

ACADEMIC THESIS
CHILDHOOD BULLYING AND PARANOID THINKING

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**Thesis submitted to the University of Nottingham for the degree of
Doctor of Forensic Psychology**

Submitted for Examination: May 2017

Abstract

Psychotic phenomena are prevalent in non-clinical populations, with a continuum existing between psychotic-like experiences (PLEs) and incidence of clinical relevance. Phenomena-associated distress often demarcates a threshold whereby individuals seek help, and experiential risk factors are consistent at both ends of the continuum. Increased exposure to stressors may predict the transition from transient, to persistent and impairing psychotic-like symptoms. PLE-specific trajectories have been noted in the literature, with childhood bullying victimisation mooted to predict the development of paranoid thinking; paranoid thinking underlies some expressive violence.

Whilst bullying victimisation is a cause for concern in itself, the cognitive and behavioural consequences for victims are potentially significant. Paranoid individuals can incorrectly appraise threat in neutral social situations, and employ maladaptive safety behaviours to reduce perceived danger. Such misperception of social events, and behavioural responses, could result in aggressive or violent actions towards others. The current thesis examines this topic.

Acknowledgements

There are many who have supported, inspired, and pushed me throughout the last two years. As such, I am grateful to individuals too numerous to thank here.

However, it is important to note my gratitude to all the staff at the Division of Family and Forensic Psychology. Whether helping with administration, or providing the building blocks to my development; I have thoroughly enjoyed my time at the university and have learned a great deal.

However, extended thanks must go to my supervisor, Vince Egan. Vince has been a constant and available source of information, support, and anchoring – ensuring that I always maintain a focus on forensic issues. Further, Vince's contribution has gone beyond the academic thesis alone. Indeed, my identity as a prospective forensic psychologist has been shaped greatly by his worldview and approach to practice.

I am also indebted to Roger Eadon and the staff at Southam College. It was not easy to find a school willing to collaborate with my research; however, Roger and his team bought into the aims of my project, and embedded the gathering of data into a framework of anti-bullying and

mental health awareness – a prime example of mutually beneficial practice. Of course, I am also thankful to the children who participated in my project.

As always, it would not have been possible to complete this thesis without the support of my parents; a roof over my head, dinner on the table, and freshly laundered clothes. Though, of course, their support has extended far beyond mere material assistance.

Also, my brother Robin has made immeasurable contributions to the development of this work. A constant source of interesting debate, challenge and motivation; he prompts me to think of things differently. Further, his own magnum opus has been the soundtrack to my doctorate.

Though distance has limited the opportunity for contact, it is noteworthy that Ronnie Wilson's support has always been felt during the past two years. It is hoped that completion of the doctorate will reduce this distance.

Finally, I must acknowledge the role of Stephanie Wilson. Stephanie has been by my side for every word written in this thesis. As such, when writing could have become a chore, it remained a pleasure and a joy without exception. Stephanie's humour, passion, and drive have maintained each in me. Further, without fail, Stephanie has challenged my

approach to my work; I am a better person and psychologist for her presence.

Table of Contents

Contents	iv
List of Tables and Figures	v
List of Appendices	vii
 Chapter One: Introduction to Academic Thesis	 1
 Chapter Two: Psychometric Critique	 6
 Chapter Three: Research Study One	 26
 Chapter Four: Research Study Two	 57
 Chapter Five: Integration of Research Studies	 75
 Chapter Six: Systematic Review	 85
 Chapter Seven: Conclusion to Academic Thesis	 123
 Integrated References	 128
 Appendices	 146

List of Tables

Table No:	Table Title	Page
1	Cronbach's alpha, mean and standard deviations for measures utilised in study one	44
2	Frequency table depicting accumulation of ACEs across the sample	47
3	Correlation matrix describing associations between paranoid thinking and different types of bullying	48
4	Correlation matrix describing associations between paranoid thinking and environmental and social variables	49
5	Forms of childhood bullying, environmental and social predictors of paranoid thinking	50
6	Cronbach's alpha, mean and standard deviations for measures utilised in study two	66
7	Correlation matrix describing association between internalising / externalising symptoms, and paranoid thinking, and overt and covert bullying	66
8	Cross tabulation table describing relationship between paranoid thinking and externalising symptoms	69
9	Cross tabulation table describing relationship between paranoid thinking and externalising symptoms	70
10	Cross tabulation table describing relationship between bullying and externalising symptoms	70
11	Cross tabulation table describing relationship between bullying and internalising symptoms	70
12	Cross tabulation table describing relationship between endorsement of revenge and propensity to fight with peers	72

13	Measures of childhood bullying used by the included studies	104
14	Measures of paranoid thinking used by the included studies	107
15	Studies included in the review	110

List of Figures

Figure No:	Figure Title	Page
1	Percentage of response to each item in the paranoid thinking scale, without associated distress	45
2	Frequencies of each type of bullying reported in the sample	46
3	Frequencies of adverse childhood experiences	46
4	Mediation model for childhood bullying, paranoid thinking, and overestimation of threat in neutral social stimuli	51
5	Scatterplot to describe relationship between paranoid thinking composite score and internalising symptoms	67
6	Scatterplot to describe relationship between paranoid thinking composite score and internalising symptoms	67
7	Scatterplot to describe relationship between paranoid thinking composite score and internalising symptoms	68
8	Scatterplot to describe relationship between paranoid thinking composite score and internalising symptoms	68
9	PRISMA flow diagram depicting search strategy	99

List of Appendices

Appendix	Title	Page
A	The Community Assessment of Psychic Experiences	146
A	Email sent to schools concerning participation in study	149
C	Participant information sheet	150
D	Consent form	152
E	Letter from ethics committee	153
F	Systematic Review database search terms	155
G	Quality Assessment checklist	158
H	Data Extraction form	160

1.0 Chapter One

1.1 Introduction to Academic Thesis

There is increasing evidence to suggest that psychotic phenomena are manifest in non-clinical populations (van Os, Linscott, Myin-Germeys & Delespaul, 2009). If they don't cause distress or impairment, such psychotic-like experiences (PLEs) are not necessarily a sign of psychopathology. However, distress is integral to the assessment of PLEs, which may have clinical significance (Peters, Joseph & Garety, 1999).

