychosis Screening Questionnaire* (Bebbington & Nayani, 1995) • Self-report • Single-question, dichotomous • "In the past year"	Demographic variables (sex, age, ethnicity, educational qualifications and intellectual functioning)	1. There was a significant bivariate association between bullying and auditory-visual (AVHs). This did not retain significance after the Bonferroni correction was applied. 2. No effect of bullying on AVHs was found with and without controlling for the demographic variables.
Campbell & Morrison (2007)	*Adapted 29-item Olweus Bully/Victim Questionnaire* (OBVQ) • Self report • Global and multi-item • Definition-based • Childhood	*1. Revised Launey-Slade Hallucinations-Auditory Subscale* (LSHS-R; Launay & Slade, 1981) • Self-report • Multi-item, frequency score • Time frame not reported	No	1. Bullying was significantly associated with hallucinations ($r = .29$, $p < .01$) 2. Bullying had a significant effect on auditory hallucinations ($F = 21.74$, $p < .05$) and demonstrated a medium effect size.
Carvalho et al (2015)	*QBVQ* • Self-report	*Psychotic Symptom Rating Scale – Voices* (Haddock et al., 1999)	No	1. No significant association was found between bullying

	• Definition-based • Multi-item • Childhood	• Self-report • Multi-item • Time frame not reported		and auditory hallucinations
Catone et al (2017)	*Multidimensional Peer-Victimisation Scale* (MPVS; Mynard & Joseph, 2000) • Self-report • Multi-item, behaviour-based • Childhood	*Specific Psychotic Experiences Questionnaire* (SPEQ;) • Self-report • Multi-item (9-items) • Time frame not reported	No	1. Bullying was significantly associated with AVHs (r = .29, p < .05) .
Morrison & Peterson (2003)	*Trauma Measure* (designed by author) • Self-report • Non-specific bullying measure • Dichotomous • Age of exposure not specified	*Revised Hallucination Scale* (adapted 24-items from LSHS-R (Launay & Slade, 1981) • Self-report • Multi-item • Time frame not reported		1. No significant association was found between bullying and auditory hallucinations 2. A significant association was found between bullying and visual hallucinations (F = 7.01, p < 0.01). The significance was not retained after the Bonferroni correction was applied. There was a significant association between bullying and hallucinations.
Moffa et al (2017)	*List of Life Threatening Experiences (Brugha et al., 1985)* • Self-report • Dichotomous • Non-specific, behaviour-	*Psychosis Screening Questionnaire* (Bebbington & Nayani, 1995) • Self-report • Single-question, dichotomous • "In the past year"	Mediating variables: Worry, sleep disturbance, generalised anxiety and depression, mood instability, hallucinations and drug use	1. Bullying was associated with hallucinations in an indirect pathway mediated by persecutory ideation and depression.

	based with no definition of bullying reported. • Lifespan			
O'Connor et al (2017)	*Case File Review* • Clinician-assessed • Dichotomous • Childhood	*Comprehensive Assessment of At Risk Mental Health States* (CAARMS) • Clinician rated • Dichotomous (perceptual abnormalities either present or absent based on rating)	Adjusted for age and gender Type of hallucination (auditory, visual, other)	1. Bullying was associated with hallucinations (*OR* = 5.00, $p < .01$) and remained significant after controlling for hallucinatory type (*OR* = 6.94, $p < .01$)
Shevlin et al (2015)	*List of Life Threatening Experiences (Brugha et al., 1985)* • Self-report • Dichotomous • Non-specific, behaviour-based with no definition of bullying reported. • Lifespan	*Psychosis Screening Questionnaire* (Bebbington & Nayani, 1995) • Self-report • Single-question, dichotomous • "In the past year"	Prison-related Traumas ("Threat of violence," "Actual violence," "Unwelcome sexual attention," "Forced sexual attention" – dichotomous yes or no)	1. Bullying was significantly associated with hallucinations ($\chi^2 = 156.46$, $p < .01$) 2. After controlling for prison-related traumas exposure of bullying increased the likelihood of experiencing hallucinations.
Stowkowy et al (2016)	*Participants were asked if they had experienced either psychological bullying or physical bullying* • Self-report • Childhood or lifetime not specified	*The Structured Interview For Psychosis-Risk Syndromes* (SIPS; McGlashan, Walsh & Woods, 2010)) & *Scale of Psychosis-Risk Symptoms* (SOPS) were used to determine criteria for presence of perceptual abnormalities • Self-rated	No	1. There was no significant correlation found between bullying and hallucinations

		• Dichotomous (yes/no) • Childhood or lifetime not specified		
Wickham & Bentall (2016)	*Retrospective Bullying Questionnaire* (RBQ; Schafer et al., 2004) • Self-report • Specific bullying measure • Multi-item, definition based • Childhood	*Items from the Positive and Negative Symptom Scale* (Kay et al., 1987) • Self-report • Multi-item assessing presence and severity of hallucinations • Assess current hallucinatory experiences Measures "current hallucinatory experiences"	No	1. There were significant associations between bullying and hallucinations in the clinical sample (r = .28, p < .01) and the combined clinical and non-clinical samples (r = .19, p < .01). 2. There was no significant association found between bullying and hallucinations.
Yamasaki et al (2016)	*Adapted OBVQ* (The 1-item global question) • Parent-rated • Specific bullying measure • Definition-based, single-item • Dichotomous • Childhood	2 items from Child Behavior Check List (CBCL; Achenbach, 1991) • Parent rated • Multi-item, scaled (not dichotomous)	Dissociation, Depression and External Locus of Control.	1. There was an association found between bullying and hallucinations (χ^2 = 8.35, p < .01). 2. Mediation analysis revealed that there was a significant indirect pathway between bullying and hallucinations via dissociation (β = .04, p < .01).
<u>Cohort</u>				
Catone et al	*List of Life Threatening*	*Psychosis Screening*	Other traumas (serious illness,	1. There was a significant

(2015)	*Experiences (Brugha et al., 1985)* • Self-report • Dichotomous • Non-specific, behaviour-based with no definition of bullying reported. • Lifetime	*Questionnaire* (Bebbington & Nayani, 1995) • Self-report • Single-question, dichotomous • "In the past year"	injury, assault, violence at work, violence in the home, expelled from school, running from home, homeless, time spent in institution, taken into care); Childhood sexual abuse; Sociodemographic variables; IQ	unadjusted association between bullying and AVHs (*RR* = 1.72, 95% *CI* = 1.13-2.63 for 2000 and = 2.18, 1.36 – 3.47 for 2007). This effect remained strong and significant after controlling for control variables in both survey years indicating good replication. 2. At 18-month follow-up (2000): In people who did not report hallucinations at baseline, bullying increased nearly 3 times the risk of developing hallucinations. In those who initially reported hallucinations, bullying did not significantly predict the maintenance of hallucinations.
Singham et al (2017)	*Multidimensional Peer-Victimisation Scale* (MPVS; Mynard & Joseph, 2000) • Self-report • Multi-item, behaviour-based • Childhood	*Specific Psychotic Experiences Questionnaire* (SPEQ;) • Self-report • Multi-item (9-items) • Time frame not reported	Shared environmental influences (MZ twins) and half of the genetic influences (DZ twins)	1. Concurrent: Bullying associated with hallucinations 2. 2 years: Bullying was associated with hallucinations. But not after controlled for within twin differences. 3. 5 years: Bullying significantly associated with hallucinations but not in the MZ group.

Shakoor et al (2014)	*Multidimensional Peer-Victimisation Scale* (MPVS; Mynard & Joseph, 2000) • Self-report • Multi-item, behaviour-based • Childhood	*Specific Psychotic Experiences Questionnaire* (SPEQ;) • Self-report • Multi-item (9-items) Time frame not reported	No	1. There was a significant correlation between bullying and hallucinations (r = .18, p < .05) 2. Bullying assessed at 12 explained about 1-3% of variance in hallucinations 4 years later.

Quality appraisal

The quality and risk of bias was assessed by the author and by an independent rater (a fellow Trainee Clinical Psychologist). The inter-rater agreement was high (80%) and disagreements were resolved through discussion (a breakdown of the quality appraisal for each study can be viewed in appendix 1.5). Overall, the quality and risk of bias varied among the studies. In terms of study quality, most studies were cross-sectional in nature and therefore unable to infer causality of the association between bullying and hallucinations. There were only three studies identified that implemented a longitudinal design (Catone et al., 2015; Shakoor et al., 2014; Singham et al., 2017). There were no studies that justified their sample sizes, which varied considerably across studies.

In terms of risk of bias, only half of the studies implemented standardised and valid measures to assess bullying (Campbell & Morrison, 2007; Carvalho et al., 2015; Catone et al., 2017; Shakoor et al., 2014; Singham et al., 2017; Wickham & Bentall, 2016; Yamasaki et al., 2016), of which six were self-reported non-dichotomous scales. Yamasaki et al. (2016) included only a dichotomous bulling measure assessed by parents, which may increase risk of bias as it has been found parents likely overestimate bullying experiences (Yamasaki et al., 2016). The heterogeneity in bullying measurement reflects the wider bullying literature; appearing to be a lack of consensus on the most appropriate method (Shaw, Dooley, Cross, Zubrick, & Waters, 2013). All studies utilised a standardised and valid measure to assess hallucinations.

There was an improved quality of research in six studies, which comprised valid and non-dichotomous measures to assess both bullying and hallucinations (Campbell & Morrison, 2007; Catone et al., 2017; Carvalho et al., 2015; Shakoor et al., 2017; Singham et al., 2017; Wickham & Bentall, 2016). The quality improved further in two studies that implemented longitudinal designs (Singham et al., 2017; Shakoor et al., 2014). Six studies included

control of at least some confounding variables, including socio demographic variables (Bentall et al., 2012; Catone et al., 2015; O'Connor et al., 2017), other traumas, for example, serious injury/assault and childhood sexual abuse (Catone et al., 2015), hallucination type (O'Connor et al., 2017), and shared genetic environmental influences (Singham et al., 2017). Two studies also included possible mediating variables in the association between bullying and hallucinations; Moffa et al., (2017) included persecutory delusions, worry, sleep disturbance, drug use, whereas Yamasaki et al. (2016) included dissociation, and external locus of control, and both included depression.

In summary, the quality and risk of bias varied across studies that found a significant association (e.g. O'Connor et al., 2017 [lower quality] versus Shakoor et al., 2014 [higher quality); indicating that quality and risk of bias did not affect, at least in part, the key findings.

Non-clinical sample results

In total, there were five cross-sectional and three cohort adolescent and adult samples. Two cross-sectional studies demonstrated significant associations between bullying and hallucinations (Campbell & Morrison 2007; Yamasaki et al., 2016). However, Campbell and Morrison (2007) found only a weak association and Yamasaki et al (2016) found no direct association between bullying and hallucinations in their mediation analysis. They found instead an indirect association via dissociation. Moffa et al., (2017) also found only an indirect association via depression and persecutory delusions. All three cohort studies found significant associations between bullying and hallucinations (Catone et al., 2015; Shakoor et al., 2014; Singham et al., 2017). For example, Singham et al. (2017) found that bullying predicted hallucinations after 2 years and 5 years in phenotypic, and dizygotic twin groups. Of note, bullying did not significantly predict hallucinations after 5 years in the monozygotic twin group, which suggests a genetic contribution.

Clinical sample results

Four clinical adult and adolescent studies demonstrated an association between bullying and hallucinations (Catone et al., 2017; O'Connor et al., 2017; Shevlin et al., 2015; Wickham & Bentall, 2016). Several of these studies reported only weak associations and the Shevlin et al. (2015) prison based study is not representative of other clinical samples, including community mental health services – where psychotic experiences are relatively common. Furthermore, none of these studies included theoretical relevant covariates, based on findings in non-clinical studies of the roles of dissociation, depression and persecutory delusions.

Discussion

The present review identified fourteen studies that investigated the association between bullying and hallucinations utilising clinical and non-clinical samples. Studies, including those which found a significant association, varied in quality in terms of sampling, design, methodology and inclusion of covariates. Nine studies were found that demonstrated an association between bullying and hallucinations, in which two found an indirect pathway.

Overall, the findings are less consistent compared to previous research that investigated associations between bullying and psychotic experiences (van Dam et al., 2012) and paranoia (Jack & Egan, 2017). For example, several studies have shown stronger associations between bullying and paranoia (Bentall et al., 2012). In their longitudinal twin development studies, Singham et al. (2017) found that bullying directly contributed to paranoia persisting for 5 years. Shakoor et al. (2014) found that childhood bullying was most strongly related to paranoia, accounting for about 6% of the variance in paranoia 4 years later. Childhood bullying was less strongly, although significantly associated, with hallucinations explaining about 1-3% of variance.

The difference in consistencies of associations with bullying highlight that, although paranoia and hallucinations often co-occur (Bentall et al., 2012), they have somewhat distinct aetiologies and may relate to different types of traumatic events (Jack & Egan, 2017). As Gracie et al. (2007) theorised, bullying leads to paranoia and hallucinations in different ways. In relation to bullying, they found that negative beliefs were strongly associated with paranoia whereas re-experiencing of symptoms were more strongly correlated with hallucinations. It has been demonstrated that childhood traumas, including sexual abuse, appear to be more strongly associated with hallucinations, whereas victimisation experiences, including bullying, are more strongly associated with paranoia (Varese et al., 2012). It has been

theorised that traumatic experiences, particularly childhood sexual abuse, may lead to an impaired source monitoring system, which is a specific cognitive bias when individuals misattribute internal experiences to external sources, and may result in hallucinations (Read et al., 2005). They may occur as external events in the present without the awareness that they are relating to a past traumatic event. It has been suggested that this may be a form of coping in terms of not re-living traumatic experiences as a child (Read et al., 2005). Despite findings that suggest distinct aetiologies, Moffa et al. (2017) found that bullying was linked with persecutory delusions (Jack & Egan, 2017), which correlated with hallucinations (Wigman et al., 2012) and co-occurred (Shevlin et al., 2014). As a possible explanation it has been shown that beliefs can influence the source monitoring judgements of hallucinations (Haddock, Slade & Bentall, 1995) but also hallucinations may sometimes provoke delusional interpretations (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001).

The review found more evidence of an association between bullying and hallucinations in non-clinical populations, which included three higher quality, large-scale, cohort studies. Catone et al. (2015) found that a history of bullying was significantly associated with hallucinatory experiences, which was maintained at 18 months follow up. Of note, they used the same data used by Bentall et al. (2012), who did not find a significant association. This difference in the findings may be due to increased risk of bias in the Bentall et al. (2012) study, which utilised a cross-sectional study and did not implement an established or valid bullying measure. Furthermore, two of the cohort studies found that bullying contributed to hallucinations at follow-up, however, genetic contributions influenced this relationship (Shakoor et al., 2015; Singham et al., 2017). These findings suggest that the association between bullying and hallucinations reflect, at least in part, multiple pre-existing vulnerabilities of bullied individuals rather than a causal contribution of childhood exposure to bullying, which has research and clinical implications.

Few studies, using large data-sets, revealed that bullying only leads to hallucinations via the influence of dissociative experiences (Yamasaki et al., 2016), and depression and persecutory delusions (Moffa et al., 2017). This is in keeping with previous literature, which has demonstrated these roles in the relationship between wider trauma experiences and hallucinations (Garety et al., 2001; Fisher et al., 2013; Wigman et al., 2009). Previous research has demonstrated that depression is associated with bullying and psychotic experiences (Lataster et al., 2006), and has been shown to mediate the relationship between bullying and hallucinations (Fisher et al., 2012).

Dissociation is defined as the structured separation from psychological processes, such as cognitions, which are normally integrated (Spiegel & Cardena, 1991). The role of dissociation found by Yamasaki et al. (2016) is consistent with previous studies, which have demonstrated mediation effects of dissociation between bullying and hallucinations (Perona-Garcelan et al., 2012; Varese et al., 2012). Emerging evidence therefore suggests that dissociation has a role in the association between bullying and hallucinations. Recent studies have revealed that dissociation arises from hypothalamic–pituitary–adrenal axis dysregulation, which could be caused by bullying (Ouellet-Morin et al., 2011) and is shown to be linked with hallucinations (Walker et al., 2008). Theoretically, the role of dissociative experiences may influence the extent to which an individual attributes their internal experiences (i.e. thoughts and intrusive memories) to external sources, which may be experienced as hallucinations.

Strengths and limitations

The present review is the first to the authors knowledge to assimilate quantitative studies that investigate the association between bullying and hallucinations. It included a broad search strategy to increase search sensitivity. I acknowledge there are limitations of the review. I did not include unpublished studies, studied not published in English or qualitative research. I

included studies, in which the association between bullying and hallucinations were not the main research questions and therefore results and discussion was somewhat limited in relation to bullying and hallucinations in several studies. I also included studies with varying quality and risk of bias in terms of population type, size, methodology and data analyses. Of importance, methods to assess bullying varied widely and time of occurrence was not always specified, which increased the risk of bias. For example, the difference in time of occurrence of bullying may have underestimated the prevalence of hallucinatory experiences yet to emerge and recall bias may have increased for adults being asked about childhood bullying. A further limitation was that less than half of the studies controlled for relevant covariates. This limits the understanding of possible underlying mechanisms in the association that may help explain the relationship between bullying and hallucinations. This appears to reflect the wider trauma-psychosis literature in that the study of possible underlying mechanisms are still in their infancy and further research is needed (Read et al., 2005).

Future research

In order to provide more firm conclusions in understanding the association between bullying and hallucinations, it is critical that future studies seek to strengthen the current literature. For example, future studies should investigate the association of bullying in longitudinal studies designed to assess causality while including samples which fully represent the wider population. Furthermore, future studies should include a baseline measurement of bullying and hallucination experiences before subsequent follow up measurement. To establish the robustness of the association, future studies should include valid measures of bullying and hallucinations and control for dissociation, depression and other psychotic experiences. In addition, replicating previous findings demonstrating a role of dissociation, depression and other psychotic experiences in clinical samples to inform effective treatment interventions would be beneficial. Importantly, those who experience

bullying as a child are also more likely to endure other forms of adversity (Lereya, Samara, & Wolke, 2013), therefore, it would be interesting for future studies to measure bullying while controlling for other adversities.

Clinical implications

Assessment of child adversity should routinely include bullying experiences. Of note, it is important to ask adults as well as young people given that the effects of bullying on mental health can be enduring and persist into adulthood (Wickham & Bentall, 2016). Therefore, the impact of bullying experiences in childhood should not be underestimated when assessing the needs of an adult accessing a mental health service. This may help develop shared formulations to aid a patient's understanding of the predisposing nature of bullying on mental health and psychiatric disorders. When working with individuals in mental health services, it would be important to assess psychotic experiences, including hallucinatory experiences given that sub-clinical experiences may lead to more severe, clinical presentations.

Considering the roles of dissociation, depression and other psychotic experiences, they are important psychological processes to assess and target in intervention strategies. Singham et al. (2017) highlighted the importance of pre-existing vulnerabilities (e.g. previous mental health difficulties), which in part account for the association between bullying and mental health outcomes. Intervention should therefore assess potential pre-existing vulnerabilities to improve mental health in the long term. Based on the literature, it is recommended that combining programs of childhood bullying prevention as well as individual work with vulnerable children by addressing existing mental health problems and promoting resilience will yield the best outcomes.

References

Bentall, R. P., Wickham, S., Shevlin, M., & Varese, F. (2012). Do specific early-life adversities lead to specific symptoms of psychosis? A study from the 2007 the Adult Psychiatric Morbidity Survey. *Schizophrenia bulletin*, *38*, 734-740.

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

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

Carvalho, C., Motta, C., Pinto-Gouveia, J., & Peixoto, E. B. (2015). Hallucinatory Activity in Schizophrenia: The Relationship with Childhood Memories, Submissive Behavior, Social Comparison, and Depression. *International Journal of Medical, Health Biomedical, Bioengineering and Pharmaceutical Engineering*, *9*, 401-409.

Catone, G., Marwaha, S., Kuipers, E., Lennox, B., Freeman, D., Bebbington, P., & Broome, M. (2015). Bullying victimisation and risk of psychotic phenomena: analyses of British national survey data. *The Lancet Psychiatry*, *2*, 618-624.