Adverse childhood experiences (ACEs) predict psychotic phenomena (Varese et al., 2012), and distinct trajectories for specific psychotic experiences have been identified (Fisher et al., 2013); risk factors are noted to be consistent above and below clinical thresholds (Rössler et al., 2011). There is some research evidence to indicate that experiences of childhood bullying victimisation are positively associated with paranoid thinking (e.g. Campbell & Morrison, 2007; Valmaggia et al., 2015), and such thinking may lead to aggression and violence. This association is the major theme of the academic thesis.

Chapter two presents a critique of the Community Assessment of Psychic Experiences (CAPE: Stefanis et al.,

2002). The CAPE is a measure of positive and negative psychotic phenomena, with an additional psychotic depression subscale. It is a tool that measures PLEs across the extended continuum, and incorporates a measurement of associated distress. The CAPE is compared to similar tools, and it is concluded that it is a valid and reliable measure of the symptoms it examines. The CAPE is used as an index of PLEs in the two original research studies that follow.

Chapters three and four are the original research studies. Broadly, these two studies investigate the association between childhood bullying victimisation and the development of paranoid thinking, and the cognitive and behavioural consequences. A single sample of 230 adolescents (range 11-14), was recruited to complete questionnaires that were analysed for the two studies.

In study one, the primary objective was to establish the association between different forms of childhood bullying, and paranoid thinking. It was hypothesised that there would be a linear relationship between the variables. A secondary aim was to measure the extent to which bullied and paranoid adolescents overestimate threat in neutral social stimuli. This investigation was the continuation of a theme established in earlier work by the author (Jack & Egan, 2016).

The aim of study two was an attempt to establish the behavioural consequences of being bullied, paranoid, and misinterpreting threat in neutral social stimuli. As such, the investigation sought to determine whether paranoid thinking was associated with violent ideation, or if other factors (i.e. a propensity to externalise symptoms) drove any interaction. The theoretical underpinning to study two was the notion that individuals who experience distressing PLEs would use safety behaviours to neutralise perceived threat (Freeman et al., 2007a).

Combined, the findings from study one and study two indicate that there was a linear relationship between childhood bullying and paranoid thinking, and that paranoid thinking mediated the association between exposure to bullying victimisation and the propensity to overestimate threat in neutral social stimuli. Further, it was established that high levels of childhood bullying and paranoid thinking were associated with both externalising and internalising symptoms. Externalising symptoms were associated with a propensity to endorse revenge to perceived social threat, and a tendency to fight with peers. Consequently, it was concluded that bullied individuals develop paranoid thinking styles, misinterpret social situations, and engage in safety behaviours to reduce threat. Those that externalised

symptoms were more likely to engage in violent retributive behaviours.

Chapter five is a systematic review. This chapter sought to contextualise the first original study within the existing literature base, and synthesise relevant findings concerning the association between childhood bullying victimisation and paranoid thinking. It was concluded that there is an evidence base to support the notion that childhood bullying victimisation begets paranoid thinking, though the quality of studies is varied.

The final chapter of the thesis is an attempt to integrate the psychometric critique, original research study, and systematic review. During this section, a consideration of forensic and clinical practice issues is presented, as are recommendations for future research.

1.2 Relevance to Forensic Practice

This thesis examines the consequences of childhood bullying victimisation, and identifies a trajectory by which victims of interpersonal aggression might become perpetrators of violence. The role of sub-clinical PLEs is reported, and the function of paranoid thinking in threat perception highlighted. It is argued that an understanding of bullying, PLEs, cognitive processes, and the use of safety behaviours should be

integrated into formulations and interventions when professionals seek to explain aggressive behaviour in persons at school, young offender institutions, or prisons, as sometimes retributive violence occurs in response to both real and perceived threat.

2.0 Chapter Two

Psychometric Critique of the Community Assessment of Psychic Experiences (CAPE)

2.1 Abstract

There is a continuum of psychotic phenomena, which extends into the general population. Most experiences are transient; however, such phenomenology's migration towards clinical impairment is demarcated by greater frequency and intrusiveness of the experience, as well as associated distress. The Community Assessment of Psychic Experiences (CAPE) is a measure of three dimensions of psychosis across the continuum. In this report, the tool is described, the psychometric properties evaluated, its application discussed, and comparisons drawn with alternative measures. It is concluded that the CAPE is a reliable and valid measure of the psychosis continuum and that it is of use in both research and clinical practice.