Catone, G., Marotta, R., Pisano, S., Lennox, B., Carotenuto, M., Gritti, A., ... & Broome, M. R. (2017). Psychotic-like experiences in help-seeking adolescents: Dimensional

exploration and association with different forms of bullying victimization–A developmental social psychiatry perspective. *International Journal of Social Psychiatry*, *63*, 752-762.

Cristóbal-Narváez, P., Sheinbaum, T., Ballespí, S., Mitjavila, M., Myin-Germeys, I., Kwapil, T. R., & Barrantes-Vidal, N. (2016). Impact of adverse childhood experiences on psychotic-like symptoms and stress reactivity in daily life in nonclinical young adults. *PloS One*, *11*, e0153557.

Cunningham, T., Hoy, K., & Shannon, C. (2016). Does childhood bullying lead to the Development of psychotic symptoms? A meta-analysis and review of prospective Studies. *Psychosis*, *81*, 48-59.

David, A. S. (2004). The cognitive neuropsychiatry of auditory verbal hallucinations: An overview. *Cognitive Neuropsychiatry*, *9*, 107–123.

Fisher, H. L., Schreier, A., Zammit, S., Maughan, B., Munafò, M. R., Lewis, G., & Wolke, D. (2012). Pathways between childhood victimization and psychosis-like symptoms in the ALSPAC birth cohort. *Schizophrenia Bulletin*, *39*, 1045-1055.

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

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

Hardy, A., Fowler, D., Freeman, D., Smith, B., Steel, C., Evans, J., ... & Dunn, G. (2005). Trauma and hallucinatory experience in psychosis. *The Journal of nervous and mental disease*, *193*(8), 501-507.

Jack, A. H., & Egan, V. (2017). Trouble at school: a systematic review to explore the association between childhood bullying and paranoid thinking. *Psychosis*, *9*, 260-270.

Johns, L. C., Cannon, M., Singleton, N., Murray, R. M., Farrell, M., Brugha, T., … Meltzer, H. (2004). Prevalence and correlates of self-reported psychotic symptoms in the British population. *The British Journal of Psychiatry, 185*, 298–305.

Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., ... & Benjet, C. (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *The British Journal of Psychiatry*, *197*, 378-385.

Larøi, F., & Woodward, T. S. (2007). Hallucinations from a cognitive perspective. *Harvard Review of Psychiatry*, *15*, 109-117.

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

Lereya, S. T., Samara, M., & Wolke, D. (2013). Parenting behavior and the risk of becoming a victim and a bully/victim: A meta-analysis study. *Child Abuse & Neglect*, *37*, 1091-1108.

Lopes, B. C. (2013). Differences between victims of bullying and nonvictims on levels of paranoid ideation and persecutory symptoms, the presence of aggressive traits, the display of social anxiety and the recall of childhood abuse experiences in a Portuguese mixed clinical sample. *Clinical Psychology & Psychotherapy*, *20*, 254-266.

Moffa, G., Catone, G., Kuipers, J., Kuipers, E., Freeman, D., Marwaha, S., ... & Bebbington, P. (2017). Using directed acyclic graphs in epidemiological research in psychosis: an analysis of the role of bullying in psychosis. *Schizophrenia Bulletin*, *43*, 1273-1279.

Morrison, A. P., & Petersen, T. (2003). Trauma, metacognition and predisposition to hallucinations in non-patients. *Behavioural and Cognitive Psychotherapy*, *31*, 235-246.

Nielsen, M. B., Hetland, J., Matthiesen, S. B., & Einarsen, S. (2012). Longitudinal relationships between workplace bullying and psychological distress. *Scandinavian Journal of Work, Environment & Health*, 38-46.

O'connor, K., Nelson, B., Cannon, M., Yung, A., & Thompson, A. (2017). Perceptual abnormalities in an ultra-high risk for psychosis population relationship to trauma and co-morbid disorder. *Early intervention in psychiatry*.

Olweus, D (1993). *Bullying at school*. Blackwell, Oxford, United Kingdom.

Ouellet-Morin, I., Odgers, C.L., Danese, A., Bowes, L., Shakoor, S., Papadopoulos, A.S., … & Arseneault, L., 2011. Blunted cortisol responses to stress signal social and behavioral problems among maltreated/bullied 12-year-old children. *Biol. Psychiatry*, *70*, 1016–1023.

Perona-Garcelan, S., Carrascoso-Lopez, F., Garcia-Montes, J.M., Ductor-Recuerda, M.J., López Jiménez, A.M., Vallina-Fernández, … & Gómez-Gómez, M.T., 2012. Dissociative experiences as mediators between childhood trauma and auditory hallucinations. *J. Trauma*

Stress, *25*, 323–329.

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

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

Schreier, A., Wolke, D., Thomas, K., Horwood, J., Hollis, C., Gunnell, D., … Salvi, G. (2009). Prospective study of peer victimization in childhood and psychotic symptoms in a nonclinical population at age 12 years. *Archives of General Psychiatry, 66*, 527–536.

Shakoor, S., McGuire, P., Cardno, A. G., Freeman, D., Plomin, R., & Ronald, A. (2014). A shared genetic propensity underlies experiences of bullying victimization in late childhood and self-rated paranoid thinking in adolescence. *Schizophrenia Bulletin*, *41*, 754-763.

Shaw, T., Dooley, J. J., Cross, D., Zubrick, S. R., & Waters, S. (2013). The Forms of Bullying Scale (FBS): Validity and reliability estimates for a measure of bullying victimization and perpetration in adolescence. *Psychological Assessment*, *25*, 1045.

Shevlin, M., McAnee, G., Bentall, R. P., & Murphy, J. (2015). Specificity of association between adversities and the occurrence and co-occurrence paranoia and hallucinations: evaluating the stability of childhood risk in an adverse adult environment. *Psychosis*, *7*, 206-216.

Singham, T., Viding, E., Schoeler, T., Arseneault, L., Ronald, A., Cecil, C. M., ... & Pingault, J. B. (2017). Concurrent and longitudinal contribution of exposure to bullying in childhood to mental health: the role of vulnerability and resilience. *JAMA Psychiatry*, *74*, 1112-1119.

Smith, B., Fowler, D. G., Freeman, D., Bebbington, P., Bashforth, H., Garety, P., … Kuipers, E. (2006). Emotion and psychosis: Links between depression, self-esteem, negative schematic beliefs and delusions and hallucinations. *Schizophrenia Research*, 86, 181–188.

Spiegel, D., & Cardeña, E. (1991). Disintegrated experience: The dissociative disorders revisited. *Journal of Abnormal Psychology*, *100*, 366.

Stowkowy, J., Liu, L., Cadenhead, K. S., Cannon, T. D., Cornblatt, B. A., McGlashan, T. H., ... & Woods, S. W. (2016). Early traumatic experiences, perceived discrimination and

conversion to psychosis in those at clinical high risk for psychosis. *Social Psychiatry and Psychiatric Epidemiology*, *51*, 497-503.

Van Dam, D. S., van der Ven, E., Velthorst, E., Selten, J. P., Morgan, C., & de Haan, L. (2012). Childhood bullying and the association with psychosis in non-clinical and clinical samples: a review and meta-analysis. *Psychological Medicine*, *42*, 2463-2474.

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

Walker, E., Mittal, V., Tessner, K., 2008. Stress and the hypothalamic pituitary adrenal axis in the developmental course of schizophrenia. *Annu. Rev. Clin. Psychol*, *4*, 189–216.

Wickham, S., & Bentall, R. (2016). Are specific early-life adversities associated with specific symptoms of psychosis? A patient study considering just world beliefs as a mediator. *The Journal of Nervous and Mental Disease*, *204*, 606.

Wigman, J. T., Vollebergh, W. A., Raaijmakers, Q. A., Iedema, J., Van Dorsselaer, S., Ormel, J., & van Os, J. (2009). The structure of the extended psychosis phenotype in early adolescence—a cross-sample replication. *Schizophrenia*

Bulletin, *37*, 850-860.

Yamasaki, S., Ando, S., Koike, S., Usami, S., Endo, K., French, P., ... & Nishida, A. (2016). Dissociation mediates the relationship between peer victimization and hallucinatory experiences among early adolescents. *Schizophrenia Research: Cognition*, *4*, 18-23.

Investigation of the association between young people's experiences of bullying and paranoia in clinical and non-clinical samples

Chapter word count (6,412)

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(Author submission instructions Appendix 2.1)

Plain English Summary

Background

Paranoia is the belief that others are going to harm you, even when there is limited evidence to support this. It is an experience ranging from mild suspiciousness to highly distressing beliefs. Paranoia has been shown to first emerge in young people and some studies have found it to be higher compared to adults. Paranoia is linked to more negative beliefs about paranoia, higher levels of social anxiety, feelings of shame and difficulties managing emotions (i.e. other psychological processes). Growing research has shown that negative life events are linked to paranoia experiences in young people. A commonly reported negative event is bullying, reported to affect up to a third of young people in British schools.

Aims

The aims were to test the predictions that: (1) bullying would be linked to greater severity of paranoia, (2) severity of paranoia would be greater in young people attending mental health services compared to those that were not, (3) bullying would be linked to paranoia, taking into account other experiences that have been shown to be related to paranoia.

Method

Following ethical approval, I asked 2 groups of 16 to 18 year old young people to complete a set of questionnaires, which asked them about their experiences of bullying, paranoia and other experiences. I collected information from 24 young people accessing mental health services (clinical group) and from 212 others who were not (non-clinical group). I arranged to meet the clinical group in person at the service they attended. Through

promotion on social media, the non-clinical group participated via an online survey. All information was anonymous and stored securely on a password encrypted computer.

Findings

I found that bullying was related to greater severity of paranoia in both groups of young people. I unexpectedly did not find that paranoia was higher in the clinical, compared to the non-clinical, group of young people. I found that bullying was linked to paranoia after taking into account the other experiences of beliefs about paranoia, shame feelings, social anxiety and emotional difficulties. Interestingly, external shame (i.e. thinking that others are judging you in a negative way) and emotional difficulties appeared to be the most relevant experiences to help us understand the relationship between bullying and paranoia.

Discussion

The findings support previous research that bullying is associated with paranoia and suggest there is a role of shame about how one is viewed by others and difficulties managing emotions. It is suggested that paranoia may be a strategy to help individuals be more alert to possible threats from others. Paranoia may therefore develop as a result of threatening experiences such as bullying.

I conclude that bullying is a common stressful life event and should be routinely asked about in clinical practice. Practitioners should be mindful of the associations between bullying with paranoia and other psychological processes. Assessment of shame feelings and emotional difficulties may be useful to develop treatment plans when working with you people who report bullying and paranoia experiences.

Abstract

Paranoia is the unfounded beliefs that others intend to cause physical and/or psychological harm. Emerging evidence reflects an association between bullying and paranoia in adolescence, but lacks control of theoretically relevant covariates (beliefs about paranoia, shame, social anxiety and emotional dysregulation). The aims of the present study were to a) examine the association between bullying and paranoia b) compare severity of paranoia between clinical and non-clinical samples and c) establish the robustness of any association by controlling for the covariates. Data from questionnaires were obtained from clinical (N = 24) and non-clinical (N = 212) samples of 16 to 18 year old adolescents. Results indicated a strong association between bullying and paranoia. The severity of paranoia did not differ between clinical and non-clinical samples. Bullying appeared to contribute independently with paranoia after controlling for the covariates in the non-clinical sample. Using the clinical sample, an indirect association was found between bullying and paranoia via emotional dysregulation and external shame. Findings are consistent with literature highlighting that bullying is associated with paranoia. Paranoia may serve an adaptive function to detect social threats, and therefore become heightened from bullying. Furthermore, this association appears to be influenced by emotional dysregulation and external shame. Future research should further examine the association between bullying and paranoia, as well as other specific psychotic experiences such as hallucinations, in longitudinal large sample studies controlling for effects of theoretically relevance processes, including external shame and emotional regulation. Clarifying the roles of external shame and emotional dysregulation have important clinical implications in the context of bullying and paranoia experiences.

Investigation of the association between young people's experiences of bullying and paranoia in clinical and non-clinical samples

Paranoia, defined as the unfounded belief that others intend to cause physical and/or psychological harm, exists on a continuum of severity ranging from mild suspiciousness to persecutory delusions (Freeman & Garety, 2000; Wigman et al., 2009). It has been reported that the prevalence of paranoia is higher in adolescent, compared to adult, populations (Wigman et al., 2009). For example, Kelleher et al (2012) found a 7.5% prevalence rate in young people aged 13-18, compared to a 5% prevalence rate in an adult sample (van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). Paranoia has been reported as most frequent and distressing compared to other psychotic phenomena in adolescence (Wigman et al., 2009). As paranoia exists as a continuum of severity, and is relatively common in adolescence, it is important to investigate in both clinical and non-clinical adolescent samples. Furthermore, psychotic experiences including paranoia are regarded as transdiagnostic phenomena, and are reported by help seeking individuals with a range of non-psychotic mental health disorders (van Os & Reininghaus, 2016). It is therefore important to utilise a clinical sample irrespective of diagnosis to assess experiences of paranoia across the continuum of severity.

Through adolescence, there is an increasing concern and sensitivity towards the pursuit of developing peer relationships (Bird, Waite, Rowsell, Fergusson, & Freeman, 2017). There appears to be an important shift from parental attachment to alliances with peer group belonginess and acceptance (Matos, Pinto-Gouveia, & Gilbert, 2013). Prioritising and seeking peer group membership is a developmental marker for a successful transition into adulthood (Bird et al., 2017), which fosters meaningful connectedness with others. In light of

this literature, adverse social events, including bullying, are considered significant disruptions in adolescence; a particularly important and valuable time for developing a sense of self through developing peer relationships.

Bullying experience are defined as repeated and intentional negative actions – typically verbal, relational, physical and/or cyber forms – whereby the victim is perceived as subordinate and unable to defend themselves (Olweus, 1993). It is a relatively common stressful, and potentially traumatic, experience affecting up to 55% of young people worldwide (Nansel, Craig, Overpeck, Saluja, & Ruan, 2004), and estimated to affect a third of individuals in British schools (Campbell & Morrison, 2007). Bullying is a determinant to mental ill-health, including depression and anxiety, and can persist into adulthood (Arseneault, Bowes, & Shakoor, 2009). Furthermore, bullying amplifies social stress and has been found to relate to heightened feelings of shame and deficits in emotion regulation (Matos, Pinto-Gouveia, & Gilbert, 2013; McLaughlin et al. 2009). Growing research has demonstrated that an association exists between bullying and psychotic experiences in clinical and non-clinical samples of young people and adults (Cunningham, Hoy, & Shannon, 2015; van Dam et al., 2012, Varese et al., 2012).

The specificity of the association has been examined further, which found evidence that bullying is associated with paranoia (Jack & Egan, 2017). Growing research has demonstrated that a history of bullying is associated with the development of paranoia (Jack & Egan, 2017). Jack and Egan (2017) systematically reviewed studies that investigated the association between bullying and paranoia. They found that nine (out of the ten studies) demonstrated a positive association between bullying and paranoia, two of which were adolescent samples (Campbell & Morrison, 2007; Shakoor et al., 2015). In addition, bullying appears to be a strong risk factor in longitudinal studies for the development of psychotic disorders in adulthood (Arseneault et al., 2010). Based on the empirical findings, it has

been theorised that paranoia is a social fear, which may emerge because of stressful social experiences as a strategy to detect social threat (Bird et al., 2017). As described, adolescence is a time of social sensitivity and therefore perhaps a time of increased susceptibility to social fears such as paranoia.

Despite emerging evidence in support of the association between bullying and paranoia, previous systematic reviews have highlighted that there is a lack of studies that have controlled for the possible effects of psychological processes (Cunningham et al., 2015; Jack & Egan, 2017; van Dam et al., 2012). In fact, previous research has found that paranoia is associated with higher negative beliefs about paranoia (Gumley et al., 2011; Morrison et al., 2011), greater social anxiety (Gilbert et al., 2005; Lopes, 2013), feelings of shame (Matos, et al., 2013), and emotional dysregulation (Westermann, Kesting, & Lincoln, 2012).

Therefore, the present study sought to investigate the robustness of the association between bullying and paranoia in adolescence by controlling for the possible effects of beliefs about paranoia, feelings of shame, social anxiety and emotional dysregulation (i.e. covariates).

Aims & Hypotheses

Primary aims of the present study were to investigate the association between bullying experiences and paranoia across clinical and non-clinical adolescent samples, hypothesising there would be a significant positive association, and to determine severity rates of paranoia between samples, hypothesising greater severity in the clinical sample. A secondary aim was to explore the robustness of the association between bullying and paranoia by controlling for the covariates. It was hypothesised that bullying would independently contribute to paranoia after controlling for these factors.

Method

Ethical Approval

Ethical approval was obtained from the West of Scotland Research Ethics Committee and managerial approval from NHS Greater Glasgow & Clyde (see Appendix 2.3).

Participants

A clinical sample, comprising a transdiagnostic group of young people, was recruited from Child and Adolescent Mental Health Services (CAMHS) and a non-clinical sample was recruited using an online survey[1] between the 1st of February and 31st May 2018. Inclusion criteria for both samples included a 16-18 age range and adequate spoken and written English. Separate inclusion criteria included capacity to consent, determined by their Clinician in the clinical sample, and computer access in the non-clinical sample. Exclusion criteria were lack of capacity to consent in the clinical sample and if the non-clinical sample received previous and/or current treatment from CAMHS.

Justification of sample size

A series of apriori power analyses were calculated for each hypothesis based on the following assumptions; (1 – β err prob) of 0.8 and α error probability at 0.05, within the range of medium to large effect sizes. Based on these power calculations, a total of 70 participants was justified across the samples (see Appendix 2.2 for further details).

[1] The online survey comprised the same study materials used in the clinical sample. It was developed by the author on their secure Bristol Online Survey (BOS) tool personal account. The BOS is fully compliant with all UK data protection laws (see webpage: https://www.onlinesurveys.ac.uk/).

Materials

Demographic Questionnaire (DQ) consisted of gender, age, ethnicity, citizenship, accommodation and education/employment status.

The Adapted-Revised Olweus Bully Victim Questionnaire (A-ROBVQ; Olweus, 1996) was adapted from the 40-item ROBVQ. The ROBVQ has robust psychometric properties and includes appropriate definitional bullying criteria (Thomas, Connor, & Scott, 2012). I adapted a shorter 5-item version to assess global, verbal, relational, physical and cyber bullying, in turn, on a 5-point Likert scale ranging from "None" to "Several times a week." The adapted version included two parts; current bullying (Current Bullying Questionnaire; CBQ) and historical bullying (Lifetime Bullying Questionnaire; LBQ). Internal consistency was high for CBQ (Cronbach's $\alpha = .90$) and LBQ (Cronbach's $\alpha = .88$) in this study.

The Green Paranoid Thoughts Scale (GPTS; Green et al., 2008) is a 32-item scale (5-point Likert scale) assessing severity of paranoia, including ideas of social reference (GPTS-ISR) and persecutory delusions (GPTS-PD). The scale has good reliability and validity for use in adolescence samples (Green et al., 2008; Korver-Nieberg et al., 2013). Internal consistency was high (GPTS-ISR Cronbach's $\alpha = .95$; GPTS-PD Cronbach's $\alpha = .96$) in this study.

Beliefs about Paranoia Scale – Short Form (BaPS; Gumley et al., 2011) is an 18-item scale (4-point Likert scale) assessing positive and negative meta-beliefs about paranoia. It comprises three sub-scales of 'negative beliefs about paranoia' (BaPS-Neg) 'beliefs about paranoia as a survival strategy,' (BaPS-SS) and 'normalising beliefs.' (BaPS-Nor). The scale has shown good internal consistency and valid for use in clinical and non-clinical samples (Gumley, Gillan, Morrison, & Schwannauer, 2011; Morrison et al., 2011). High internal was found in this study (Cronbach's α's = .88 [BaPS-SS], .92 [BaPS-Neg], .88 [BaPS-Nor]).

Experience of Shame Scale (ESS; Andrews, Qian & Valentine, 2002) is a 25-item scale (4-point Likert scale) assessing internal shame shown to have good reliability and validity (Andrews et al., 2002). Internal shame is conceptualised as negative self evaluations towards the self (Matos et al., 2013). Internal consistency was high in this study (Cronbach's α = .96).

The Other As Shamer Scale (OSS-2; Matos et al., 2013) is an 18-item scale (5-point Likert scale) assessing external shame experiences shown to have good reliability and validity (Matos et al., 2013). External shame is defined as attentional biases towards others holding negative beliefs about them (Matos et al., 2013). Internal consistency was high in this study (Cronbach's α = .96).

Social Interaction Anxiety Scale (SIAS; Heimberg et al., 1992) is a 20-item scale (5-point Likert scale) assessing the severity of anxiety experienced in social situations. It has demonstrated good internal consistency and validity for use in clinical and non-clinical samples and discriminates between other anxiety disorders (Heimberg et al., 1992). internal consistency was high in this study (Cronbach's α = .95)

Difficulties in Emotional Regulation Scale – Short Form (DERS-SF; Kaufman et al., 2016) is a reliable and valid 18-item scale (5-point Likert scale) assessing the severity of emotional dysregulation (Kaufman et al., 2016). Emotion dysregulation is a difficulty to tolerate and respond flexibly and appropriately to emotive situations (Kaufman et al., 2016). Internal consistency was high in this study (Cronbach's α = .91).

Procedures

Clinical sample. Clinicians identified eligible participants and obtained their consent to be sent an information sheet and to be contacted to arrange an appointment with the

researcher at CAMHS. Following their consent to take part, participants were asked to complete the questionnaires with the researcher present and were given a debrief summary at the end. All appointments were facilitated in accordance with local CAMHS policy and standard operating procedures in terms of management of risk.

Non-clinical Sample. Through social media advertisement, potential participants were invited to take part in the online survey (created on the secure Bristol online survey tool). A pilot was administered with three young people, which confirmed the functionality[2] of the online survey. The survey included an information sheet for participants to read initially. They were then required to complete a consent form before proceeding to complete the questionnaires. A debrief summary was presented at the end.

Data Analyses

Anonymous data were collected, assigned a unique code, and inputted on the Statistical Package for the Social Sciences (SPSS) on a password encrypted Glasgow University server. Hard copy clinical participant questionnaires were stored in secure filing cabinet, separate from the consent forms. Missing data analysis and assessment of data distribution was conducted. The data were examined for normality using analysis of skewness, kurtosis and visual inspection. Using combined sample data, a series of correlational analyses were conducted to assess hypothesis one. Independent samples t-tests were carried out to investigate hypothesis two. Regarding the secondary aim, multiple linear regression (MLR) analysed data from the non-clinical sample to identify a robust set of predictors. Subsequently, each of these predictors were tested in a series of mediation analyses conducted with the clinical sample data. Mediation analysis was conducted using the SPSS

[2] The study flowed appropriately; URL links opened in a new window without closing the online survey; the consent section was required to be completed before proceeding

macro PROCESS (model 4). This study used the bootstrapping approach to mediation (Hayes, 2013), setting this at 10,000 to generate a 95% CI.

Results

Samples

In total there were 238 participants across both samples (24 in clinical sample & 214 in non-clinical sample). Two participants were excluded in the non-clinical sample due to missing data exceeding 80% resulting in 212 non-clinical participants included in the data analysis. Table 1 displays the sample characteristics. There were 24 participants (10 males & 14 females) in the clinical sample with a mean age of 16.71 (*SD* = .62). There were 212 participants (18 males, 185 females, 8 transgender/non-binary & 1 not reported) with a mean age 16.63 (*SD* = .64). Participants were predominately white females living at home with parents and attending school. All demographics were tested for differences between clinical and non-clinical samples. Only gender was found to differ significantly across groups; there was a significantly higher percentage of females in the non-clinical compared to the clinical sample ($\chi^2 = 21.35$, $p < .001$).

Table 1

Demographic information for the clinical, non-clinical, and combined samples

		Clinical Sample (*N* =24)		Non-clinical Sample (*N* = 212)		Combined Sample (*N* = 236)	
Variable	Category	*n*	(%)	*n*	(%)	*n*	(%)
Gender	*Female**	14	58.3	185	87.3	199	84.3
	*Male**	10	41.7	18	8.5	28	11.9
	Transgender/Non-binary	0	0	8	3.8	8	3.4
	Not reported	0	0	1	0.5	1	0.4
Age	16	9	37.5	98	46.2	107	45.3
	17	13	54.2	95	44.8	108	45.8
	18	2	8.3	19	9.0	21	8.9
Ethnicity	White	23	95.8	205	96.7	228	96.6
	Black/African/Caribbean/Black British	1	4.2	1	0.5	2	0.8
	Mixed/Multiple ethnicities	0	0	3	1.4	3	1.3
	Asian/Asian British	0	0	2	0.9	2	0.8
	Not specified	0	0	1	0.5	1	0.4
Citizenship	UK citizen	24	100	207	97.6	231	97.9
	Other	0	0	5	2.4	5	2.1
Accommodation	Rented accommodation	7	29.2	35	16.5	42	17.8
	Private residence with family	17	70.8	168	79.2	185	78.4
	Private residence with carer	0	0	4	1.9	4	1.7
	Private residence, ownership	0	0	1	0.5	1	0.4
	Other (please specify)	0	0	4	1.9	4	1.7
Employment	School	17	70.8	131	61.8	148	62.7
	Further education	4	16.7	53	25	57	24.2
	Employment	1	4.2	8	3.8	9	3.8
	Unemployed	2	8.3	10	4.7	12	5.1
	Other	0	0	10	4.7	10	4.2

** Significant difference between clinical and non-clinical groups ($p < .05$)*

Reporting of adverse events

No adverse experiences resulting from taking part in this study were reported. This in line with feedback from authors contacted in the field of bullying and psychosis research[3].

Missing data analysis

Based on non-significant Little's tests for each scaled variable, the selected imputation method was therefore Expectation-Maximisation (EM) as recommended in the literature (Enders, 2003) (see Appendix 2.4 for further detail).

Distribution of Data

Normality of data, from the combined and non-clinical samples, were assessed using analysis of skewness, kurtosis and visual inspection. All skewness and kurtosis values fell within the range of minus 1 to 1 (i.e. to the nearest whole number value) for clinical, non-clinical and combined data suggesting that data were normally distributed. Therefore, parametric tests were selected for data analysis (see Appendix 2.4 for non-parametric equivalent tests that were conducted for hypotheses 1 and 2). Also, regarding hypothesis 3, the residual plots from the MLR appeared random and therefore normally distributed.

Experiences of Bullying

Table 2 displays the mean and standard deviation scores for current and lifetime bullying experiences for clinical, non-clinical and combined samples. Current and lifetime experiences of bullying were compared between the clinical and non-clinical samples. Only

[3] Authors from each paper cited in the systematic review by van Dam and colleagues were contacted prior to recruitment of participants in this study. Of the 14 authors, 10 responded stating no reporting of adverse events as a result of participating in research that investigated the association between bullying and psychotic experiences

current cyber-bullying was found to be significantly greater in the non-clinical sample compared to the clinical sample ($t(41.79) = -2.58$, $p < .05$).

Table 2

Total Mean scores (SD) for current and lifetime bullying in the clinical, non-clinical and combined samples

Bullying Questionnaire Subscale	Current bullying (*M*, *SD*) Clinical Sample	Non-clinical Sample	Combined Sample	Lifetime bullying (*M*, *SD*) Clinical Sample	Non-clinical Sample	Combined Sample
Global Bullying	1.00 (1.32)	1.16 (1.44)	1.14 (1.43)	2.54 (1.50)	2.36 (1.56)	2.38 (1.55)
Verbal Bullying	1.04 (1.37)	1.53 (1.45)	1.47 (1.45)	2.46 (1.69)	2.50 (1.43)	2.50 (1.45)
Relational Bullying	.96 (1.40)	1.61 (1.55)	1.54 (1.55)	1.88 (1.68)	2.26 (1.59)	2.23 (1.60)
Physical Bullying	.33 (.87)	.50 (1.05)	.48 (1.03)	1.13 (1.26)	1.07 (1.41)	1.08 (1.39)
Cyberbullying	*.33* (.70)*	*.77* (1.25)*	.72 (1.21)	1.04 (1.37)	1.21 (1.36)	1.21 (1.36)
Total Bullying	**3.67 (4.98)**	**5.56 (5.67)**	**5.35 (5.70)**	**9.04 (6.36)**	**9.44 (6.07)**	**9.40 (6.09)**
Min - Max	0 - 16	0 - 20	0 - 20	0 - 20	0 - 20	0 - 20

*** Significant at the .01 level*

** Significant at the .05 level*

Hypothesis one

As hypothesised, there were significantly positive and strong associations between current and lifetime bullying experiences with paranoia (r = .67, p <.01 and r = .66, p <.01 (one-tailed), respectively).

Hypothesis two

Table 3 displays variable mean scores across samples. There were no significant differences found between severity rates between the clinical and non-clinical samples. This included the severity rate of total paranoia (t(234) = -.05, p >.05), ideas of social reference (t(234) = -.45, p >.05) and persecutory delusions (t(234) = .33, p > .05). This result is inconsistent with hypothesis two. Of note, the severity rate of paranoia was relatively higher

than expected in the non-clinical sample compared to previous research using the Green Paranoia Thoughts Scale.

Table 3

Scaled variables descriptive statistics for the clinical, non-clinical and combined samples

	Clinical Sample		Non-clinical Sample		Combined Sample	
Questionnaire subscale	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
GPTS (Total paranoia severity)	**91.57**	**30.95**	**91.91**	**35.98**	91.88	35.44
GPTS – ISR (Ideas of social reference severity)	**48.46**	**16.25**	**50.18**	**17.83**	50.00	17.65
GPTS – PD (Persecutory delusions severity)	**43.11**	**16.20**	**41.74**	**19.68**	41.88	19.33
BaPS – TOTAL (Beliefs about paranoia)	44.19	8.77	43.47	11.43	43.54	11.17
BaPS – Negative beliefs about paranoia	16.04	5.23	15.53	5.79	15.58	5.73
BaPS – Survival Strategy	11.77	4.12	12.10	4.67	12.06	4.61
BaPS – Normalising	16.38	3.70	15.84	4.46	15.89	4.38
ESS (Internal shame)	71.04	15.85	76.12	19.11	75.60	18.84
OSS (External shame)	36.89	17.51	41.05	19.89	40.63	19.67
SIAS (Social anxiety)	46.26	16.39	50.53	19.54	50.10	19.26
DERS-SF (Emotional Dysregulation)	58.65	15.06	61.16	14.97	60.90	14.96

Hypothesis three

Prior to undertaking MLR, Pearson Correlations were conducted to determine significantly associated covariates with paranoia. Table 4 shows that each covariate was positively associated with paranoia and therefore included as predictor variables in the MLR model. A MLR was performed for the dependent variable of paranoia to determine the extent to which the overall model predicted the variance in paranoia. Table 5 displays the results from the MLR. In the model, the multiple adjusted R was .77 (R^2 = .77) and significant (F =

79.43, $p < .01$), indicating that the model significantly explained 77% of the variance in paranoia. An examination of tolerances, which were all below .10, suggested multicollinearity was not an issue; as per guidance in literature (Tabachnick & Fidell, 2001),

Table 5 indicates that current bullying remained a significant and independent predictor of paranoia after controlling for covariates ($\beta = .24$, partial $r = .34$, $t = 5.17$, $p < .01$). Negative beliefs about paranoia ($\beta = 1.07$, *partial* $r = .23$, $t = 3.33$, $p < .01$), lifetime bullying ($\beta = .90$, *partial* $r = .22$, $t = 3.22$, $p < .01$), beliefs about paranoia as a survival strategy ($\beta = .77$, *partial* $r = .15$, $t = 2.10$, $p < .05$), external shame ($\beta = .44$, *partial* $r = .25$, $t = 3.62$, $p < .01$), emotional dysregulation ($\beta = .40$, *partial* $r = .20$, $t = 2.83$, $p < .01$) were also significant predictors of paranoid thinking.

Table 4

Pearson correlation coefficients between exposure to bullying and predisposition to paranoid thoughts for non-clinical sample data

	Scale/Subscale names (N = 236)	1	2	3	4	5	6	7	8	9	10	11	12	13
1.	CBQ	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	LBQ	.64**	-	-	-	-	-	-	-	-	-	-	-	-
3.	GPTS – ISR	**.63****	**.63****	-	-	-	-	-	-	-	-	-	-	-
4.	GPTS – PD	**.66****	**.64****	.84**	-	-	-	-	-	-	-	-	-	-
5.	GPTS – Total	**.68****	**.66****	.96**	.96**	-	-	-	-	-	-	-	-	-
6.	BaPS - SS	.38**	.37**	.59**	.58**	.61**	-	-	-	-	-	-	-	-
7.	BaPS – Neg	.42**	.47**	.72**	.62**	.70**	.59**	-	-	-	-	-	-	-
8.	BaPS – Nor	.02	.07	.16*	.13*	.15*	.39**	.14*	-	-	-	-	-	-
9.	BaPS – Total	.38**	.42**	.67**	.60**	.66**	.86**	.80**	.62**	-	-	-	-	-
10.	ESS	.42**	.53**	.72**	.62**	.70**	.56**	.68**	.31**	.69**	-	-	-	-
11.	OSS	.56**	.55**	.79**	.73**	.79**	.61**	.67**	.20**	.63**	.80**	-	-	-
12.	SIAS	.43**	.53**	.67**	.57**	.64**	.47**	.62**	.13*	.56**	.71**	.71**	-	-
13.	DER-SF	.46**	.53**	.72**	.70**	.74**	.60**	.69**	.20**	.67**	.76**	.76**	.65**	-

** Significant at the .05 level; ** Significant at the .01 level (one-tailed)*

Table 5

Multivariate regression of the association between current bullying and paranoia

	B	95% CI	β	P	Adj R^2
Model					**0.77**
Current Bullying	**1.50****	**.93 – 2.07**	**.24****	**<.01**	
Lifetime Bullying	**.90****	**.35 – 1.46**	**.15****	**<.01**	
BAPS SS	.77*	.05 – 1.50	.10*	<.05	
BAPS NEG	1.10**	.44 – 1.70	.17**	<.01	
BAPS NORMAL	-.17	-.77 - .44	-.02	.58	
ESS total	.05	-.19 - .30	.03	.68	
OSS Total	.44**	.20 - .68	.24**	<.01	
Social Anxiety	.01	-.17 - .20	.01	.89	
Emotional Dysregulation	.40**	.12 - .68	.17**	<.01	

B = unstandardized regression coefficient; β = standardised regression coefficient
* p < .05; ** p < .01

Mediation analysis

To test the veracity of these predictors identified in the non-clinical sample I entered the significant covariates as mediators between bullying and paranoia in the clinical sample. Current bullying was entered as the predictor variable, paranoia was entered as the dependent variable, and beliefs about paranoia as a survival strategy and negative beliefs about paranoia, external shame, and emotional dysregulation were entered as mediators in a series of mediation analyses. The indirect (mediation) pathways from current bullying to paranoia via: (i) beliefs about paranoia as a survival strategy was not significant, *b* = .02, 95% *CI* (-1.10, 1.08), (ii) negative beliefs about paranoia was not significant, *b* = .54, 95% *CI* (-.72, 1.52), (iii) external shame was significant, *b* = 1.81, 95% CI (.69, 3.13) and (iv) emotional dysregulation was significant, *b* = 1.35, *CI* (.14, 2.91). Replication of findings in the association between lifetime bullying and paranoia were demonstrated for the above mediating variables except for emotional dysregulation which was non-significant *b* = .63, *CI* (-.46, 1.70). Therefore, in the clinical sample, external shame showed the strongest signal as a

mediator of bullying (current and lifetime) and paranoid thinking. Figure 1 displays the mediation models which demonstrated significant indirect pathways between variables.

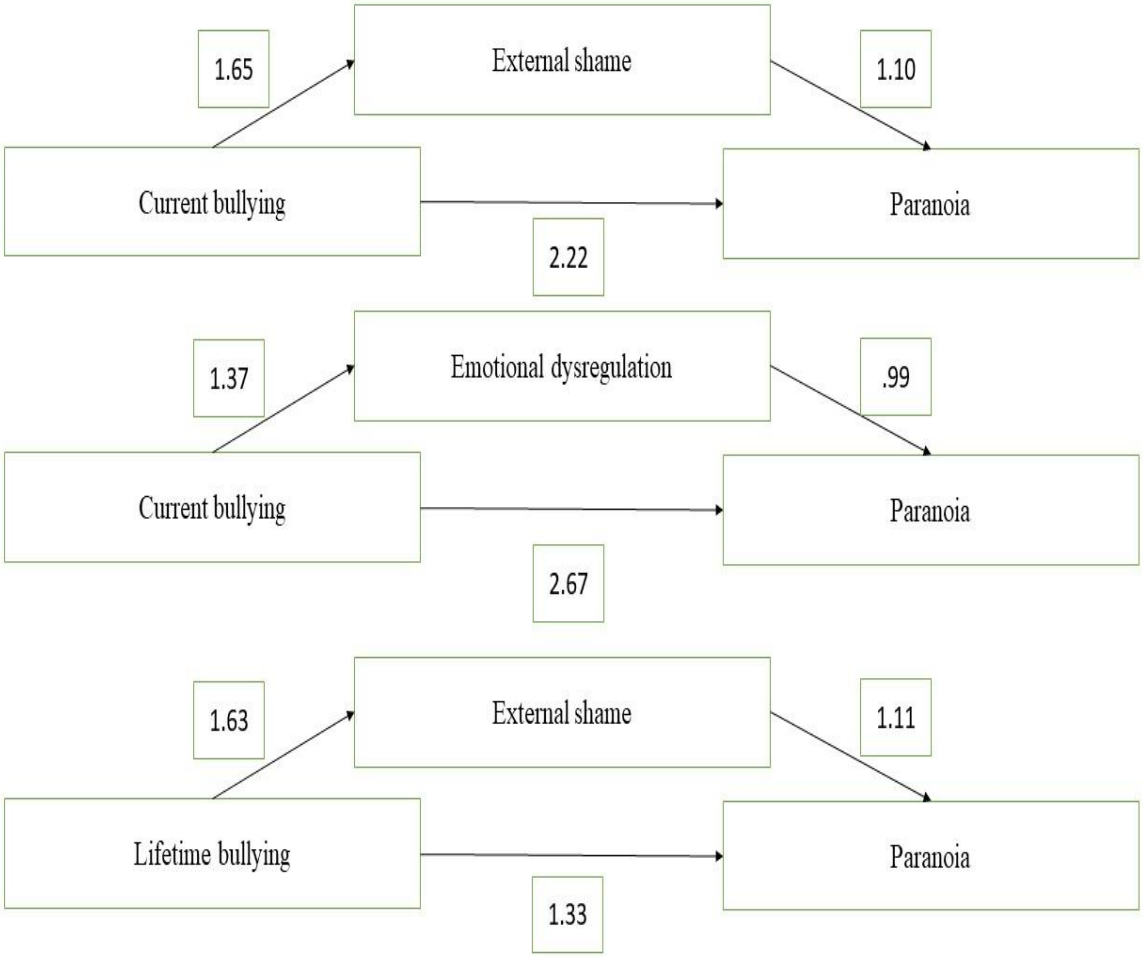

Figure 1. Significant mediation models with pathway coefficients

Discussion

The present study investigated the association between bullying and paranoia with the inclusion of theoretically relevant covariates. The results demonstrated a strong association between bullying and paranoia across clinical and non-clinical adolescent samples. The severity of paranoia did not, however, differ significantly between samples. Results from the non-clinical data revealed that current bullying independently contributed to paranoia after controlling for beliefs about paranoia, feelings of shame, social anxiety and emotional dysregulation. Post hoc analyses of the clinical sample demonstrated indirect pathways between current bullying mediated by emotional dysregulation and external shame. External shame also mediated the pathway between lifetime bullying and paranoia, indicating external shame had the more consistent mediating effect.