2.2 Introduction

Many now argue categorical models of psychosis are flawed (Bentall, 2004). Psychologists commonly view psychotic experiences as on a continuum of phenomena, which extends into the general population (Johns & van Os, 2001; Shevlin, Murphy, Dorahy & Adamson, 2007; van Os et al., 2009). This is exemplified by the skewed distribution of perceived psychotic symptom severity (Ahmed, Buckley & Mabe, 2012), with clinical manifestations making up only a small proportion of the “extended psychosis phenotype” (Nelson, Fusar-Poli & Yung, 2012; van Os et al., 2009). Psychotic phenomena are present at subclinical levels, with voice-hearing (Beavan, Read & Cartwright, 2011), delusions (Garety & Freeman, 2013) and paranoid thinking (Freeman et al., 2008; Bebbington et al., 2013) particularly evident; however, below clinical thresholds, there is lower frequency, intrusiveness and associated distress demarcating impairment, hence psychotic symptoms are more prevalent than clinical disorder itself (van Os et al., 2009).

Transient psychotic-like experiences (PLEs) are not necessarily indicative of psychopathology (Poulton et al., 2000), and the majority abate over time. A longitudinal study by Dominguez, Wichers, Lieb, Wittchen and van Os (2011)

reported that 75-to-90% of PLEs were transient and did not precede clinical disorder. Moreover, some PLEs are positively associated with mental wellbeing and comfort. For example, Boden and Berenbaum (2004) reported that participants' peculiar beliefs helped them to derive understanding and meaning in their world. Beavan et al. (2011) further argue that voice hearing is not a sign of pathology *per se*; paranoid thinking has been implicated in adaptation to environmental risk (Jack & Egan, 2016). Nevertheless, some PLEs are associated with greater distress and subsequent clinical relevance. Nelson et al. (2012) observe that paranoid ideas, bizarre thinking and perceptual abnormalities indicate risk of psychotic disorder; co-occurrence of hallucinations and delusions heightens the risk of persistent and impairing psychosis (Smeets et al., 2013).

Symptom migration from discrete PLEs to clinical manifestations of psychosis has been evidenced (Poulton et al., 2000; van Os et al., 2009; Dominguez et al., 2011) with similar risk factors implicated above and below clinical thresholds (Rössler et al., 2011). Moreover, a dose-response effect has been observed regarding exposure to environmental risk factors and the progression from transient to persistent to subsequently impairing symptoms (Cougnard et al., 2007; van Os et al., 2009; Dominguez et al., 2011).

PLE-associated distress is an important consideration (Boyda, 2014), and distressing symptoms are predictive of help seeking (Hanssen, Krabbendam, de Graaf & Volleburgh, 2005a; Krabbendam et al., 2005), and implicated in the development of clinical disorders (Broome et al., 2005; Freeman & Garety, 2003; van Os et al., 2009). Smeets et al. (2013) found that co-occurrence of hallucinations and delusions heightened the risk of developing clinical disorder, with Hanssen et al. (2005) reporting that those who experienced distressing hallucinations were five times more likely to develop delusions. Peters et al. (1999) argue that consideration of the dimensions of conviction, preoccupation and distress in relation to psychosis symptoms are necessary to ascertain the person's position on the continuum. Shevlin, Boyda, Houston and Murphy (2015) reiterated this, when they conducted a factor-analytic analysis of dimensional models and concluded that distress was a "central and necessary adjunct to measurement [of the dimensionality of psychosis]" (p.108). Measures of subclinical psychosis should thus account for (a) the phenomenological continuity of the psychosis phenotype; and (b) the necessity to measure distress as a component of symptom severity (Peters et al., 1999; Murphy, Shevlin, Houston & Adamson, 2010).

2.3 Existing Measures of Psychosis

Despite the need to consider continuity and distress, the measurement of psychosis varies significantly across clinical practice and the research literature. As such, a variety of instruments have been utilised and each have strengths and weaknesses.

2.3.1 Semi-Structured Interviews

Semi-structured interviews are used extensively, with the Brief Psychiatric Rating Scale (BPRS: Overall & Gorham, 1962), Positive and Negative Symptom Scale (PANSS: Kay, Opler & Fiszbein, 1987) and Comprehensive Assessment of At-Risk Mental States (CAARMS: Yung et al., 2005) being used extensively. The use of such interviews allows for comprehensive measurement, appropriate depth of symptom elicitation, and, importantly, incorporates sensitivity to distress and impairment. Despite this, due to the need for the interviews to be conducted by trained professionals (to ensure validity), difficulties regarding standardisation and the significant administration time means they are often an impractical tool for screening or research with limited resources. Whilst the BPRS and CAARMS have been used in the general population (Hanssen et al., 2003; Mossaheb et al., 2012) the PANSS is predominantly used to measure

symptomatology within clinical populations, rather than the full continuum of the phenomenology.

2.3.2 *Measures of Schizotypy*

Measures of schizotypy have dominated the 'sub-clinical' research landscape under the premise that they are measuring phenomena distinct from pure psychosis (Stefanis et al., 2002)¹. The most commonly used measure of schizotypy is the Schizotypy Personality Questionnaire (SPQ: Raine, 1991), which has been cited over 1000 times in the research literature. The SPQ is a 74-item self-report measure, which has also been converted into a shortened format (SPQ-B; Raine & Benishay, 1995). Satisfactory reliability and validity have been demonstrated.

Whilst the SPQ can be used to measure schizotypal symptomatology within the general population, it is constructed to assess attenuated psychotic traits, rather than the continuum of phenomenological experience (Stefanis et al., 2002). Consequently, the measure does not have validity to assess experiences and symptoms phenomenologically like those of clinical disorder. Furthermore, the measure does not

¹ It is noteworthy that this distinction is the source of debate, with different positions taken within the DSM-V (APA, 2013) and ICD-10 (WHO, 1992).

incorporate a rating of distress, which is arguably a necessary requirement of such a tool (Shevlin et al., 2015a).

2.3.3 Measures of Distinct Positive Psychotic Phenomena

As an increasing body of evidence has indicated that psychotic symptoms are distinct phenomena, with divergent developmental trajectories (Varese et al., 2012), contemporary research has taken a single-symptom approach to investigating psychosis. Consequently, a variety of psychometric tools have been designed to measure specific psychotic-like symptoms.

The Paranoia Scale (Fenigstein & Venable, 1992), Peters Delusion Inventory (PDI: Peters et al., 1999) and Green et al. Paranoid Thoughts Scale (GPTS: Green et al., 2008) have been used extensively to measure delusional and paranoid thinking. All have demonstrated good reliability and validity and purport to measure a continuum of phenomena; however, the Paranoia Scale does not measure associated distress. The PDI is based on the Present State Examination (PSE-9: Wing, Cooper & Sartorius, 1974) and has been shown to be a valid and useful measure of delusions across the continuum, with eleven types of delusional thinking reported, and incorporates scales for conviction, preoccupation and

distress (Peters et al., 1999). The GPTS measures two types of paranoid ideation (ideas of reference, and persecutory delusions) across two scales. The GPTS asks participants to report on experiences during the prior month, so cannot capture historical transient experiences, or evaluate the degree of persistence of the items endorsed. It does, however, measure conviction, preoccupation and distress (Green et al., 2008).

Distinct tools have also been created to investigate auditory hallucinations. One, the Launay Slade Hallucinations Scale (LSHC: Launay & Slade, 1981), has been used frequently and is specifically designed to assess the continuum between normal experience and clinical manifestation (Larøi, Marczewski & Van Der Linden, 2004). However, the LSHC does not measure distress associated with the experience of hallucinations, which prevents the assessment of symptom severity. A further psychometric assessment of psychotic-like symptoms that measures distress is the Beliefs About Voices Questionnaire-Revised (BAVQ-R: Chadwick, Lees & Birchwood, 2000). This is a reliable and validated tool which also incorporates measures of emotional and behavioural response.

2.3.4 *Measures of Negative Symptomatology*

Regarding the assessment of negative symptomatology, two tools that have been oft cited in the literature are the Scale for the Assessment of Negative Symptoms (SANS: Andreasen, 1989), and the Subjective Experience of Negative Symptoms (SENS: Selten, Sijben, van den Bosch, Omluo-Visser & Warmerdam, 1993). The SANS incorporates measures of severity; however, it is administered as an interview and therefore experiences the same practicality issues as the BPRS, PANSS and CAARMs mentioned above. Furthermore, the SANS is used in clinical populations rather than sampling the general continuum of psychotic-like experiences. The SENS was adapted from the SANS and sought to assess the subjective experience of negative symptoms in those diagnosed with clinical disorder. A strength of the SENS is that it measures associated distress, as well as the presence of symptoms; however, as an adjunct to the SANS, it is used exclusively in clinical populations.

2.4 The Community Assessment of Psychic Experiences (CAPE)

The CAPE is a 42-item self-report assessment of three key dimensions of psychosis. The tool comprises 20-items measuring positive symptoms, 14-items measuring negative

symptoms and a further eight items measuring depressive symptoms (appendix A: Stefanis et al., 2002). Each item is responded to via a four-point frequency scale ('never', 'sometimes', 'often' and 'nearly always') and a distress scale ('not distressed', 'a bit distressed', 'quite distressed' and 'very distressed').

The CAPE evolved from other measures of psychosis described previously in this report. Stefanis et al. (2002) reported that the basic instrument was the PDI (Peters et al., 1999), with items on religiosity omitted, ambiguous items omitted or rephrased (Verdoux et al., 1998), and items documenting auditory hallucinations added. Negative symptom items were derived from the SANS (Andreasen, 1989) and SENS (Selten et al., 1993). Negative symptom items were adjusted to follow the format of the PDI questions. A total of eight items measuring cognitive symptoms of depression were also included.

2.4.1 Application of the CAPE

The CAPE has been administered in populations across the psychosis continuum, and has been cited over 300 times. It has been used with clinical populations (Versmissen et al., 2007; Moritz et al., 2013), with Liraud, Droulout, Parrot & Verdoux (2004) finding it a valid tool for enabling acute

patients to self-report symptoms. The CAPE has also been validated as an assessment of those at ultra-high risk of clinical disorder (Mossaheb et al., 2012). Despite this, most research making use of the CAPE has investigated the continuum in populations below clinical thresholds. This has included samples to determine the presence and structure of psychosis (Hanssen et al., 2003); the migration from transient to clinically relevant symptoms (Yung et al., 2009); risk factors such as cannabis use (Verdoux et al., 2003; Stefanis et al., 2004) and childhood adversity (Alemany et al., 2011; DeRosse, Nitzburg, Kompancaril & Malhotra, 2014), and the psychological processes involved in psychosis (Moritz et al., 2013; Westermann et al., 2011). The CAPE has been used in the general adult population (Konings, Bak, Hanssen, van Os & Krabbendam, 2006), with young adults (Verdoux et al., 2003; Stefanis et al., 2004) and with adolescents (Dominguez et al., 2011; Mossaheb et al., 2012). The measure therefore has breadth as an assessment in clinical and non-clinical populations.