The association between bullying and paranoia is consistent with previous research (Campbell & Morrison, 2007; Jack & Egan, 2017; Shakoor et al., 2015). A stronger association was found in the present study compared with several studies (Campbell and Morrison, 2007; Wickham & Bentall, 2009). A possible explanation could be that a valid multi-item bullying measure with definitional criteria was included, which is recommended as a preferred method in the literature (Thomas, Connor, & Scott, 2012). Further evidence was provided regarding the association, showing that bullying independently contributed to paranoia after controlling of negative beliefs about paranoia, feelings of shame, social anxiety and emotional dysregulation.

Consistent with theoretical understandings, adolescence is a particularly sensitive time for forming peer alliances, which may heighten fears of social rejection and non-acceptance (Bird et al., 2017). It is likely that bullying amplifies stress and acts as a barrier to the adolescence maturation development. Paranoia may develop as a coping strategy to detect

social threat, which may lead to a 'keeping a safe distance' approach (Matos et al., 2013). Although it serves an adaptive function, paranoia is potentially problematic as it is based on cognitive biases, potentially leading to socially avoidant behaviours (Matos et al., 2013). As shown, sub-clinical paranoia may increase the risk of clinically distressing persecutory delusions (Bird et al., 2017).

Furthermore, the roles of emotional regulation and external shame utilising the clinical sample were demonstrated. The role of emotional dysregulation has been demonstrated in previous research (Westermann & Lincoln, 2011); showing that bullying is linked to negative emotions and poor emotional adjustment. This, in turn, may lead to the emergence of paranoia during a particularly sensitive stage of social development with peers. In fact, it has been reported that help seeking adolescents present with greater emotional dysregulation who also express paranoia and negative life events (Westermann & Lincoln, 2011).

External shame, found to be the strongest signal between bullying and paranoia, reflects literature highlighting its role with paranoia (Matos et al., 2005). Several authors suggest that a defence to external shame is the internalised shame response, in which individuals adopt a subordinate role coupled with elevated self-blaming and self-critical attitudes to avoid aggressive behaviours from powerful others (Gilbert, 2005). Subordinate and submissive roles, paradoxically, dominate a young person's internal world. Bullying disrupts an adolescent's valuable social functioning, which may influence feelings of shame in terms of negative self evaluations in the mind of the other and in turn influences paranoia. (Gilbert et al., 2005). Therefore, paranoia experiences appear to be contextualised as they are influenced by life experiences and may offer a helpful function to manage social fears and shameful feelings (Cromby, Harper, & Reavey, 2013).

The findings, unexpectedly, did not find a greater severity of paranoia in the clinical sample, which is inconsistent with previous research (Korver-Neiberg et al., 2014; Valmaggia et al., 2015). Upon further inspection, the clinical sample findings reflect comparable severity rates of paranoia with other clinical samples (Green et al., 2008; Valmaggia et al., 2015) and persecutory delusions specifically (Bird et al., 2017). Of note, these clinical comparison studies included participants on the basis of paranoia. The present study recruited help seeking adolescent, which represented a transdiagnostic sample, and not on the basis of paranoia. The comparable severity therefore suggests that paranoia is relatively high across help-seeking adolescents irrespective of diagnosis. In contrast, the severity of paranoia was higher than anticipated in the present study's non-clinical sample. This may have resulted, at least in part, from increased risk of bias from self-selection bias, advertisement methods exclusively online, and the significantly higher proportion of females. Previous research has found that adolescent females experience higher levels of paranoia compared to boys (Wigman et al., 2009).

Strengths and limitations

Strengths of the present study included that the specificity of the association between bullying and paranoia was investigated in adolescence with the inclusion of a relatively large non-clinical sample. I implemented a bullying measure with definitional criteria and a multi-item scale as recommended by literature (Thomas et al., 2012). I controlled for theoretically relevant cognitive and affective processes and identified clinically relevant roles of emotional dysregulation and external shame.

The limitations of the present study include sampling biases in terms of a small convenience clinical sample and self-selection biases in the non-clinical who were predominately female. These issues may limit the generalisability of findings. The cross-

sectional nature of the study does not allow the causality in the relationship between bullying and paranoia to be determined. Despite the plausibility of the model tested here, there may be other explanatory models for these relationships using other variables or considering other types or directions of association.

Research and clinical implications

The association between bullying and paranoia could be further explored in replication studies using larger clinical adolescent samples, with a more balanced sample of males and females. Longitudinal research would be important to develop a greater understanding of causality and identify risk factors for developing paranoia. Matos et al. (2013) have also demonstrated that shame memories – conditioned emotional memories involving intrusiveness, hyperarousal, and efforts to avoid shame – are associated with paranoia, even when controlling for current external shame (Matos et al., 2013). This may be an area of future research to explore the effects of shame memories in the context of bullying and paranoia.

In terms of clinical relevance, bullying should be routinely assessed in conjunction with asking about paranoia experiences with importance in developing shared formulations with young people with regards to the predisposing nature of bullying on mental health. It would also be important to explore young people's perceptions of how they exist in the mind of others – particularly peers – and assess their ability to regulate their emotions.

It may become relevant to develop treatment interventions that target external shame and emotional dysregulation. Through adopting a person-centred approach, there are several psychological interventions that may be useful to consider in light of the findings. These include Compassionate Focused Therapy and Cognitive Behavioural Therapy approaches that target feeling of shame, and associated self-criticism, and to challenge cognitions of paranoia.

Acceptance and Commitment Therapy might be helpful to explore the value of connectedness with others and strategies to rebuild this in the context of social disruptions such as bullying.

References

Andrews, B., Qian, M., & Valentine, J. D. (2002). Predicting depressive symptoms with a new measure of shame: The Experience of Shame Scale. *British Journal of Clinical Psychology*, *41*, 29-42.

Bird, J. C., Waite, F., Rowsell, E., Fergusson, E. C., & Freeman, D. (2017). Cognitive, affective, and social factors maintaining paranoia in adolescents with mental health problems: a longitudinal study. *Psychiatry Research, 257*, 34-39.

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

Cristóbal-Narváez, P., Sheinbaum, T., Ballespí, S., Mitjavila, M., Myin-Germeys, I., Kwapil, T. R., & Barrantes-Vidal, N. (2016). Impact of adverse childhood experiences on psychotic-like symptoms and stress reactivity in daily life in nonclinical young adults. *PloS One*, *11*, e0153557.

Cromby, J., Harper, D., & Reavey, P. (2013). *Psychology, mental health and distress*. Macmillan International Higher Education.

Cunningham, T., Hoy, K., & Shannon, C. (2016). Does childhood bullying lead to the development of psychotic symptoms? A meta-analysis and review of prospective studies. *Psychosis*, *8*, 48-59.

Enders, C. K. (2003). Using the expectation maximization algorithm to estimate coefficient alpha for scales with item-level missing data. *Psychological methods*, 8, 322.

Freeman, D., & Garety, P. A. (2000). Comments on the content of persecutory delusions: does the definition need clarification? *British Journal of Clinical Psychology*, *39*, 407-414.

Freemann, D., Garety, P.A., Kuipers, E., Fowler, D., Bebbington, E.P., (2002). A cognitive model of persecutory delusions. *British Journal of Clinical Psychology*, *41*, 331–347.

Gilbert, P., Boxall, M., Cheung, M., & Irons, C. (2005). The relation of paranoid ideation and social anxiety in a mixed clinical population. *Clinical Psychology & Psychotherapy*, *12*, 124-133.

Green, C. E. L., Freeman, D., Kuipers, E., Bebbington, P., Fowler, D., Dunn, G., & Garety, P. A. (2008). Measuring ideas of persecution and social reference: The Green et al. Paranoid Thought Scales (GPTS). *Psychological Medicine*, *38*, 101-111.

Gumley, A. I., Gillan, K., Morrison, A. P., & Schwannauer, M. (2011). The development and validation of the Beliefs about Paranoia Scale (Short Form). *Behavioural and Cognitive Psychotherapy*, 39, 35-53.

Hayes, A.F., 2013. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. United Kingdom: Guilford Press.

Heimberg, R. G., Mueller, G. P., Holt, C. S., Hope, D. A., & Liebowitz, M. R. (1992). Assessment of anxiety in social interaction and being observed by others: The Social Interaction Anxiety Scale and the Social Phobia Scale. *Behavior Therapy*, *23*, 53-73.

Jack, A. H., & Egan, V. (2017). Trouble at school: a systematic review to explore the association between childhood bullying and paranoid thinking. *Psychosis, 9*, 260-270.

Johns, L. C., Cannon, M., Singleton, N., Murray, R. M., Farrell, M., Brugha, T., … Meltzer, H. (2004). Prevalence and correlates of self-reported psychotic symptoms in the British population. *The British Journal of Psychiatry*, *185*, 298–305.

Kaufman, E. A., Xia, M., Fosco, G., Yaptangco, M., Skidmore, C. R., & Crowell, S. E. (2016). The Difficulties in Emotional Regulation Scale Short Form (DERS-SF): validation and replication in adolescent and adult samples. *Journal of Psychopathology and Behavioral Assessment*, *38*, 443-455.

Kelleher, I., Connor, D., Clarke, M. C., Devlin, N., Harley, M., & Cannon, M. (2012). Prevalence of psychotic symptoms in childhood and adolescence: a systematic review and meta-analysis of population-based studies. *Psychological Medicine*, *42*, 1857-1863.

Korver-Nieberg, N., Fett, A. K. J., Meijer, C. J., Koeter, M. W., Shergill, S. S., de Haan, L., & Krabbendam, L. (2013). Theory of mind, insecure attachment and paranoia in adolescents with early psychosis and healthy controls. *Australian & New Zealand Journal of Psychiatry*, *47*, 737-745.

Lopes, B. C. (2013). Differences between victims of bullying and nonvictims on levels of paranoid ideation and persecutory symptoms, the presence of aggressive traits, the display of social anxiety and the recall of childhood abuse experiences in a Portuguese mixed clinical sample. *Clinical Psychology & Psychotherapy*, *20*, 254-266.

Matos, M., Pinto-Gouveia, J., & Gilbert, P. (2013). The effect of shame and shame memories on paranoid ideation and social anxiety. *Clinical Psychology & Psychotherapy*, *20*, 334-349.

Morrison, A. P., Gumley, A. I., Ashcroft, K., Manousos, I. R., White, R., Gillan, K., Wells, A., & Kingdon, D. (2011). Metacognition and persecutory delusions: Test of a metacognitive model in a clinical population and comparisons with non-patients. *British Journal of Clinical Psychology*, *50*, 223-233.

Morrison, A. P., Gumley, A. I., Schwannauer, M., Campbell, M., Gleeson, A., Griffin, E., & Gillan, K. (2005). The Beliefs about Paranoia Scale: preliminary validation of a metacognitive approach to conceptualizing paranoia. *Behavioural and Cognitive*

Psychotherapy, *33*, 153-164.

Nansel, T. R., Craig, W., Overpeck, M. D., Saluja, G., & Ruan, W. J. (2004). Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of Pediatrics & Adolescent Medicine*, *158*, 730-736.

Olweus, D (1993). *Bullying at school*. United Kingdom: Blackwell.

Olweus, D. (1996). *The revised Olweus bully/victim questionnaire*. University of Bergen, Research Center for Health Promotion.

Shakoor, S., McGuire, P., Cardno, A. G., Freeman, D., Plomin, R., & Ronald, A. (2015). A shared genetic propensity underlies experiences of bullying victimization in late childhood and self-rated paranoia in adolescence. *Schizophrenia Bulletin*, *41*, 754–763.

Shevlin, M., Boyda, D., Houston, J., & Murphy, J. (2015). Measurement of the psychosis continuum: Modelling the frequency and distress of subclinical psychotic experiences. *Psychosis*, *7*, 108–118.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics (4th ed.).* Boston, MA: Allyn and Bacon.

Thomas, H. J., Connor, J. P., & Scott, J. G. (2015). Integrating traditional bullying and cyberbullying: Challenges of definition and measurement in adolescents–A review. *Educational Psychology Review*, *27*, 135-152.

Westermann, S., Kesting, M. L., & Lincoln, T. M. (2012). Being deluded after being

excluded? How emotional regulation deficits in paranoia-prone individuals affect state paranoia during experimentally induced social stress. *Behavior Therapy, 43*, 329-340.

Wigman, J. T., Vollebergh, W. A., Raaijmakers, Q. A., Iedema, J., Van Dorsselaer, S., Ormel, J., & van Os, J. (2011). The structure of the extended psychosis phenotype in early adolescence—a cross-sample replication. *Schizophrenia bulletin*, *37*, 850-860.

Valmaggia, L. R., Day, F. L., Kroll, J., Laing, J., Byrne, M., Fusar-Poli, P., & McGuire, P. (2015). Bullying victimisation and paranoid ideation in people at ultra-high risk for psychosis. *Schizophrenia Research*, *168*, 68–73.

van Dam, D. S., van der Ven, E., Velthorst, E., Selten, J. P., Morgan, C., & de Haan, L. (2012). Childhood bullying and the association with psychosis in non-clinical and clinical samples: A review and meta-analysis. *Psychological Medicine*, *42*, 2463–2474.

van Os, J., Linscott, R. J., Myin-Germeys, I., Delespaul, P., & Krabbendam, L. (2009). A systematic review and meta-analysis of the psychosis continuum: Evidence for a psychosis proneness–persistence–impairment model of psychotic disorder. *Psychological Medicine, 39*, 179–195.

van Os, J., & Reininghaus, U. (2016). Psychosis as a transdiagnostic and extended phenotype in the general population. *World Psychiatry*, *15*, 118-124.

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

Appendix

Appendix 1.1

Systematic review submission guidelines to the Schizophrenia Bulletin Journal

Schizophrenia Bulletin is an international peer-reviewed journal that publishes unsolicited and invited reports and reviews of clinical and experimental research relating to all aspects of schizophrenia. First Person Accounts, Historical perspectives from patients and their families, are also welcome.

Editorial policies.

Manuscripts must be written in English and are accepted for consideration with an explicit understanding that the material has not been previously published in whole or substantial part and is not currently under consideration for publication by any other journal. All matters relating to the editorial policies of Schizophrenia Bulletin should be addressed in writing to Prof. William Carpenter, M.D., Editor-in Chief, Schizophrenia Bulletin Editorial Office, Maryland Psychiatric Research Center, PO Box 21247, Baltimore, MD 21228, USA. Manuscripts should be submitted through the journal's web-based manuscript submission system as instructed below.

Informed Consent and Ethics Committee Approval.

Manuscripts reporting experiments on patients or healthy volunteers must record the fact that the subjects' consent was obtained and include a statement that the research was approved by the responsible ethical committee of the institution (e.g., an institutional review board) and was consistent with the principles outlined in an internationally recognized standard for the ethical conduct of human research. Consent must be also recorded when photographs of patients are shown or other details given that could lead to the identification of the individuals. Authors may be required to provide tangible proof that the necessary permissions and consents have been obtained from study participants.

Originality.

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This page should consist of (i) the complete title of the manuscript, (ii) a running title not to exceed 50 characters including spaces, (iii) the full name of each author and the authors' institutional affiliations, (iv) name, complete address, telephone, fax, and e-mail address of the corresponding author, and (v) separate word counts of the abstract and text body. Please note that there can only be one corresponding author, per journal style

Manuscript Length.

Manuscripts should be concisely worded and should not exceed 5,000 words for major reviews, 4,000 words for regular articles, or 2,500 words for invited special features. The word count should include the abstract, text body, figure legends, and acknowledgments and must appear together with the abstract word count on the title page of the manuscript. Supplementary data, including additional methods, results, tables, or figures will be published online.

Abstract.

Provide a summary of no more than 250 words describing why and how the study, analysis, or review was done, a summary of the essential results, and what the authors have concluded from the data. The abstract should not contain unexplained abbreviations. Up to six key words that do not appear as part of the title should be provided at the end of the abstract.

Main Text.

Unsolicited original manuscripts reporting novel experimental findings should be comprised of these sections, in this order: Abstract, Introduction, Methods, Results, Discussion, Acknowledgments, References, and Figure Legends. Review articles must contain an abstract; however, the body of the text can be organized in a less structured format. Authors of review articles are encouraged to use section headers to improve the readability of their manuscript.

Number pages consecutively beginning with the title page. Spelling should conform to that used in Merriam-Webster's Collegiate Dictionary, eleventh edition. Clinical laboratory data may be expressed in conventional rather than Système International (SI) units.

Acknowledgments.

These should be as brief as possible but include the names of sources of logistical support.

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Tables should be created with the table function of a word processing program; spreadsheets are not acceptable. Include only essential data, and format the table in a manner in which it should appear in the text. Each table must fit on a single manuscript page and have a short title that is self-explanatory without reference to the text. Footnotes can be used to explain any symbols or abbreviations appearing in the table. Do not duplicate data in tables and figures.

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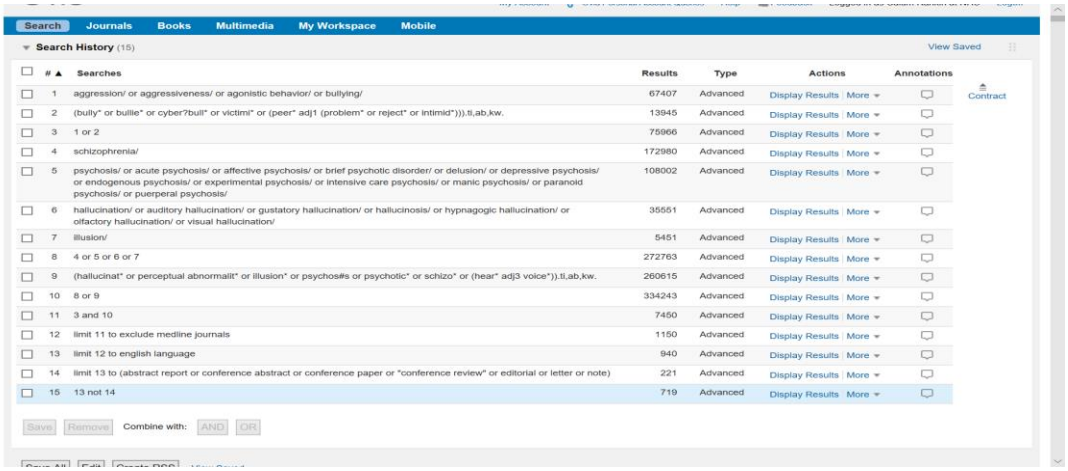
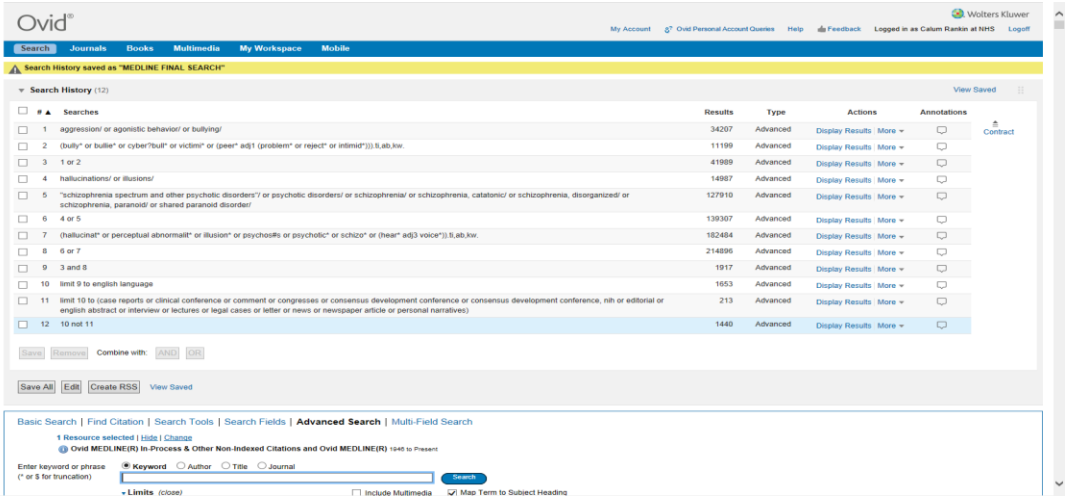
Appendix 1.2

The Systematic review database search strategies conducted on the 29th March 2018.