2.5 Psychometric properties of the CAPE

The psychometric properties of the CAPE have been extensively tested, with reliability and validity data available for multiple populations. It has also been adapted into Greek

(Stefanis et al., 2002), French (Brenner et al., 2007), Italian (Daneluzzo et al., 2008), German (Schlier, Jaya, Moritz & Lincoln, 2015) and Spanish (Barrantes-Vidal, 2011) language versions. Mark and Toulopoulou (2015) conducted a meta-analysis of both reliability and validity of the CAPE and “highly recommend CAPE for clinical and research use” (p. 7).

2.5.1 Reliability

Mark and Toulopoulou (2015) conducted a meta-analysis of reliability coefficients for the CAPE and concluded that the overall psychometric scale had a meta-analytic mean of 0.91 (the positive symptom scale had a reliability of 0.84, the negative symptom scale 0.81, and the depression scale 0.76). The authors also found that the CAPE was more reliable for adolescent samples than older adults.

Regarding test-retest reliability, Konings et al. (2006) reported that the three dimensions of the CAPE fall between acceptable and good (the positive symptom scale had test-retest reliability of 0.71, the negative symptom scale 0.78 and the depression scale 0.76). It should, however, be noted that the CAPE does not measure stable traits; consequently, absolute test-retest reliability would be unwelcome.

2.5.2 *Validity*

The validity of the CAPE as a measure of psychotic phenomena across the continuum has been presented in a variety of papers. Further, the tool has been validated against other commonly used measures of psychotic phenomena (Stefanis et al., 2002; Konings et al., 2006).

2.5.2.1 *Face validity*

Stefanis et al. (2002) describe how face validity of the CAPE is ensured by keeping as close as possible to the question form suggested by the PSE-9, whilst adapting to a continuum population.

2.5.2.2 *Factorial validity*

The CAPE was devised to measure three key dimensions of psychosis (Stefanis et al., 2002), with several factor analytic investigations being directed towards the structure of the positive symptoms dimension (Shevlin et al., 2015a). Three (Murphy et al., 2010), four (Yung et al., 2009) and five-factor (Wigman et al., 2011) models have been proposed; Shevlin et al. (2015a) employed confirmatory factor analysis to test the various models and concluded that while all provided an acceptable fit, the five-factor model (hallucinations, paranoia, grandiosity, delusions and paranormal beliefs: Wigman et al.,

2011) was considered superior. Despite this, a systematic review and meta-analysis of the psychometric properties of the CAPE (Mark & Touloupoulou, 2015) reported three-factor models of positive symptoms (bizarre ideations, delusional ideas and perceptual anomalies) and negative symptoms (social withdrawal, affect flattening and avolition). Stefanis and colleagues (2002) acknowledge that two further dimensions of psychosis (alongside positive and negative symptoms, and depression) – disorganisation and mania – are not incorporated into the assessment due to difficulty capturing the phenomena within a self-report psychometric measure.

Studies that have investigated the reliability of the five subdimensions have noted mixed results. Typically, paranoia ($\alpha = .71$: Boyda, 2014; $\alpha = .62$: Shevlin et al., 2015a) and delusional ($\alpha = .62$: Boyda, 2014; $\alpha = .71$: Shevlin et al., 2015a) subdimensions have been shown to be reliable, with lower (approximately $\alpha = .50-.60$) Cronbach's alphas for the others.

2.5.2.3 Construct and discriminant validity

Construct and discriminant validity of the CAPE were analysed by Stefanis et al. (2002). The authors asked participants to complete measures of depression (the depression scale of the

Symptom Checklist-90 (SCL-90); Donias et al., 1991), positive symptoms (Perceptual Aberration Scale (PAS; Chapman, Chapman & Raulin, 1978); the Paranoia subscale of the SCL-90 (SCL-90 Paranoia; Donias et al., 1991)); and negative symptoms (Social Isolation and Flat Affect subscales of the Schizotypal Personality Questionnaire (SPQ; Raine, 1991)), which were then analysed alongside the CAPE using a multivariate regression procedure. The authors found that “the CAPE positive symptom score displayed stronger associations with the PAS and the SCL-90 Paranoia subscale than the negative and depressive scores; the CAPE negative symptoms score displayed stronger associations with the SPQ negative symptom scales, and the CAPE depressive symptoms score displayed stronger associations with the SCL-90 depression scale” (Stefanis et al., 2002, p. 354). Konings et al. (2006) corroborated these findings when the CAPE was contrasted with the Structured Interview for Schizotypy (SIS; Kendler, Lieberman & Walsh, 1989) and the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962). Thus, satisfactory construct and discriminant validity for the CAPE has been reported.

2.5.2.4 *Comparison of CAPE to alternative measures*

The CAPE has been validated against semi-structured interviews, including the BPRS (Stefanis et al., 2002) and CAARMS (Mossaheb et al., 2012). Whilst, the CAPE cannot capture the same depth of information as an interview, Mossaheb and colleagues concluded that the CAPE was a “valid, simple and cost-effective instrument” for screening for PLEs in clinical populations and detecting “individuals at an increased risk for developing psychosis in a clinical, help-seeking population” (p.210). Despite this, the authors recommend that, in such populations, the CAPE be used only as a triage instrument to identify those who require further investigation.

The CAPE negative symptom dimension was constructed with items drawn from the SANS and SENS (Stefanis et al., 2002). Therefore, it can be argued that the measure demonstrates convergence with established tools. However, an advantage of the CAPE is that questions are assimilated to the style of the PDI (i.e. a dual rating of presence and distress), which means that experiences of negative symptomatology both above and below clinical thresholds can be measured, which is not possible on either the SANS or SENS. Indeed, whilst the SENS does incorporate a subjective

distress measurement, it is only applicable to clinical populations.