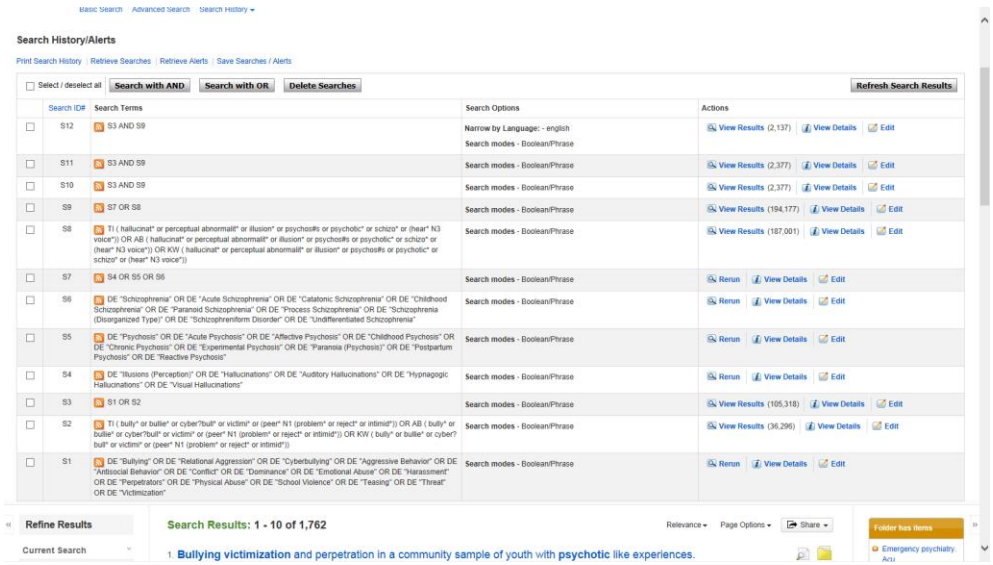
(i) Embase (OVID).



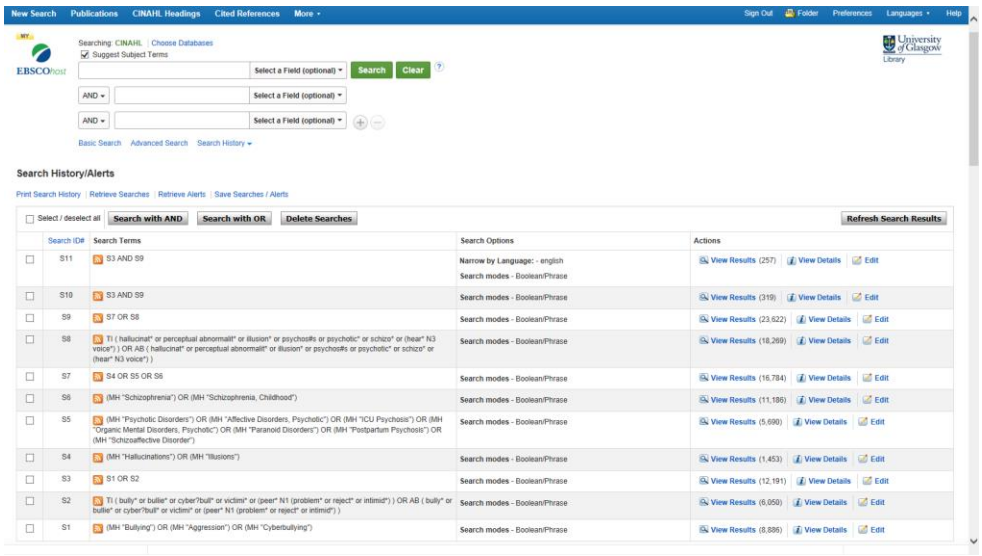
(ii) Medline (Ovid).



(iii) PsycINFO (EBSCO).



(iv) CINAHL (EBSCO).



Appendix 1.3

Quality rating scale.

Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (QATCCS) the National Heart, Lung and Blood Institute (NHLBI).

Criteria	Yes	No	Other (CD, NR, NA)*
1. Was the research question or objective in this paper clearly stated?			
2. Was the study population clearly specified and defined?			
3. Was the participation rate of eligible persons at least 50%?			
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?			
5. Was a sample size justification, power description, or variance and effect estimates provided?			
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?			
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?			
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?			
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
10. Was the exposure(s) assessed more than once over time?			
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
12. Were the outcome assessors blinded to the exposure status of participants?			

13. Was loss to follow-up after baseline 20% or less?			
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?			

Quality Rating (Good, Fair, or Poor)

*CD, cannot determine; NA, not applicable; NR, not reported

Appendix 1.4

Guidance for Assessing the Quality of Observational Cohort and Cross-Sectional Studies.

Question 1. Research question.

Did the authors describe their goal in conducting this research? Is it easy to understand what they were looking to find? This issue is important for any scientific paper of any type. Higher quality scientific research explicitly defines a research question.

Questions 2 and 3. Study population.

Did the authors describe the group of people from which the study participants were selected or recruited, using demographics, location, and time period? If you were to conduct this study again, would you know who to recruit, from where, and from what time period? Is the cohort population free of the outcomes of interest at the time they were recruited?

An example would be men over 40 years old with type 2 diabetes who began seeking medical care at Phoenix Good Samaritan Hospital between January 1, 1990 and December 31, 1994. In this example, the population is clearly described as: (1) who (men over 40 years old with type 2 diabetes); (2) where (Phoenix Good Samaritan Hospital); and (3) when (between January 1, 1990 and December 31, 1994). Another example is women ages 34 to 59 years of age in 1980 who were in the nursing profession and had no known coronary disease, stroke, cancer, hypercholesterolemia, or diabetes, and were recruited from the 11 most populous States, with contact information obtained from State nursing boards.

In cohort studies, it is crucial that the population at baseline is free of the outcome of interest. For example, the nurses' population above would be an appropriate group in which to study incident coronary disease. This information is usually found either in descriptions of population recruitment, definitions of variables, or inclusion/exclusion criteria.

You may need to look at prior papers on methods in order to make the assessment for this question. Those papers are usually in the reference list.

If fewer than 50% of eligible persons participated in the study, then there is concern that the study population does not adequately represent the target population. This increases the risk of bias.

Question 4. Groups recruited from the same population and uniform eligibility criteria.

Were the inclusion and exclusion criteria developed prior to recruitment or selection of the study population? Were the same underlying criteria used for all of the subjects involved? This issue is related to the description of the study population, above, and you may find the information for both of these questions in the same section of the paper.

Most cohort studies begin with the selection of the cohort; participants in this cohort are then measured or evaluated to determine their exposure status. However, some cohort studies may recruit or select exposed participants in a different time or place than unexposed participants, especially retrospective cohort studies–which is when data are obtained from the past (retrospectively), but the analysis examines exposures prior to outcomes. For example, one research question could be whether diabetic men with clinical depression are at higher risk for cardiovascular disease than those without clinical depression. So, diabetic men with depression might be selected from a mental health clinic, while diabetic men without depression might be selected from an internal medicine or endocrinology clinic. This study recruits groups from different clinic populations, so this example would get a "no."

However, the women nurses described in the question above were selected based on the same inclusion/exclusion criteria, so that example would get a "yes."

Question 5. Sample size justification.

Did the authors present their reasons for selecting or recruiting the number of people included or analyzed? Do they note or discuss the statistical power of the study? This question is about whether or not the study had enough participants to detect an association if one truly existed.

A paragraph in the methods section of the article may explain the sample size needed to detect a hypothesized difference in outcomes. You may also find a discussion of power in the discussion section (such as the study had 85 percent power to detect a 20 percent increase in the rate of an outcome of interest, with a 2-sided alpha of 0.05). Sometimes estimates of variance and/or estimates of effect size are given, instead of sample size calculations. In any of these cases, the answer would be "yes."

However, observational cohort studies often do not report anything about power or sample sizes because the analyses are exploratory in nature. In this case, the answer would be "no." This is not a "fatal flaw." It just may indicate that attention was not paid to whether the study was sufficiently sized to answer a prespecified question–i.e., it may have been an exploratory, hypothesis-generating study.

Question 6. Exposure assessed prior to outcome measurement.

This question is important because, in order to determine whether an exposure causes an outcome, the exposure must come before the outcome.

For some prospective cohort studies, the investigator enrols the cohort and then determines the exposure status of various members of the cohort (large epidemiological studies like Framingham used this approach). However, for other cohort studies, the cohort is selected based on its exposure status, as in the example above of depressed diabetic men (the exposure being depression). Other examples include a cohort identified by its exposure to fluoridated drinking water and then compared to a cohort living in an area without fluoridated water, or a cohort of military personnel exposed to combat in the Gulf War compared to a cohort of military personnel not deployed in a combat zone.

With either of these types of cohort studies, the cohort is followed forward in time (i.e., prospectively) to assess the outcomes that occurred in the exposed members compared to nonexposed members of the cohort. Therefore, you begin the study in the present by looking at groups that were exposed (or not) to some biological or behavioral factor, intervention, etc., and then you follow them forward in time to examine outcomes. If a cohort study is conducted properly, the answer to this question should be "yes," since the exposure status of members of the cohort was determined at the beginning of the study before the outcomes occurred.

For retrospective cohort studies, the same principal applies. The difference is that, rather than identifying a cohort in the present and following them forward in time, the investigators go back in time (i.e., retrospectively) and select a cohort based on their exposure status in the past and then follow them forward to assess the outcomes that occurred in the exposed and nonexposed cohort members. Because in retrospective cohort studies the exposure and outcomes may have already occurred (it depends on how long they follow the cohort), it is important to make sure that the exposure preceded the outcome.

Sometimes cross-sectional studies are conducted (or cross-sectional analyses of cohort-study data), where the exposures and outcomes are measured during the same timeframe. As a result, cross-sectional analyses provide weaker evidence than regular cohort studies regarding a potential causal relationship between exposures and outcomes. For cross-sectional analyses, the answer to Question 6 should be "no."

Question 7. Sufficient timeframe to see an effect.

Did the study allow enough time for a sufficient number of outcomes to occur or be observed, or enough time for an exposure to have a biological effect on an outcome? In the examples given above, if clinical depression has a biological effect on increasing risk for CVD, such an effect may take years. In the other example, if higher dietary sodium increases BP, a short timeframe may be sufficient to assess its association with BP, but a longer timeframe would be needed to examine its association with heart attacks.

The issue of timeframe is important to enable meaningful analysis of the relationships between exposures and outcomes to be conducted. This often requires at least several years, especially when looking at health outcomes, but it depends on the research question and outcomes being examined.

Cross-sectional analyses allow no time to see an effect, since the exposures and outcomes are assessed at the same time, so those would get a "no" response.

Question 8. Different levels of the exposure of interest.

If the exposure can be defined as a range (examples: drug dosage, amount of physical activity, amount of sodium consumed), were multiple categories of that exposure assessed? (for example, for drugs: not on the medication, on a low dose, medium dose, high dose; for dietary sodium, higher than average U.S. consumption, lower than recommended consumption, between the two). Sometimes discrete categories of exposure are not used, but

instead exposures are measured as continuous variables (for example, mg/day of dietary sodium or BP values).

In any case, studying different levels of exposure (where possible) enables investigators to assess trends or dose-response relationships between exposures and outcomes–e.g., the higher the exposure, the greater the rate of the health outcome. The presence of trends or dose-response relationships lends credibility to the hypothesis of causality between exposure and outcome.

For some exposures, however, this question may not be applicable (e.g., the exposure may be a dichotomous variable like living in a rural setting versus an urban setting, or vaccinated/not vaccinated with a one-time vaccine). If there are only two possible exposures (yes/no), then this question should be given an "NA," and it should not count negatively towards the quality rating.

Question 9. Exposure measures and assessment.

Were the exposure measures defined in detail? Were the tools or methods used to measure exposure accurate and reliable–for example, have they been validated or are they objective? This issue is important as it influences confidence in the reported exposures. When exposures are measured with less accuracy or validity, it is harder to see an association between exposure and outcome even if one exists. Also as important is whether the exposures were assessed in the same manner within groups and between groups; if not, bias may result.

For example, retrospective self-report of dietary salt intake is not as valid and reliable as prospectively using a standardized dietary log plus testing participants' urine for sodium content. Another example is measurement of BP, where there may be quite a difference between usual care, where clinicians measure BP however it is done in their practice setting (which can vary considerably), and use of trained BP assessors using standardized equipment (e.g., the same BP device which has been tested and calibrated) and a standardized protocol (e.g., patient is seated for 5 minutes with feet flat on the floor, BP is taken twice in each arm, and all four measurements are averaged). In each of these cases, the former would get a "no" and the latter a "yes."

Here is a final example that illustrates the point about why it is important to assess exposures consistently across all groups: If people with higher BP (exposed cohort) are seen by their providers more frequently than those without elevated BP (nonexposed group), it also increases the chances of detecting and documenting changes in health outcomes, including CVD-related events. Therefore, it may lead to the conclusion that higher BP leads to more CVD events. This may be true, but it could also be due to the fact that the subjects with higher BP were seen more often; thus, more CVD-related events were detected and documented simply because they had more encounters with the health care system. Thus, it could bias the results and lead to an erroneous conclusion.

Question 10. Repeated exposure assessment.

Was the exposure for each person measured more than once during the course of the study period? Multiple measurements with the same result increase our confidence that the exposure status was correctly classified. Also, multiple measurements enable investigators to look at changes in exposure over time, for example, people who ate high dietary sodium throughout the followup period, compared to those who started out high then reduced their intake, compared to those who ate low sodium throughout. Once again, this may not be applicable in all cases. In many older studies, exposure was measured only at baseline. However, multiple exposure measurements do result in a stronger study design.

Question 11. Outcome measures.

Were the outcomes defined in detail? Were the tools or methods for measuring outcomes accurate and reliable–for example, have they been validated or are they objective? This issue is important because it influences confidence in the validity of study results. Also important is whether the outcomes were assessed in the same manner within groups and between groups.

An example of an outcome measure that is objective, accurate, and reliable is death–the outcome measured with more accuracy than any other. But even with a measure as objective as death, there can be differences in the accuracy and reliability of how death was assessed by the investigators. Did they base it on an autopsy report, death certificate, death registry, or report from a family member? Another example is a study of whether dietary fat intake is related to blood cholesterol level (cholesterol level being the outcome), and the cholesterol level is measured from fasting blood samples that are all sent to the same laboratory. These examples would get a "yes." An example of a "no" would be self-report by subjects that they had a heart attack, or self-report of how much they weigh (if body weight is the outcome of interest).

Similar to the example in Question 9, results may be biased if one group (e.g., people with high BP) is seen more frequently than another group (people with normal BP) because more frequent encounters with the health care system increases the chances of outcomes being detected and documented.

Question 12. Blinding of outcome assessors.

Blinding means that outcome assessors did not know whether the participant was exposed or unexposed. It is also sometimes called "masking." The objective is to look for evidence in the article that the person(s) assessing the outcome(s) for the study (for example, examining medical records to determine the outcomes that occurred in the exposed and comparison groups) is masked to the exposure status of the participant. Sometimes the person measuring the exposure is the same person conducting the outcome assessment. In this case, the outcome assessor would most likely not be blinded to exposure status because they also took measurements of exposures. If so, make a note of that in the comments section.

As you assess this criterion, think about whether it is likely that the person(s) doing the outcome assessment would know (or be able to figure out) the exposure status of the study participants. If the answer is no, then blinding is adequate. An example of adequate blinding of the outcome assessors is to create a separate committee, whose members were not involved in the care of the patient and had no information about the study participants' exposure status. The committee would then be provided with copies of participants' medical records, which had been stripped of any potential exposure information or personally identifiable information. The committee would then review the records for prespecified outcomes according to the study protocol. If blinding was not possible, which is sometimes the case, mark "NA" and explain the potential for bias.

Question 13. Followup rate.

Higher overall followup rates are always better than lower followup rates, even though higher rates are expected in shorter studies, whereas lower overall followup rates are often seen in studies of longer duration. Usually, an acceptable overall followup rate is considered 80 percent or more of participants whose exposures were measured at baseline. However, this is just a general guideline. For example, a 6-month cohort study examining the relationship between dietary sodium intake and BP level may have over 90 percent followup, but a 20-year cohort study examining effects of sodium intake on stroke may have only a 65 percent followup rate.

Question 14. Statistical analyses.

Were key potential confounding variables measured and adjusted for, such as by statistical adjustment for baseline differences? Logistic regression or other regression methods are often used to account for the influence of variables not of interest.

This is a key issue in cohort studies, because statistical analyses need to control for potential confounders, in contrast to an RCT, where the randomization process controls for potential confounders. All key factors that may be associated both with the exposure of interest and the outcome–that are not of interest to the research question–should be controlled for in the analyses.

For example, in a study of the relationship between cardiorespiratory fitness and CVD events (heart attacks and strokes), the study should control for age, BP, blood cholesterol, and body weight, because all of these factors are associated both with low fitness and with CVD events. Well-done cohort studies control for multiple potential confounders.

Some general guidance for determining the overall quality rating of observational cohort and cross-sectional studies

The questions on the form are designed to help you focus on the key concepts for evaluating the internal validity of a study. They are not intended to create a list that you simply tally up to arrive at a summary judgment of quality.

Internal validity for cohort studies is the extent to which the results reported in the study can truly be attributed to the exposure being evaluated and not to flaws in the design or conduct of the study–in other words, the ability of the study to draw associative conclusions about the effects of the exposures being studied on outcomes. Any such flaws can increase the risk of bias.

Critical appraisal involves considering the risk of potential for selection bias, information bias, measurement bias, or confounding (the mixture of exposures that one cannot tease out from each other). Examples of confounding include co-interventions, differences at baseline in patient characteristics, and other issues throughout the questions above. High risk of bias translates to a rating of poor quality. Low risk of bias translates to a rating of good quality. (Thus, the greater the risk of bias, the lower the quality rating of the study.)

In addition, the more attention in the study design to issues that can help determine whether there is a causal relationship between the exposure and outcome, the higher quality the study. These include exposures occurring prior to outcomes, evaluation of a dose-response gradient, accuracy of measurement of both exposure and outcome, sufficient timeframe to see an effect, and appropriate control for confounding–all concepts reflected in the tool.

Generally, when you evaluate a study, you will not see a "fatal flaw," but you will find some risk of bias. By focusing on the concepts underlying the questions in the quality assessment tool, you should ask yourself about the potential for bias in the study you are critically appraising. For any box where you check "no" you should ask, "What is the potential risk of bias resulting from this flaw in study design or execution?" That is, does this factor cause you to doubt the results that are reported in the study or doubt the ability of the study to accurately assess an association between exposure and outcome?

The best approach is to think about the questions in the tool and how each one tells you something about the potential for bias in a study. The more you familiarize yourself with the key concepts, the more comfortable you will be with critical appraisal. Examples of studies rated good, fair, and poor are useful, but each study must be assessed on its own based on the details that are reported and consideration of the concepts for minimizing bias.

Appendix 1.5

Assessment of quality of each systematic review study.

Quality rating assessment of each study using the NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

	Quality rating for each question **Criteria: Yes/No/Other (Cannot Determine (CD), Not Reported (NR), Not Applicable (NA))**														**Quality rating**
Study **Cross-sectional**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	
Bentall et al (2012)	Yes	Yes	NR	Yes	NR	No	No	NA	No	NA	Yes	Yes	NA	Yes	**Fair**
Campbell & Morrison (2007)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	NA	Yes	Yes	NA	No	**Fair**
Carvalho et al (2015)	No	Yes	NR	Yes	No	No	No	Yes	Yes	NA	Yes	CD	NA	No	**Fair**
Catone et al (2017)	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	NA	Yes	Yes	NA	No	**Fair**
Morrison & Peterson (2003)	Yes	Yes	Yes	CD	No	No	No	NA	No	NA	Yes	Yes	NA	No	**Fair**
Moffa et al (2017)	Yes	Yes	NR	Yes	No	No	No	NA	No	Yes	Yes	Yes	NA	Yes	**Fair**
O'Connor et al (2017)	Yes	Yes	NR	Yes	NR	No	No	NA	No	NA	Yes	CD	NA	Yes	**Fair**
Shevlin et al (2015)	Yes	Yes	Yes	Yes	NR	No	No	NA	No	NA	Yes	Yes	NA	Yes	**Fair**
Stowkowy et al (2016)	Yes	Yes	Yes	Yes	NR	No	No	CD	No	NA	Yes	No	NA	No	**Fair**
Wickham & Bentall (2016)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	NA	Yes	Yes	NA	No	**Fair**

Yamasaki et al (2016)	Yes	Yes	No	Yes	NR	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	**Fair**
Cohort															
Catone et al (2015)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	No	Yes	No	Yes	Yes	**Good**
Singham et al (2017)	Yes	Yes	NR	Yes	NR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	**Good**
Shakoor et al (2014)	Yes	Yes	Yes	Yes	NR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	CD	No	**Good**

Appendix 2.1

Major research proposal submission guidelines for the Journal of Behavioural and Cognitive Psychotherapy.

Preparing Your Manuscript.

Articles must be under 5,000 words at the point of submission, excluding references, tables and figures (please see separate instructions for Brief Clinical Reports and Study Protocols). Manuscripts describing more than one study may exceed this limit but please make this clear to the editorial office in your cover letter.

Authors who want a blind review should indicate this at the point of submission of their article, omitting details of authorship and other identifying information from the main manuscript. Authors who do not omit this information will be assumed as submitting a non-blinded manuscript. Submission for blind review is encouraged. APA style should be followed throughout. http://www.apastyle.org/. All submissions should be submitted via this portal: http://mc.manuscriptcentral.com/babcp

Title Page.

The title should phrase concisely the major issues. Author(s) to be given with departmental affiliations and addresses, grouped appropriately. A running head of no more than 40 characters should be indicated and carried through the document as a header. This should be uploaded as a separate file.

Main Manuscript.

a. Abstract. Unless a Study Protocol (see separate guidelines), a 250 word abstract should be structured under the following five headings: Background, Aims, Method, Results, and Conclusions. Include up to six key words that describes the article.

b. Main Text. Following APA guidelines, this should contain the sections Introduction (including overview and theoretical background), Method (participants, design and data analyses), Results (described in detail with summary figures and tables), Discussion (including conclusions and limitations).

c. Required Sections

Acknowledgements.

You may acknowledge individuals or organizations that provided advice, support (non-financial). Formal financial support and funding should be listed in the following section.

Ethical statements.

All papers should include a statement indicating that authors have abided by the Ethical Principles of Psychologists and Code of Conduct as set out by the APA http://www.apa.org/ethics/code/. Authors should also confirm if ethical approval was needed,

by which organisation, and provide the relevant reference number. If no ethical approval was needed, the authors should state why.

Conflict of Interest.

Please provide details of all known financial, professional and personal relationships with the potential to bias the work. Where no known conflicts of interest exist, please include the following statement: "(Authors names) have no conflict of interest with respect to this publication".

Where conflict of interest, ethical statements and acknowledgements would compromise blind review, these may be anonymized from the main manuscript, but should be included in full on the separate title page which is not seen by reviewers. During the review process within the main text it is acceptable to replace identifiable information by using XXXXXX or similar.

Tables and Figures.

Manuscripts should not usually include more than five tables and/or figures. They should be supplied as separate files, but have their intended position within the paper clearly indicated in the manuscript. They should be constructed so as to be intelligible without reference to the text.

Figures. Tints and shading in figures may be used, but colour should be avoided unless essential. Although colour is possible in the online version, when designing a figure please ensure that any line variation/distinction demonstrated by colour can still be noted when in black and white. Colour figures are free of charge for online published articles but if authors wish figures to be published in colour in the print version the cost is £200. Numbered figure captions should be provided. All artwork should be submitted as separate TIFF format files.

The minimum resolution for submission of electronic artwork is:

Halftone Images (Black and White Photographs only): 300 dpi (dots per inch).

LineTone (Black and White Photographs plus Line Drawings in the same figure): 600 dpi.

Bitmap (Line Drawings only): 1200 dpi

Appendices.

If any, are intended for inclusion in the printed version of the manuscript and should be kept to a minimum. Please consider the use of supplementary information instead.

Supplementary Information – Online only.

Where unpublished material e.g. behaviour rating scales or therapy manuals are referred to in an article, copies should be submitted as an additional document (where copyright allows) to facilitate review.

Supplementary files can be used to convey supporting or extra information to your study, however, the main manuscript should be able to ‘stand-alone’ as these documents are not published in the printed issues.

Supporting documents are reviewed but not copyedited on acceptance of the article. They can therefore be submitted in PDF format, and include figures and tables within the text. There is no word limit for supporting online information.

Ethical Standards.

Behavioural and Cognitive Psychotherapy is committed to actively investigating any cases of suspected misconduct, even in the event of the manuscript being withdrawn. All manuscripts are screened for plagiarism before being accepted for publication. All editors and reviewers are asked to disclose any conflict of interest when they are assigned a manuscript. If deemed necessary, alternative or additional opinions will be sought in order to maintain the balance of fair and thorough peer review.

Editors for Behavioural and Cognitive Psychotherapy (BCP) can choose to recommend submission of a manuscript not suitable for BCP to the Cognitive Behavioural Therapist (tCBT), thus effectively submitting to both journals sequentially. This allows the automatic transfer of the manuscript files, including, as appropriate, transmission of reviewers’ comments (at the discretion of the handling Editor) where this seems likely to facilitate manuscript handling. Selection of a manuscript to be transferred to tCBT is at the Editor’s discretion, and is then subject to the peer-review process of that journal. No guarantee of suitability for tCBT or acceptance is made. Those papers not passed on to tCBT by a BCP Editor can be submitted by the author via the usual channels.

Appendix 2.2

Major research project proposal.

Doctorate in Clinical Psychology
University of Glasgow
Institute of Health and Wellbeing
Gartnavel Royal Hospital
Glasgow
G12 0XH

MAJOR RESEARCH PROJECT PROPOSAL

Exploring the possible association of childhood peer bullying and paranoid thinking in clinical and non-clinical adolescent samples

Matriculation number: 2230369R

Academic Supervisors:
Professor Andrew Gumley, University of Glasgow
Co-academic supervisor: Dr Ruchika Gajwani, Greater Glasgow & Clyde NHS
Field Supervisors:
Dr Diane Fraser, Clinical Psychologist, NHS Greater Glasgow & Clyde

Protocol version 0.6

Date of submission 28-11-17

Word count: 3,526

Abstract

Introduction

Paranoid thinking (PT) encompasses beliefs regarding perceived threat or harm towards the self by others. The experience of PT ranges in severity and is reported in non-clinical and clinical adult, and adolescent, samples. Studies have identified that PT is associated with increased levels of negative beliefs about paranoia, social anxiety, shame, and emotion dysregulation. Evidence suggests that childhood peer bullying (CPB), defined as a negative action involving intention, repetition, and power, may be associated with symptoms of psychosis, but this is limited.

Aims and hypotheses

The aims of this study are to explore the association between CPB and PT, compare the severity of PT between the clinical and non-clinical samples, and to establish the robustness of any association between CPB and PT by controlling for the variables of negative beliefs about paranoia, social anxiety, shame and emotion dysregulation across the clinical and non-clinical adolescent samples.

Method

Upon receipt of ethical approval and in accordance with NHS GG&C policy and procedures, data will be collected from a set of questionnaires following participant consent. This will include two 16-18 year old participant groups: A clinical sample, during interview with the Researcher, and a non-clinical sample, via an online survey using the Bristol Online Survey tool. Data will be anonymised and stored on SPSS on the password encrypted University of Glasgow server.

Applications

This study hopes to further an understanding of the association between CPB and PT in adolescence, which will inform clinical practice and research.

Exploring the possible association of childhood peer bullying and paranoid thinking in clinical and non-clinical adolescent samples

Paranoid thinking as a continuum

The experience of psychosis encompasses altered perceptions and interpretations of reality and is considered multi-dimensional and complex (van Dam et al., 2012); primary symptoms include hallucinations and delusions ("National Health Service Choices", 2016). The core feature of paranoid thinking (PT) is widely understood where the individual believes that harm is occurring, or is going to occur, to him or her, and that the individual believes the persecutor has the intention to cause harm (Freeman & Garety, 2000). PT exists on a continuum ranging from normal 'non-clinical' experiences – tending to reflect social concerns – to more extreme 'clinical' forms, which occur within psychotic disorders such as paranoid delusions (Wigman et al., 2011).

Studies have indicated PT is experienced in clinical and non-clinical samples. John and colleagues' (2004) British National Comorbidity study identified approximately 21% of a group of 8,850 adults in the general population reported PT over a period of one year. Kelleher and colleagues' (2012) systematic review identified 19 population studies that reported psychotic symptoms among children aged 9-12 (17%) and adolescents aged 13-18 (7.5%). Psychotic symptoms are therefore relatively common for adolescents, and identified as a risk factor for developing more severe psychotic disorders (Poulton et al., 2000; Welham et al., 2009). It is therefore important to more specifically identify the presence and severity of PT in both clinical and non-clinical adolescent populations.

Adverse childhood experiences (ACE) have been found to be associated with emerging symptoms of psychosis, including PT (van Dam et al., 2012). These findings have focused primarily on sexual and physical abuse but less so on the experience of childhood peer

bullying (CPB) (Cristobal-Narvaez et al., 2015); argued to be an ACE as it has been shown to lead to symptoms of trauma (Campbell & Morrison, 2007).

Childhood peer bullying

A quote by Olweus– the pioneer of bullying research - defined peer bullying as

"Exposure, repeatedly and over time, to negative actions on the part of one or more other students. A negative action is when someone intentionally inflicts, or attempts to inflict, injury or discomfort upon one another" (Olweus, 1993)

CPB consists of traditional, and cyber, forms of negative action – verbal, physical, relational – involving intention, repetition and power imbalance (Thomas, Connor & Scott, 2015; van Dam et al., 2012). It is a global problem, affecting approximately one third of young people in British schools (Campbell & Morrison, 2007), leading to potential mental health difficulties (van Dam et al., 2012).

Childhood peer bullying and paranoid thinking

Previous research evidence is starting to identify an association between the CPB and emerging symptoms of psychosis in adolescence and adulthood in clinical and non-clinical samples (Ashford, Ashcroft & Maguire, 2012; Cristobal-Narvaez, 2015; Lopes, 2013; Schemer et al, 2009; van Dam et al., 2011). Studies have shown severity of psychotic symptoms is associated with both the greater frequency (Lataster et al., 2006) and severity (Schreier et al., 2009) of bullying. Morrison and colleagues (2003) theorise that CPB creates

a vulnerability to threat from others, and therefore acts as a predisposing factor for developing PT.

Established associations have found that PT is associated with higher negative beliefs about paranoia (Gumley et al., 2011; Morrison et al., 2011), social anxiety (Ashford, Ashcroft & Maguire, 2012; Gilbert et al., 2005; Lopes, 2013), shame (Matos, Pinto-Gouveia, & Gilbert, 2013), and emotion dysregulation (Westermann, Kesting, & Lincoln, 2012). Of the 14 studies included by van Dam and colleagues (2012), 12 studies specifically investigated the association between bullying and PT (one study explored the relationship between bullying and hallucinations, and the other study investigated the association between bullying and substance use). Of these studies only two studies controlled for at least one established association (negative beliefs about paranoia in one study, and emotion regulation in the other). Therefore, this study would improve on this body of work by (a) including both a clinical and a non-clinical sample and (b) controlling for established predictors of negative beliefs about paranoia, social anxiety, shame and emotion dysregulation.

Aims and hypotheses

Aims

The primary aim of this study to explore the association between CPB and PT in a clinical and non-clinical adolescent sample. A secondary aim is to compare the severity of PT between the clinical and non-clinical adolescent samples. A further secondary aim is to establish the robustness of any association between CPB and PT by controlling the dependent variables in the clinical and non-clinical adolescent samples.

Hypotheses

Primary hypothesis.

- There will be a significant positive correlation between the frequency of CPB and severity of PT across the clinical and non-clinical adolescent samples.

Secondary hypotheses.

- There will be a greater severity of PT in the clinical adolescent sample compared to the non-clinical adolescent sample. This will be indicated by the Green Paranoid Thoughts Questionnaire.
- There will be an association between CPB and PT in the clinical and non-clinical adolescent samples after controlling for the variables of negative beliefs about paranoia, social anxiety, internal and external shame, and emotion dysregulation.

Plan of investigation

Participants

Clinical sample.

Inclusion criteria.

- Young people aged 16 to 18 years old.
- Engaged within NHS GG&C CAMHS.
- Capacity to consent, determined by their Clinician.
- Ability to read and understand the English language.

Exclusion criteria.

- Do not have capacity to consent, determined by their Clinician.

Non-clinical sample

Inclusion criteria.

- Young people aged 16 to 18 years old.
- Access to a computer and internet use.
- Ability to read and understand the English language.

Exclusion criteria.

- Current or past receipt of help from specialist adolescent mental health services.

Recruitment procedures

Clinical sample. The clinical sample will be recruited through NHS GG&C CAMHS. The research study will be advertised using a Study Flyer, which will be disseminated in CAMHS reception waiting areas and given to Clinicians to give potential participants**.** With participants' permission (they will be asked to complete a "Permission to Be Contacted" Consent Form), Clinicians will inform the Researcher of their expressed interest. With permission, the Researcher will contact potential participants. This will include posting a Cover Letter A (clinical version), Participant Information Sheet A (clinical version) to read, outlining the nature of the study and what would be involved. An appointment will be offered, either by telephone or post, to meet the Researcher and proceed with the study. Potential participants will be asked to read and sign the Consent Form A (clinical version) at the beginning of the appointment. This will enable them to proceed to complete the set of standardised questionnaires in session, with the Researcher present. The appointment is expected to be approximately 45-60 minutes in duration, which accounts for regular break intervals and space for questions. There will be a Debrief summary (clinical version) provided at the end of the appointment.

Non-clinical sample. An online survey of the study will be advertised using Twitter (https://twitter.com/BullyingStudy) and Gumtree (https://my.gumtree.com/manage-account/). The advertisements will provide a brief explanation about the study, including the inclusion and exclusion criteria, and a URL link to the study (https://admin.onlinesurveys.ac.uk/account/glasgow/preview/mental-health-study-young-peoples-experience-of-bullying?referer=distribute).

The online study will be uploaded using the Bristol Online Survey. It will contain the non-clinical versions of the Cover Letter, Participant Information Sheet and Consent Form. Following consent, participants will be asked to complete a set of standardised questionnaires. The set of questionnaires will take approximately 30-40 minutes to complete in one sitting. The online study makes it clear that participation is voluntary, and they can withdraw at anytime. Although it is encouraged to answer all questions they can leave specific questions unanswered should they find too distressing. Participants will be able to read the Debrief Summary, which will include a reminder of the list of support organisation contact details, at the end of the online survey.

Measures

Demographics. A Demographic Questionnaire, which will contain questions ascertaining gender, age, ethnicity, citizenship, accommodation and employment status. All questions are tailored to suit a British audience.

Paranoid thinking. The 32-item *Green Paranoid Thoughts Questionnaire* (GPTQ; Green et al., 2008) will be included to measure level of PT. It has been shown to have good internal consistency and validity.

Peer bullying. Although there are a range of self-report questionnaires to assess bullying, the Revised-Olweus Bully Victim Questionnaire (Revised OBVQ; Olweus,1996) is the most popular method. It has been shown to have robust psychometric properties (Thomas, Connor & Scott, 2015). Literature suggests that it is important to measure traditional forms (i.e. physical, verbal and relational) and cyberbullying simultaneously, given that they have been found to mostly co-occur (Thomas, Connor & Scott, 2015). The Revised OBVQ is a definition based scale and, unlike other bullying questionnaires, it manages to a) measure both traditional and cyberbullying and b) includes multi-item scale composition and c) comprises definitional criteria for the three widely accepted aspects of bullying; intention, repetition (this is operationalised) and imbalance of power (Thomas, Connor & Scott, 2015).

This study will use the shorter, adapted version of the Revised OBVQ called the 'Bullying Questionnaire,' which will be used for the purpose of this study. It will ask participants a **total of 12** questions about peer bullying a) six questions in the last 6 months and b) 6 questions across the lifespan.

Beliefs about paranoia. The 18-item *Beliefs about Paranoia Scale* (BaPS; Gumley et al., 2011). Items were generated on the basis of clinical knowledge of patients experiencing persecutory delusions, and included positive and negative interpretations (Morrison et al., 2011).

Social anxiety. The 20-item *The Social Interaction Anxiety Scale* (SIAS; Heimberg et al., 1993) will be administered. The SIAS has been demonstrated to discriminate between social anxiety, other anxiety disorders, and community samples.

Shame. The study proposes to use the *Other as Shamer Scale-revised* (OSS-2; Matos et al., 2013), which is an 18-item self-report scale that measures judgment about the self evaluated

by others, and the *Experience of Shame Scale* (ESS; Andrews, Qian, & Valentine, 2002), which is a 25-item scale that assesses internal shame.

Emotion regulation. The *Difficulties in Emotion Regulation Scale – Short Form* (DERS-SF) is an 18-item self report measure that is a widely used reliable and valid measure to assess emotion regulation level in adults and adolescents (Kaufman et al., 2016).

Design

The study will implement a cross sectional design and ask the clinical and non-clinical adolescent samples to complete a set of self-report standardised questionnaires.

Research procedures

Clinical sample. Identified potential participants will be given a week to read the Participant Information Sheet. They will be provided with the Researcher's email address should they have any questions. This will include a list of organisations that offer additional sources of information, advice and support: Child-Line, the Samaritans, Breathing Space, National Bullying Helpline, and Papyrus (Prevention of Young Suicide) – HOPELinkUK telephone service.

An appointment will be arranged for potential participants to meet the Researcher at the CAMHS they attend, in a private and secure booked interview room. They will be asked to read, agree to, and sign the Consent Form and will be able to ask the Researcher questions they may have. Following receipt of consent, participants will be asked to complete the set of questionnaires, with the Researcher present. During this process, they will have opportunity to have breaks and raise research, or clinical, related questions. The Researcher will follow local NHS GG&C CAMHS policy and procedures should there be issues regarding participant risk. They will be encouraged to discuss clinical matters further with their

Clinicians. A debrief summary will be provided in addition to space to discuss any reflections at the end of the session. The debrief summary will repeat the same list of support organisations previously provided, and a URL link to information, advice and suggestions to manage bullying on Scotland's anti-bullying campaign, "Respect-me," website (https://respectme.org.uk).

Non-clinical sample. Individuals will be able to decide whether they wish to access the study by using the URL link provided in the social media advertisements. The study materials will be available online using the BOS. The online survey will contain the Cover Letter (B), and Participant Information Sheet (B). The PIS-B will state that this is a research study and can contact the Researcher, using the email address provided, should they have any research-related questions. It will signpost to the relevant support organisations provided (same list as the clinical sample), including 24/7 telephone support offered. They will also be signposted to seek advice and support from their GP for any issues relating to their health. Potential participants will then be asked to read the Consent Form (B) and tick each box to indicate that they understand and agree to each statement.

Following consent, participants will be able to complete the set of questionnaires online. A debrief summary will be available after the set of questionnaires. Similar to the clinical version of the debrief summary, this will restate the list of support organisations and information on the 'respect me' anti-bullying campaign webpage.

Data analysis

Clinical sample. The consent forms ("Permission To Be Contacted" Consent Form, and Consent Form A [clinical version]) will be participant-identifiable documents, and will be stored in a secure and locked filing cabinet within the University of Glasgow's Clinical Psychology Department. The completed questionnaires will be anonymised by assigning

each set with a unique code. They will be held separately in a secure and locked filing cabinet within the University of Glasgow's Institute of Health and Wellbeing Any transfer of data will be done so in a locked briefcase between CAMHS and the University of Glasgow.