There are various single-symptom scales that measure key psychosis-related phenomena across the continuum (e.g. Paranoia Scale; PDI; GPTS; LSHC; BAVQ-R etc.); however, not all incorporate measures of distress. Of those that do, the PDI does not provide a multi-dimensional assessment of different psychotic phenomena (i.e. voice hearing and delusional thinking), which the CAPE does, , whilst the GPTS is a viable measure of paranoid thinking in isolation, with reference to preoccupation, conviction, and distress. However, it is noted that, whilst longer instruments, the PDI and GPTS are constructed using a more sophisticated and multi-dimensional model when compared to the CAPE. The BAVQ-R is a valid measure of voice hearing that incorporates distress, experienced across the continuum. None of these measures, however, provide a multi-dimensional assessment of different psychotic phenomena (i.e. voice hearing and delusional thinking). Also, one could argue that the various measures of schizotypy do not stand up to comparison, as they measure attenuated psychotic experiences, and do not prescribe to a theoretical position of phenomenological continuity. The CAPE is robust in comparison to alternative measures of psychosis.

2.6 Limitations of the CAPE

There are some limitations to the CAPE. It is acknowledged that the measure assesses three key dimensions of psychosis (positive symptoms, negative symptoms and depression); however, disorganisation and mania are both deliberately omitted due to the difficulty capturing the phenomena using self-report methods (Stefanis et al., 2002).

As noted, the CAPE does not capture the same depth of information, particularly regarding phenomenological content, as semi-structured interviews. Indeed, as questionnaire measures, the PDI and GPTS allow for multi-dimensional expositions of delusions and paranoid thinking respectively, whilst the CAPE presents a simpler dimensional approach – presence, frequency, and distress. However, the existing literature does indicate that the CAPE is valid for research and screening applications, though its weaknesses mean that it should not be used as a diagnostic tool. Konings and colleagues (2006) urge caution when using the CAPE as a screening tool due to the higher prevalence of PLEs as compared to frank clinical disorder, and Mossaheb et al. (2012) note that, whilst the tool is appropriate for triage investigation, it should not be used in isolation when making clinical decisions. It should, however, be noted that the nature

of PLEs, and the variable threshold that demarcates clinically-relevant disorder (i.e. the number of symptoms and distress that determines clinical disorder will vary from one individual to the next), is such that the CAPE, as a measure of presence and distress only, is not designed to attribute clinical status.

2.7 Conclusion

The CAPE is a reliable and valid psychometric tool, which measures three key dimensions of psychosis across a phenomenological continuum. It has been used extensively in research and is has been shown to be a viable self-assessment for acute populations (Liraud et al., 2004; Mossaheb et al., 2012). The CAPE compares well to semi-structured interviews and has several advantages over other research and screening tools, though it should not be used as a sole investigatory measure in clinical settings.

The CAPE is best utilised in research, whereby the demand for a reliable, quick-to-administer, and theoretically sound instrument is paramount. Relatedly, the measurement of distress is intrinsically linked with the relevant theoretical literature, as is the dimensional structure of the tool. It is advised that the CAPE be used as a measure of potential PLEs, particularly below clinical thresholds, to both

understand the phenomenon and predict migration towards
impairing psychopathology.

3.0 Chapter Three

Childhood Bullying, Paranoid Thinking and the Misappraisal of Social Threat: Trouble at School

3.1 Abstract

3.1.1 Background

Experiences of bullying predict the development of paranoid thinking in school-age adolescents. Whilst many instances of psychotic phenomena are transitory, there is a linear relationship between maintained victimisation and distressing paranoid thinking. Furthermore, paranoid thinkers perceive threat in neutral social stimuli and are vigilant for environmental risk.

3.1.2 Aims

The present paper investigated the association between different forms of bullying and paranoid thinking, and the extent to which school-age paranoid thinkers overestimate threat in interpersonal situations.

3.1.3 *Methods*

Two hundred and thirty participants, aged between eleven and fourteen, were recruited from one secondary school in the UK. Participants completed a series of questionnaires, via an online paradigm hosted by the Bristol Online Survey tool. All data was collected in a classroom setting in quiet and standardised conditions.

3.1.4 *Results*

A linear relationship was found between experiences of bullying and paranoid thinking: greater severity of bullying predicted more distressing paranoid thinking. Further, paranoid thinking mediated the relationship between bullying and overestimation of threat in neutral social stimuli. Covert bullying was a stronger predictor of paranoid thinking than overt bullying.

3.1.5 *Conclusion*

Exposure to bullying can precipitate distressing paranoid thinking and subsequent misappraisal of threat. As paranoid thinkers experience *real* and *overestimated* threat, the phenomena may persist.

3.2 Introduction

Psychotic phenomena exist on a continuum, or at least as an extended phenotype (Kaymaz & van Os, 2010), which extends into the general population (Johns & van Os, 2001; Shevlin et al., 2007; van Os et al., 2009), with estimated prevalence rates of approximately 5% in adulthood (van Os et al., 2009), 11% in adolescence, and 17% in childhood (Kelleher et al., 2012). A skewed distribution of symptom severity has been noted (Ahmed et al., 2012), with frequency, intrusiveness and associated distress demarcating impairment and subsequent clinical significance (van Os et al., 2009). Thus, clinical manifestations account for a small proportion of total incidence (Nelson et al., 2012).