Non-clinical sample. Participant data will be stored on the password secured BOS personal account of the Chief Investigator.

Clinical and non-clinical sample data. Each participant will be assigned a unique code. The participant non-identifiable data will be entered onto SPSS using a password encrypted University of Glasgow server.

This data will be able to be accessed by the Researcher and supervisors of the research study. Representatives of the study Sponsor, NHS GG&C, may access the information to make sure that the study is being conducted correctly. The data will be retained for 10 years as per instruction in the Glasgow Universities data management guidance booklet.

Prior to formal data analysis, data will be evaluated to ensure that it meets the assumptions for parametric data analysis. Assuming data are parametric, comparison between the two groups in terms of PT will be made using independent sample t-tests. Associations between Bullying and PT will be conducted using Pearson Correlations. Analysis of the relationship between CPB and PT, controlling for covariates will be conducted using Linear Multiple Regression (LMR). Prior to undertaking LMR significant ($p<0.05$) associations between potential predictor variables and PT will be selected for inclusion in the statistical model. The study will identify the most salient and relevant covariates. The study will identify statistically significant associations between the covariates of social anxiety, shame, social anxiety, beliefs about paranoia and emotion regulation and the dependent variable paranoid thoughts. Only significant covariates will be selected for the LMR in order to avoid overfitting the statistical model.

Justification of sample size

A sample size of 70 (35 participants in each group) was ascertained using a series of G-power analyses based on a range of medium to large effect size, and setting the α error probability at 0.05, and Power ($1 - \beta$ err prob) of 0.8 (see Appendix A). I selected medium effect sizes as this would be a clinically meaningful difference.

Settings and equipment.

Clinical sample. The research will be carried out within a CAMHS setting and equipment will include enough copies of each questionnaire, stationary, consent forms, and access to computer software (Microsoft word, excel, and SPSS) for data collection, analysis and report writing.

Non-clinical sample. The research will be carried out by participants in their own environment with access to a computer. They will be able to complete study using BOS. This is the Chief Investigators password secure account and is licenced by the University of Glasgow.

Health and safety issues

Researcher safety issues

Researcher safety will be managed by adherence to local GG&C policy and ethical procedures, communicating effectively with CAMHS, and regular supervision.

Participant/ethical issues

Clinical sample. Potential participants will have sufficient time to read and develop an understanding of the study using the PIS-A, in addition to having opportunity to contact the research team with questions regarding the study. They will be invited to complete the

Consent Form-A, with the Researcher present should they have any questions. Following consent, participants will be given sufficient time to complete the questionnaires, including breaks and time for questions, with the Researcher present. The appointments will be scheduled on the CAMHS premises they already attend.

The researcher will work closely with CAMHS and follow local clinical policies, protocols and Standard Operating Procedures. Although the likelihood of this is low, the researcher will provide opportunity to discuss their experiences of the research and communicate any clinical needs, with consent, to their Clinician. In addition, it is possible that the young person discloses information regarding trauma and abuse by others that indicates a current child protection risk. In this event, NHS Guidelines on Child Protection will be followed. Finally, it is possible that participants disclose information pertaining to risk of harm to self or others necessitating breaking confidentiality. In both cases, the Participant Information Sheet will explain clearly the limits of confidentiality. The researchers will endeavour to ensure that in the event of information being disclosed that necessitates communication to others, the young person will be given the opportunity and support to communicate this themselves or it will be clearly explained the rationale for further disclosure.

Non-clinical sample. The study will be advertised using media advertisements. Potential participants will be able to access the online study. This will contain a cover letter and a Participant Information Sheet, which will outline the nature of the study and what it would involve. They will then be able to read, agree-to, and sign the online Consent Form to ensure they have a good understanding of participation in this study. It will be made explicit in the consent for the non-clinical control group that past or current engagement with specialist adolescent mental health services is an exclusion criterion for participation in this study. Following consent, participants will be asked to complete the set of standardised

questionnaires online, which will take approximately 30-40 minutes to complete in one sitting.

I have considered that some of the questions may trigger distressing memories regarding bullying or other difficult experiences. The information will highlight that the participants do not have to answer questions they may find too sensitive, and they can withdraw from the study at anytime. The Participant Information Sheet will contain a set of support organisation contact details, including 24/7 out of hour access to telephone support. They will also be advised to seek support from their GP should they have concerns or issues regarding their mental health. The document will also include description and contact details of the Scottish anti-bullying campaign – "Respect me" – website. This includes a video resource that discusses helpful coping strategies to respond effectively to being bullied. These are accessible, practical and possible for 16-18 year olds in the general population. A Debrief Summary will be provided at the end of the online survey, which will restate the support organisations and their contact details.

Dissemination plan

This research study represents the thesis as part of the Doctorate in Clinical Psychology programme at the University of Glasgow. The research findings will be written in the form and structure of a scientific report and submitted to the Doctorate in Clinical Psychology Programme Research Team. It may also be disseminated in scientific journals and presented at conferences. Participants will be able to tick whether they would like to be notified about research findings in the consent form.

References

Andrews, B., Qian, M., & Valentine, J. D. (2002). Predicting depressive symptoms with a new measure of shame: The Experience of Shame Scale. *British Journal of Clinical Psychology*, *41*(1), 29-42.

Ashford, C., Ashcroft, K., & Maguire, N. (2012). *Emotions, traits and negative beliefs as possible mediators in the relationship between childhood experiences of being bullied and paranoid thinking in a non-clinical sample* (Doctoral dissertation, University of Southampton)

Bebbington, P. E., Bhugra, D., Brugha, T., Singleton, N., Farrell, M., Jenkins, R,. & Meltzer, H. (2004). Psychosis, victimisation and childhood disadvantage. *The British Journal of Psychiatry*, *185*(3), 220-226.

Campbell, M. L., & Morrison, A. P. (2007). The relationship between bullying, psychotic-like experiences and appraisals in 14–16-year olds. *Behaviour research and therapy*, *45*(7), 1579-1591.

Cristóbal-Narváez, P., Sheinbaum, T., Ballespí, S., Mitjavila, M., Myin-Germeys, I., Kwapil, T. R., & Barrantes-Vidal, N. (2016). Impact of adverse childhood experiences on psychotic-like symptoms and stress reactivity in daily life in nonclinical young adults. *PloS one*, *11*(4), e0153557.

Freeman, D., & Garety, P. A. (2000). Comments on the content of persecutory delusions: does the definition need clarification? *British Journal of Clinical*

Psychology, *39*(4), 407-414.

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of the positive symptoms of psychosis. *Psychological medicine*, *31*(02), 189-195.

Gilbert, P., Boxall, M., Cheung, M., & Irons, C. (2005). The relation of paranoid ideation and social anxiety in a mixed clinical population. *Clinical Psychology & Psychotherapy*, *12*(2), 124-133.

Green, C. E. L., Freeman, D., Kuipers, E., Bebbington, P., Fowler, D., Dunn, G., & Garety, P. A. (2008). Measuring ideas of persecution and social reference: the Green et al. Paranoid Thought Scales (GPTS). *Psychological medicine*, *38*(01), 101-111.

Gross, C. A., & Hansen, N. E. (2000). Clarifying the experience of shame: The role of attachment style, gender, and investment in relatedness. *Personality and individual differences*, *28*(5), 897-907.

Gumley, A. I., Gillan, K., Morrison, A. P., & Schwannauer, M. (2011). The development and validation of the Beliefs about Paranoia Scale (Short Form). *Behavioural and Cognitive Psychotherapy*, 39(01), 35-53.

Heimberg, R. G., Mueller, G. P., Holt, C. S., Hope, D. A., & Liebowitz, M. R. (1992). Assessment of anxiety in social interaction and being observed by others: The Social Interaction Anxiety Scale and the Social Phobia Scale. *Behavior Therapy*, *23*(1), 53-73.

Johns, L. C., Cannon, M., Singleton, N., Murray, R. M., Farrell, M., Brugha, T., & Meltzer, H. (2004). Prevalence and correlates of self-reported psychotic symptoms in the British population. *The British Journal of Psychiatry*, *185*(4), 298-305.

Kaufman, E. A., Xia, M., Fosco, G., Yaptangco, M., Skidmore, C. R., & Crowell, S. E. (2016). The Difficulties in Emotion Regulation Scale Short Form (DERS-SF): validation and replication in adolescent and adult samples. *Journal of Psychopathology and Behavioral Assessment*, *38*(3), 443-455.

Kelleher, I., Connor, D., Clarke, M. C., Devlin, N., Harley, M., & Cannon, M. (2012). Prevalence of psychotic symptoms in childhood and adolescence: a systematic review and meta-analysis of population-based studies. *Psychological medicine*, *42*(09), 1857-1863.

Lataster, T., van Os, J., Drukker, M., Henquet, C., Feron, F., Gunther, N., & Myin-Germeys, I. (2006). Childhood victimisation and developmental expression of non-clinical delusional ideation and hallucinatory experiences. *Social psychiatry and psychiatric epidemiology*, *41*(6), 423-428.

Lopes, B. C. (2013). Differences between victims of bullying and nonvictims on levels of paranoid ideation and persecutory symptoms, the presence of aggressive traits, the display of social anxiety and the recall of childhood abuse experiences in a Portuguese mixed clinical sample. *Clinical psychology & psychotherapy*, *20*(3), 254-266.

Matos, M., Pinto-Gouveia, J., & Gilbert, P. (2013). The effect of shame and shame memories on paranoid ideation and social anxiety. *Clinical Psychology & Psychotherapy*, 20(4), 334-349.

Morrison, A. P., Gumley, A. I., Ashcroft, K., Manousos, I. R., White, R., Gillan, K., Wells, A., & Kingdon, D. (2011). Metacognition and persecutory delusions: Test of a metacognitive model in a clinical population and comparisons with non-patients. British Journal of Clinical Psychology, 50(3), 223-233.

Murphy, E. K., Tully, S., Pyle, M., Gumley, A. I., Kingdon, D., Schwannauer, M., Turkington, D., & Morrison, A.P. (2017). The beliefs about Paranoia Scale: Confirmatory factor analysis of a metacognitive model of paranoia in a clinical sample. *Psychiatry Research*, 248, 87-94.

Olweus, D (1993). *Bullying at school*. Blackwell, Oxford, United Kingdom.

National Health Service (2016, December 23). Psychosis. Retrieved from http://www.nhs.uk/conditions/psychosis/Pages/Introduction.aspx#symptoms

Thomas, H. J., Connor, J. P., & Scott, J. G. (2015). Integrating traditional bullying and cyberbullying: Challenges of definition and measurement in adolescents–A review. *Educational psychology review*, *27*(1), 135-152.

Westermann, S., Kesting, M. L., & Lincoln, T. M. (2012). Being deluded after being excluded? How emotion regulation deficits in paranoia-prone individuals affect

state paranoia during experimentally induced social stress. *Behavior therapy*, *43*(2), 329-340.

Wigman, J. T., Vollebergh, W. A., Raaijmakers, Q. A., Iedema, J., Van Dorsselaer, S., Ormel, J., & van Os, J. (2011). The structure of the extended psychosis phenotype in early adolescence—a cross-sample replication. *Schizophrenia bulletin*, *37*(4), 850-860.

van Dam, D. S., van der Ven, E., Velthorst, E., Selten, J. P., Morgan, C., & de Haan, L. (2012). Childhood bullying and the association with psychosis in non-clinical and clinical samples: a review and meta-analysis. *Psychological medicine*, *42*(12), 2463-2474.

Appendices (of MRP proposal)

Appendix A

Justification of sample size calculations

Hypothesis 1

Figure 1.

Priori calculation of required total sample size as a function of medium to large effect size based on Pearson Correlational analysis

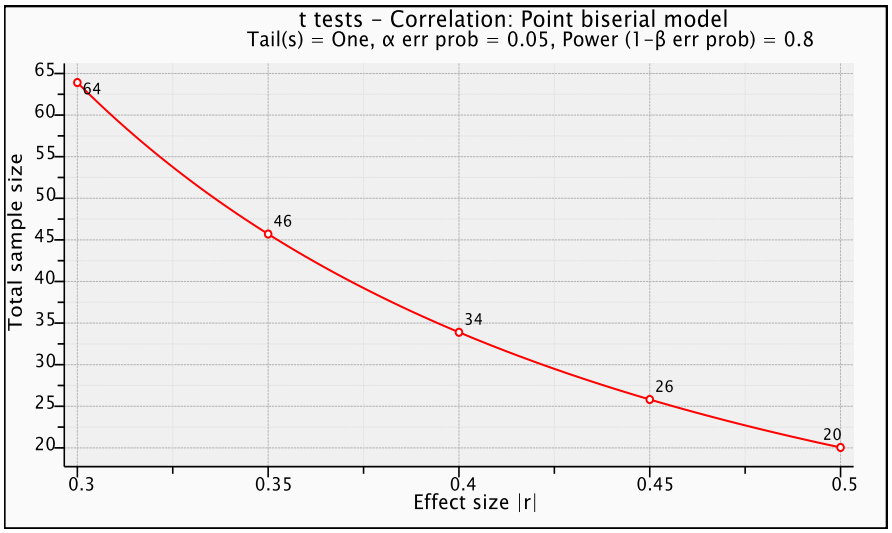


Figure 1 indicates the output from G-power analysis to test hypotheses 1 (one-tailed). This is based on range of medium (Cohen's d = 0.3) to large (Cohen's d = 0.5) effect sizes, setting α error probability at .05, and power (1 – β err prob) of 0.8. The calculation yields a total sample size (across the clinical and the non-clinical groups) in the range of 20 to 64 participants, which is based on a medium to large effect size.

Hypotheses 2

Figure 2.

Priori calculation of required total sample size as a function of medium to large effect size based on t-test independent sample analysis.

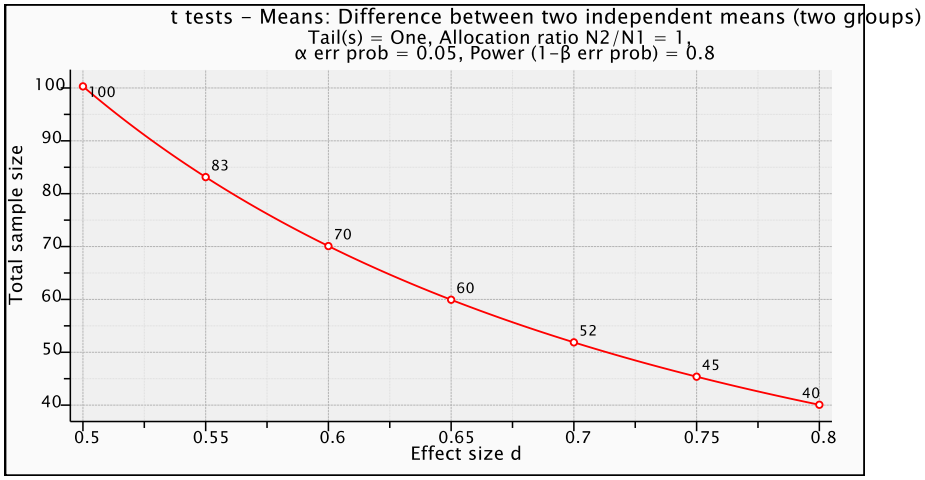


Figure 2 indicates the output from G-power analysis to test hypotheses 2 (one-tailed). This is based on the range of medium (Cohen's $d = 0.5$) to large (Cohen's $d = 0.8$) effect size, setting α error probability at .05, and power ($1 - \beta$ err prob) of 0.8. The calculation yields a total sample size in the range of 102 for medium to large effect sizes, respectively. Based on Cohen's d of 0.6 the required sample size is 70, which would seem reasonable.

Hypothesis 3

Figure 3.

Priori calculation of required total sample size as a function of medium to large effect size based on multiple regression analysis

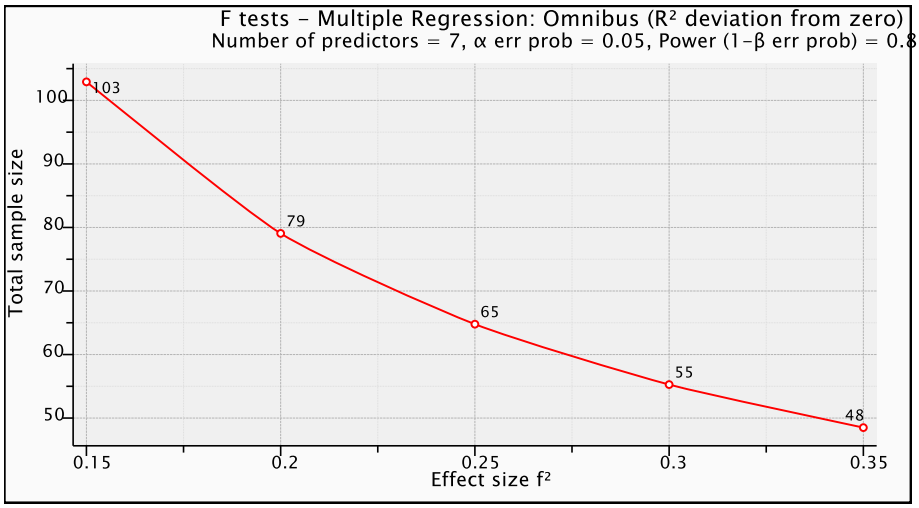


Figure 3 indicates the output from G-power analysis to test hypothesis 3 (two-tailed), based on 7 predictor variables (current peer bullying, lifetime peer bullying, internal shame, external shame, social anxiety, negative beliefs about paranoia, emotion regulation). This is based on range of medium (f^2 = 0.15) to large (f^2 = 0.35) effect sizes, setting α error probability at .05, and power (1 – β err prob) of 0.8. The calculation yields a total sample size in the range of 48 to 103 participants, for medium to large effect sizes, respectively.

Based on the calculations, it would seem reasonable to recruit a sample size of 70 (including the clinical and non-clinical groups) to achieve the calculated power of 0.8, the α error probability of 0.05, and within the range of medium to large effect sizes.

Plain English Summary.

Exploring the association between childhood peer bullying and paranoid thinking in both a clinical and non-clinical adolescent sample

(Word count: 476)

Background

Psychosis is a mental health condition that alters perceptions and interpretations of a person's reality including hallucinations and delusions. A core feature of delusions referred to as paranoia thinking (PT) consists of worries and anxiety about being harmed or threatened by others, even when there is little evidence to suggest this. Literature indicates that PT is relatively common in the general population, including young people. Research evidence suggests that adverse childhood experiences including sexual and physical abuse are associated with emerging symptoms of PT. Research has focused less on the effects of another adverse childhood experience called peer bullying. Childhood peer bullying (CPB) includes any negative action by peers that is intended, repeated and creates a power imbalance. It is global problem, and affects about one third of young people in British schools leading to mental health difficulties. Studies have identified PT is associated with more negative beliefs about paranoia, social anxiety, shame and poorer abilities to regulate emotions.

Aims and questions

The study aims to compare the severity of PT in clinical and non-clinical adolescent samples; to explore the association between CPB and PT in these groups and to finally establish the strength of this relationship by removing the effects of negative beliefs about paranoia, social anxiety, shame and emotion dysregulation.

- Is there an association between CPB and PT?
- Is the severity rate of PT higher in the clinical, compared to the non-clinical, sample?
- Is there an association between CPB and PT when the effects of negative beliefs about paranoia, social anxiety, shame and emotion dysregulation are removed?

Methods

There were two groups of participants aged 16 to 18 years old: A group who attend child and adolescent mental health service (the clinical sample) and a group who have received no past or current input from specialist adolescent mental health services (the non-clinical sample). They will all be asked to read information regarding the study and read, agree to, and sign a consent form to make sure they are satisfied with what will be expected in their participation.

Participants will be asked to complete a set of questionnaires that measure CPB, PT, negative beliefs about paranoia, social anxiety, shame and emotion dysregulation. The clinical sample will complete in the clinic setting, and the non-clinical sample will be able to complete their questionnaires online using the Bristol Online Survey. The responses will be anonymised and secured on a password encrypted computer on a University of Glasgow server.

Key ethical issues including confidentiality

Regarding the clinical sample, they study will adhere to NHS standard operating procedures. They will be provided with an information sheet with a clear definition of confidentiality. The nature of the project may trigger distressing memories or reminders of difficult experiences. The study will therefore at every stage ensure space and opportunity are provided to participants to discuss their experience of the research and support communication of their needs, with consent, to participants' Clinician. All participants will be provided with a list of contact details of support organisations, including 24/7 out of hours

telephone services and a link to helpful anti bullying strategies. Debrief summaries will be provided at the end of the study.

Appendix C

The Health and Safety Form.

1. Title of Project	Exploring the possible association of childhood peer bullying and paranoid thinking in clinical and non-clinical adolescent samples
2. Trainee	Mr Calum Rankin
3. University Supervisor	Professor Andrew Gumley
4. Other Supervisor(s)	Dr Ruchika Gajwani & Dr Diane Fraser
5. Local Lead Clinician	Ms Jacqui Howison (Consultant Clinical Psychologist/Professional Lead for NHS GG&C CAMHS)
6. Participants: (age, group or sub-group, pre- or post-treatment, etc)	All participants will be 16-18 years old. The clinical sample will be recruited from NHS GG&C CAMHS (advertised using a clinical poster) and the non-clinical sample will be recruited from the general population using social media advertisement Participants will be provided with a Cover Letter, Participant Information Sheet to read, and a Consent Form to read and sign, before proceeding in the research study.
7. Procedures to be applied (eg, questionnaire, interview, etc)	Questionnaires • The Green Paranoid Thoughts Questionnaire

	(GPTQ) • *'Bullying Questionnaire' adapted from the Revised Olweus Bully Victim Questionnaire* (OBVQ; Olweus 1996) Beliefs about Paranoia Scale (BaPS) • The Social Interaction Anxiety Scale (SIAS) • Other as Shamer Scale Revised (OSS-2) • Experience of Shame Scale (ESS) • Difficulties in Emotion Regulation Scale – Short Form (DERS-SF) A Participant Information Sheet and the set of standardised questionnaires will be administered, following informed consent, to participants. RE: Clinical sample, participants will complete questionnaires in CAMHS with Researcher present. RE: Non-clinical sample, participants will be able to complete questionnaires as an online study using the Bristol Online Survey. This is the Chief Investigators secured personal account and is licensed by the University of Glasgow.
8. Setting (where will procedures be carried out?) i) Details of all settings	RE: Clinical sample: In NHS GG&C CAMHS premises RE: Non-clinical sample, completed as an online survey. No home visits will be required.
ii) Are home visits involved	Y/N✓

9. Potential Risk Factors Considered (for researcher and participant safety)& 10. Actions to minimise for each identified point. i) Participants ii) Procedures iii) Settings	i. Participants RE: Clinical sample: Participants will be aged 16-18 who are open to CAMHS. • Participants could potentially display unpredictable behaviour towards researcher. = Utilising a safe clinical space, alerting a member of staff my location with participant and the expected time frame we will be spending together. It would also be important to have access to a personal alarm to alert staff if there is an emergency. Also, sitting nearest the exit door. • Sensitive nature of the questionnaires; participants may disclose experiences hitherto undisclosed; It is possible that participants disclose information pertaining to risk of harm or self to others. = Providing a Patient Information Sheet, containing relevant information about the research and what it will entail, including explanation on the limits confidentiality. = List of support organisations provided = A debrief summary letter provided including the support organisations restated and information and contact details of an anti-bullying campaign webpage – 'respect me.' = Providing opportunity for participants to discuss their experience of research and where clinical needs are identified these can be communicated, with consent, to the participants' key worker. = Adherence to NHS guidelines on Child Protection will be followed. = Adherence to the ethical approved

agreement.

= Use of supervision.

RE: Non-clinical sample: This group will be young people aged 16-18 who are representative of the general population.

- There are no risks to researcher identified.
- Similar to the clinical sample, the sensitive nature of the questionnaire may be distressing for some.

  = They will be provided with a participant information sheet outlining the nature of the study and what would be involved.

  =They will be provided with a contact email address to contact the Researcher should they have any questions related to the research

  = Participants will be encouraged to seek advice and support from their GP should they have clinical concerns. For more immediate, out of hours, they can contact the support organisations provided.

  = List of support organisations provided

  = A debrief summary letter provided including the support organisations restated and information and contact details of an anti-bullying campaign webpage – 'respect me.'

-

  =

ii. Procedures

RE Clinical sample: Set of questionnaires will be administered to participants in clinical environment.

- Participant could potentially become distressed when completing questionnaire, or may

	disclose a mental health need. = If a participant became distressed I would use grounding techniques to encourage calmness, take a break, give them the choice if they want to discontinue and offer to inform their key worker. = If they disclosed an unmet need I would inform their key worker with their consent. A list of contact details for support organisations will also be provided. = Opportunity will be provided for participants to report any concern or issues that they may have with Researcher or Clinician, at any phase of the research process. RE Non-clinical sample: Set of questionnaires will be administered to participants using the Bristol online survey. • Participant could potentially become distressed through process and become more aware of a mental health need. • As described above, they have access to a clear information sheet regarding study in addition to a list of support organisations and a debrief summary at the end of the study. • The debrief summary will include information and contact details on Scotland's anti-bullying campaign – 'respect-me.' iii. Settings • NHS GG&C local policy and procedures in line with health and safety for participant and researcher will be adhered to. The University policy and procedures will be followed in line with health and safety for researcher and

	participants in the non-clinical sample. = The Researchers will endeavour to ensure that in the event of information being disclosed that necessitate communication others, the young person will be given the opportunity and support to communicate themselves it will be clearly explained the rationale for further disclosure. = It will be ensured that the research process is made transparent to participants, their key workers within the services to facilitate shared communication. = Use of supervision. Non-clinical sample = Settings will be an online survey. This will be on the BOS. This is the Chief Investigators secure personal account, and is licensed by the University of Glasgow. = They will be able to contact the Researcher should they have any research related questions. = A list of support organisations will be provided should they wish to contact for any clinical matter. • There will be no home visits carried out.

Trainee signature:  Date: 24.02.17

University supervisor signature: 

Date: 24.02.17

The Equipment Form.

Item	Details and Amount Required	Cost or Specify if to Request to Borrow from Department
Stationary	Set of questionnaires (accessed online) = total is 10-pages Patient Information Sheet = total is 1 page Informed consent form = total is 1-page Require this for 70 participants. 12pages*110	Subtotal: £6.54 (3 reams of paper)
Postage		Subtotal:
Photocopying and Laser Printing		

		Subtotal:
Equipment and Software	Bristol Online Survey	Subtotal: £0.00
Measures		Subtotal:
Miscellaneous	Participant incentive	Subtotal: £50 Amazon gift voucher
Total		**£56.54**

Appendix 2.3

Letters of ethical approval (i.e. approvals from West of Scotland Research Ethics Committee and National Health Service Greater Glasgow & Clyde Research and Development department).

Administrator: Mrs Elaine O'Neill
Telephone Number: 0141 232 1815
E-Mail: elaine.o'neill2@ggc.scot.nhs.uk
Website: www.nhsggc.org.uk/r&d

R&D Management Office
West Glasgow ACH
Dalnair Street
Glasgow G3 8SW

31 January 2018

Mr Calum S Rankin
Trainee Clinical Psychologist
Institute of Health and Wellbeing
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH

NHS GG&C Board Approval

Dear Mr C Rankin,

Study Title:	**Exploring the possible association of childhood peer bullying and paranoid thinking in clinical and non-clinical adolescent samples**
Principal Investigator:	**Mr Calum S Rankin**
GG&C HB site	**NHS GG&C CAMHS**
Sponsor	**NHS Greater Glasgow and Clyde**
R&D reference:	**GN17MH708**
REC reference:	**18/WS/0005**
Protocol no:	**V0.6; 28/11/17**

I am pleased to confirm that Greater Glasgow & Clyde Health Board is now able to grant **Approval** for the above study.

Conditions of Approval

1. **For Clinical Trials** as defined by the Medicines for Human Use Clinical Trial Regulations, 2004

   a. During the life span of the study GGHB requires the following information relating to this site
      i. Notification of any potential serious breaches.
      ii. Notification of any regulatory inspections.

It is your responsibility to ensure that all staff involved in the study at this site have the appropriate GCP training according to the GGHB GCP policy (www.nhsggc.org.uk/content/default.asp?page=s1411), evidence of such training to be filed in the site file.

2. **For all studies** the following information is required during their lifespan.
   a. Recruitment Numbers on a monthly basis
   b. Any change of staff named on the original SSI form
   c. Any amendments – Substantial or Non Substantial
   d. Notification of Trial/study end including final recruitment figures
   e. Final Report & Copies of Publications/Abstracts

Please add this approval to your study file as this letter may be subject to audit and monitoring.

Your personal information will be held on a secure national web-based NHS database.

I wish you every success with this research study

Yours sincerely,

Mrs Elaine O'Neill
Senior Research Administrator

Cc: Emma-Jane Gault (Glasgow University)

WoSRES
West of Scotland Research Ethics Service

NHS
Greater Glasgow and Clyde

Professor Andrew Gumley
Institute of Health & Wellbeing
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow
G12 0XH

West of Scotland REC 4
Research Ethics
Clinical Research and Development
West Glasgow Ambulatory Care Hospital
Dalnair Street
Glasgow
G3 8SJ
(Formerly Yorkhill Childrens Hospital)

Date 29 January 2018
Direct line 0141 232 1808
E-mail WoSREC4@ggc.scot.nhs.uk

Dear Professor Gumley

Study title: **Exploring the possible association of childhood peer bullying and paranoid thinking in clinical and non-clinical adolescent samples**
REC reference: **18/WS/0005**
IRAS project ID: **230651**

Thank you for your submission of 29 January 2018. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 18 January 2018.

Documents received

The documents received were as follows:

Document	*Version*	*Date*
Other [Cover letter A_clinical sample]	version 0.3	21 January 2018
Other [Consent to give permission to be contacted_clinical sample]	version 0.3	21 January 2018
Other [Consent form A_clinical sample]	version 0.7	21 January 2018
Other [Participant Information Sheet A_clinical sample]	version 0.7	21 January 2018
Other [Consultant Psychiatrist Letter]	version 0.4	21 January 2018
Other [GP Letter]	version 0.4	21 January 2018
Other [Key Worker Letter]	version 0.4	21 January 2018
Other [Cover letter B_non-clinical sample]	version 0.4	21 January 2018
Other [Consent form B_non-clinical sample]	version 0.5	21 January 2018

Document	Version	Date
Other [Participant Information Sheet B_non-clinical sample]	version 0.6	21 January 2018
Other [Cover letter in response to favourable opinion]	version 1	21 January 2018

Approved documents

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

Document	Version	Date
Copies of advertisement materials for research participants [Study Flyer]	v0.4	03 December 2017
Copies of advertisement materials for research participants [Media advertisements_non-clinical sample]	v0.4	14 December 2017
Covering letter on headed paper [Cover letter to REC_17-12-17]	n/a	17 December 2017
Other [UofG Insurance]		27 July 2017
Other [REC Unfav Op letter]		10 November 2017
Other [Questionnaire Front Cover Sheet]	v0.3	03 December 2017
Other [Demographics Questionnaire]	v0.4	25 November 2017
Other [Debrief Summary Letter_clinical sample]	v0.1	28 November 2017
Other [Debrief Summary Letter_non-clinical sample]	v0.1	28 November 2017
Other [Cover letter A_clinical sample]	version 0.3	21 January 2018
Other [Consent to give permission to be contacted_clinical sample]	version 0.3	21 January 2018
Other [Consent form A_clinical sample]	version 0.7	21 January 2018
Other [Participant Information Sheet A_clinical sample]	version 0.7	21 January 2018
Other [Consultant Psychiatrist Letter]	version 0.4	21 January 2018
Other [GP Letter]	version 0.4	21 January 2018
Other [Key Worker Letter]	version 0.4	21 January 2018
Other [Cover letter B_non-clinical sample]	version 0.4	21 January 2018
Other [Consent form B_non-clinical sample]	version 0.5	21 January 2018
Other [Participant Information Sheet B_non-clinical sample]	version 0.6	21 January 2018
Other [Cover letter in response to favourable opinion]	version 1	21 January 2018
REC Application Form [REC_Form_19122017]		19 December 2017
Research protocol or project proposal [Research Study Proposal Protocol]	v0.6	28 November 2017
Summary CV for Chief Investigator (CI) [Andrew Gumley_Supervisor_CI_CV]		
Summary CV for student [Summary CV Calum Rankin]		01 September 2017
Summary CV for supervisor (student research) [Summary CV for supervisor (Dr Ruchika Gajwani)]		
Validated questionnaire [Beliefs about Paranoia Scale]	v0.2	03 December 2017
Validated questionnaire [Bullying Questionnaire derived from the Revised Olweus Bully Victim Questionnaire]	v0.2	03 December 2017
Validated questionnaire [Difficulties in Emotion Regulation Scale]	v0.2	03 December 2017
Validated questionnaire [Experience of Shame Scale]	v0.3	03 December 2017
Validated questionnaire [Green's Paranoid Thoughts Scale]	v0.2	03 December 2017

Document	*Version*	*Date*
Validated questionnaire [Other As Shamer Scale]	v0.3	03 December 2017
Validated questionnaire [Social Interaction Anxiety Scale]	v0.3	03 December 2017

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

18/WS/0005	**Please quote this number on all correspondence**

Yours sincerely

Rozanne Suarez
REC Manager

Copy to: *Mr Calum S Rankin*
Ms Elaine O'Neill, NHS Greater Glasgow and Clyde
Emma-Jane Gault

Appendix 2.4

Missing data analysis.

Visual inspection indicated that some missing data were present across the difference scales. Missing data analysis (MDA) was therefore performed on the combined dataset to determine whether the missing data were missing completely at random (MCAR). Table 1 displays Little's Test for each scaled variable, its significance level, and which imputation method was selected. The Table shows that each Little Test was non-significant, meaning that that missing data were MCAR.

Table 1

Missing data analysis and imputation method for clinical and non-clinical sample

Scaled variables	Valid data	*N* items of the scale	*N* items with some missing data	*N* items totally completed	Participants who missed values	Missing values	MCAR (Little's test *p*>.05)	Imputation method
CBQ	236	5	2	3	0.85% (2)	0.17%	Yes (.14)	**EM**
LBQ	236	5	4	1	0.85% (2)	0.42%	Yes (.46)	**EM**
GPTS	236	32	14	18	6.36% (15)	0.33%	Yes (.96)	**EM**
BaPS	236	18	8	10	3.81% (9)	0.24%	Yes (.34)	**EM**
ESS	236	25	8	17	3.39% (8)	0.15%	Yes (.33)	**EM**
OSS	236	18	8	10	3.39% (8)	0.21%	Yes (.69)	**EM**
SIAS	236	20	5	15	2.12% (5)	0.11%	Yes (.86)	**EM**
DERS-SF	236	18	5	13	2.54% (6)	0.14%	Yes (.71)	**EM**

EM = Expectation-Maximisation

Skewness and kurtosis analyses for clinical, non-clinical and combined samples.

Table 2

Skewness and kurtosis analyses for clinical, non-clinical and combined samples.

Variable	Skewness			Kurtosis		
	Combined	Clinical	Non-clinical	Combined	Clinical	Non-clinical
CBQ	1.10	1.41	1.08	.12	0.88	.06
LBQ	.09	.10	.09	-1.1	-1.31	-1.08
GPTS-SR	-.22	-.38	-.21	-1.02	-.86	-1.03
GPTS-PD	.32	.05	.35	-1.14	-1.18	-1.15
GPTS-Total	.12	-.17	.13	-1.08	-1.03	-1.10
BaPS-ss	.42	.12	.44	-.64	-1.28	-.62
BaPS-neg	-.22	-.35	-.20	-1.25	-.85	-1.28
BaPS-nor	-.26	-.05	-.26	-.56	-1.10	-.57
BaPS-total	-.36	.34	-.38	-.27	-.29	-.32
ESS	-.82	-1.10	-.84	.05	.46	.05
OSS	-.18	.01	-.21	-.95	-1.03	-.93
SIAS	-.56	-.52	-.59	-.48	-.84	-.45
DER-SF	-.40	.10	-.45	-.60	-1.05	-.47

Supplementary median and interquartile ranges for scaled variables in the clinical, non-clinical and combined samples

Table 3

Median and interquartile ranges for each variable in the clinical, non-clinical and combined samples

	Clinical Sample		Non-clinical Sample		Combined Sample	
Questionnaire subscale	Median	IR	Median	IR	Median	IR
CBQ	2.00	5	3.00	7	3.00	7
LBQ	8.50	11	9.00	10	9.00	10
GPTS	92.50	51	90.59	60	90.59	60
GPTS – ISR	50.50	27	53.00	28	52.50	28
GPTS – PD	43.00	27	39.00	36	39.00	34
BaPS - TOTAL	44.50	9	45.00	14	45.00	14
BaPS – Neg	17.00	10	16.00	11	16.50	11
BaPS – SS	12.00	7	12.00	8	12.00	8
BaPS – Nor	16.00	7	16.00	7	16.00	7
ESS	74.50	24	80.00	26	79.50	25
OSS	34.00	29	41.00	33	41.00	32
SIAS	50.00	31	53.00	28	53.00	27
DERS-SF	59.50	23	64.00	22	63.00	22

Non-parametric equivalent results

Table 4

Spearman's Correlation coefficients between exposure to bullying and predisposition to paranoid thoughts for combined sample data

	Scale/Subscale names (N = 236)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1.	Current Bullying	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	Lifetime Bullying	.55**	-	-	-	-	-	-	-	-	-	-	-	-
3.	GPTS – Ideas of Social Reference	**.63****	**.62****	-	-	-	-	-	-	-	-	-	-	-
4.	GPTS – Persecution	**.62****	**.64****	.86**	-	-	-	-	-	-	-	-	-	-
5.	GPTS – Total	**.64****	**.66****	.96**	.96**	-	-	-	-	-	-	-	-	-
6.	BaPS - Survival beliefs about paranoia	.34**	.37**	.57**	.57**	.59**	-	-	-	-	-	-	-	-
7.	BaPS – Negative beliefs about paranoia	.36**	.45**	.70**	.62**	.68**	.58**	-	-	-	-	-	-	-
8.	BaPS – Normalising beliefs about paranoia	-.00	.05	.08	.11*	.10	.38**	.97	-	-	-	-	-	-
9.	BaPS – Total	.34**	.40**	.64**	.61**	.65**	.87**	.78**	.53**	-	-	-	-	-
10.	Experience of Shame Scale	.42**	.46**	.70**	.63**	.69**	.54**	.66**	.19**	.64**	-	-	-	-
11.	Other As Shame Scale	.56**	.54**	.78**	.73**	.78**	.59**	.64**	.14*	.63**	.75**	-	-	-
12.	Social Interaction Anxiety Scale	.43**	.50**	.66**	.56**	.63**	.47**	.61**	.06	.53**	.69**	.67**	-	-
13.	Difficulties in Emotional Regulation Scale – Short form	.44**	.48**	.73**	.70**	.74**	.60**	.68**	.11*	.65**	.72**	.73**	.62**	-

** Significant at the .01 level (one-tailed)

* Significant at the .05 level (one-tailed)

Non-parametric analyses for hypothesis 2.

Regarding hypothesis 2, a Mann-Whitney Test indicated that paranoia was not significantly greater in the clinical sample compared to the non-clinical sample (U = 2516.50, z = -.09, p (one-tailed) = .93). Regarding each GPTS subscale there were, again, no significant differences for Ideas of Social Reference (U = 2374, z = -.54, p = .59) in the clinical and non-clinical samples, and for Persecutory Delusions (U = 2372, z = -.54, p = .59) in the clinical and non-clinical samples.