Transient psychotic-like experiences (PLEs) are not necessarily indicative of psychopathology, with the majority abating over time (Poulton et al., 2000; Dominguez et al., 2011). Moreover, some PLEs are positively associated with mental wellbeing (Boden & Berenbaum, 2004; Beavan et al., 2011); however, others are associated with greater distress and subsequent impairment. Nelson et al. (2012) reported that paranoid ideation, bizarre thinking and perceptual abnormalities indicated risk of clinical disorder, whilst Smeets et al. (2013) found that co-occurring hallucinations and

delusions heightened the risk of persistent and impairing psychosis. Hanssen et al. (2005) reported that those who experienced distressing hallucinations were five times more likely to develop delusions. Distress is integral to the clinical relevance of PLEs, with evidence indicating that distressing symptoms are predictive of help seeking (Hanssen et al., 2005), and migration towards clinical disorder (Freeman & Garety, 2003; van Os et al., 2009). Indeed, Shevlin et al. (2015a) argue that distress is a “central and necessary adjunct to measurement [of PLEs]”.

Migration from transient to persistent PLEs has been evidenced, with increasingly persistent symptoms implicated in greater risk of clinical impairment (Poulton et al., 2000; Bartels-Velthuis, Jenner, van de Willage, van Os & Wiersma, 2010). Cougnard et al. (2007) proposed a *proneness-persistence-impairment* model, which was endorsed in a review by van Os and colleagues (2009), evidencing that whilst many developmental expressions of psychosis disappear over time, some transitory experiences may persist and eventually become of clinical significance, depending on the environmental risk to which a person is exposed (Linscott & van Os, 2013). In an eight-year longitudinal study, Dominguez et al. (2011) identified that exposure to traumatic events precipitated developing psychoses, in those who had

demonstrated vulnerability. Frequently, a dose-response relationship has been reported, with similar risk factors apparent above and below clinical thresholds (Rössler et al., 2011). Specifically, adverse childhood experiences (ACE) have been identified as contributing to the onset of PLEs and psychotic disorders (Read, van Os, Morrison & Ross, 2005; Varese et al., 2012). Experiences of victimisation are associated with the later onset of psychosis (Varese et al., 2012) and those victimised at a young age are at increased risk of accumulative victimisation (Radford, Corral, Bradley & Fisher, 2013).

Childhood bullying is one specific experience that contributes towards the phenomena (Varese et al., 2012; van Dam et al., 2012), with a body of literature highlighting that clinically psychotic adults report to have been bullied in childhood (Varese et al., 2012; Chaudhry, 2012) and that samples of adolescents who endorse items on psychosis checklists have experienced bullying (Campbell & Morrison, 2007; Kelleher et al., 2008). Furthermore, studies that have measured frequency of bullying have indicated that adolescents with more persistent symptoms reported being bullied more frequently than those with transient symptoms (Lataster et al., 2006; Schreier et al., 2009; Mackie, Castellanos-Ryan & Conrod, 2011), which indicates a dose-

response and *prone-ness-persistence-impairment* explanation of migrating PLEs.

Childhood bullying (or peer victimisation) has been conceptualised as a behaviour that takes place between individuals of the same age group, with the intention of causing harm and distress (Olweus, 1996) and is characterised by a repeated and systematic abuse of power (Olweus, Limber & Mihalic, 1999). In a review, Arsenault et al. (2010) state that bullying has three universal characteristics, which are: that it occurs amongst individuals of the same age; that it is repeated over time; and that there is a power imbalance whereby the victim struggles to defend himself.

Factor-analytic studies have identified that the concept of bullying can be broken down into two broad constructs: direct aggression and indirect aggression (Rigby, 2003; Sourander et al., 2007). Direct aggression refers to physical (punching, kicking etc.) or verbal aggression such as name-calling and threats (Sourander et al., 2007). Indirect aggression encapsulates rumour-spreading, exclusion, and other forms of relational or social victimisation (Card, Stucky, Sawalani & Little, 2008; Sourander et al., 2007).

Prevalence rates of bullying differ depending on the methods and definitions used within studies (Chaudhry, 2012; Cook, Williams, Guerra, Kim & Sadek, 2010). Nansel, Craig, Overpeck, Saluja and Ruan (2004) found that rates of peer victimisation ranged from nine to 54% across an international sample; however, rates in England were 11%. Radford and colleagues (2013) estimated that 25% of young people were exposed to a form of bullying during their school years and Cawson, Wattam, Brooker and Kelly (2000) found that approximately 15% of participants experienced physical bullying; however, a larger majority reported indirect bullying, with the most common forms being verbal insults, malicious lies being told about them, or exclusion from peer groups. A further study by Berger (2007) corroborated these findings, also reporting that verbal abuse was the most common form of bullying.

Whilst an association between indiscriminate psychosis and childhood bullying has been observed, research that has adopted a single symptom approach has identified mechanisms that underlie distinct symptom-specific developmental trajectories (Varese et al., 2012; Longden, Sampson & Read, 2015). Consequently, childhood bullying has been identified as a specific risk factor for the development of paranoid and persecutory thinking (Chaudhry,

2012; Ashford, Ashcroft & Maguire, 2012; Catone et al., 2015).

Prevalence rates of paranoid thinking are relatively high with estimates indicating that between one third (Freeman et al., 2005) and 41% (Cella, Sisti, Rochi and Preti, 2011) of non-clinical adult populations experience the phenomena at some time. Cella and colleagues also reported a further 31% who held beliefs that were delusional by nature. Within child and adolescent samples paranoid ideation has been documented, with Wong, Freeman and Hughes (2014) reporting traits of 'mistrust' to relate generally, to home and to school in their sample. Further, Wigman et al. (2011) identified that incidence of paranoid ideation, amongst other PLEs, were common, with heightened incidence for girls over boys.

Chaudhry (2012) reported that in a sample of clinically psychotic adult participants, those who expressed paranoid ideation also reported elevated experiences of childhood bullying; whilst Ashford, Ashcroft and Maguire (2010) reported that exposure to childhood bullying was associated with paranoid thinking in a non-clinical adult sample. In a general population sample, Shevlin, McAnee, Bentall and Murphy (2015) identified that bullying was a significant

predictor of paranoia and that a combination of prior sexual abuse and bullying predicted co-occurring paranoia and hallucinations. Relatedly, Catone and colleagues (2015) utilised the 2000 and 2007 British Adult Psychiatric Morbidity Surveys and reported that experiences of bullying were predictive of persistent persecutory ideation and hallucinations. Valmaggia et al. (2015) reported that individuals at ultra-high risk (UHR) for psychosis were more likely to have been bullied; however, exposure to bullying was associated with paranoid ideation regardless of clinical status. In adolescent samples, Campbell and Morrison (2007) reported that 14-16 year olds who perceived that they had been the victims of bullying expressed paranoid thinking to a greater degree than those who did not, and a longitudinal study by Wolke, Lereya, Fisher, Lewis and Zammit (2014) reported that bullying throughout adolescence predicted paranoid symptoms at age eighteen. To investigate the mechanisms underlying the association between childhood trauma and psychosis, Shevlin, McElroy and Murphy (2015) identified that peer victimisation mediated the relationship between childhood experiences of threat and subordination and psychotic experiences, with loneliness moderating the mediated effect. Findings concerning loneliness correlated with research that has indicated that positive social support

mitigates psychotic symptoms in adolescence (Norman et al., 2005).

Paranoid thinkers have been shown to overestimate threat (Freeman et al., 2008); for example, demonstrating a bias towards threatening stimuli (Bentall & Kaney, 1989) and misinterpreting neutral faces as angry (Pinkham, Brensinger, Kohler, Gur & Gur, 2011). Various explanatory pathways exist, with Freeman and Garety (2014) conducting a review and determining that six proximal causal factors contribute toward persecutory delusions: a worry thinking style, negative beliefs about the self, interpersonal sensitivity, sleep disturbance, anomalous internal stimuli and reasoning biases. Further, cognitive models hypothesise that experiences of victimisation contribute towards the development of schematic beliefs concerning apparent danger in others and the wider world (Smith et al., 2006), thus contributing to the use of an availability heuristic and explaining a bias towards threat (Corcoran et al., 2006) and a perception of the self as vulnerable (Johns et al., 2004). As evidence indicates that victims of childhood bullying experience lower self-esteem, depression and anxiety (Hawker & Boulton, 2000), negative-self related cognitions (Cook et al., 2010) and internalising/externalising symptoms (Kunimatsu & Marsee, 2012), it is plausible that mechanisms identified by Freeman

and Garety are exacerbated by peer victimisation and a sense of the self as vulnerable.

The present study will investigate the association between childhood bullying and paranoid thinking, with consideration of a *proneness-persistence-impairment* framework, whilst also considering distress as a necessary adjunct to measurement. Further, the study will investigate the degree to which paranoid thinking mediates the relationship between different forms of bullying and overestimation of threat in neutral social situations. This will give insight into the developmental trajectory of the phenomena. Other factors that impact upon paranoid thinking, such as; loneliness, social support and adverse childhood experiences will also be considered. Impairment in participants' perceptions of neutral social stimuli will demonstrate the extent to which biases are formed that impact on social interaction.

It is hypothesised that (1) a linear relationship will be found between exposure to childhood bullying and paranoid thinking; (2) adverse childhood experiences, childhood bullying, loneliness and a lack of social support will contribute to an overall predictive model of paranoid thinking; and (3) paranoid thinking will mediate the relationship between

childhood bullying and perception of threat in neutral social stimuli.

3.3 Method

3.3.1 Design

A retrospective cohort study was employed, utilising a sample of adolescents derived from one secondary school in the Midlands region of the United Kingdom. Senior school staff acted as gatekeepers and assessment was conducted in examination conditions on school sites. The survey was hosted online within the architecture of the Bristol Online Survey web tool (BOS; <http://www.onlinesurveys.ac.uk/>). This ensured teachers facilitating data collection were not able to see the confidential responses of the participants. Participants were required to provide demographic information and complete a series of questionnaires, which were assessed for readability using 'the readability test tool' (<http://read-able.com/>); results indicated that readability was adequate for the sample. Tacit consent was required from parents and informed consent requested from participants. The University of Nottingham ethics committee approved the study.

3.3.2 *Participants*

Two hundred and thirty participants (M:F = 123:107) were recruited to the study from one secondary school. Their ages ranged from 11 to 14 ($M=12.57$ years, $SD=.91$ years). Six participants (2.6%) reported to have smoked cannabis or taken legal highs, with 28 participants (12.2%) reporting to be from urban neighbourhoods, 78 (33.9%) from suburban neighbourhoods and 124 (53.9%) from rural neighbourhoods.

3.3.3 *Measures*

3.3.3.1 *Childhood Adversity Scale (CHAS; Boyda, personal correspondence)*

The CHAS is a seven-item measure of adverse childhood experiences, with items covering: separation of parents; family financial difficulties; family arguments; fear of a family member; alcohol problems within the family; physical illness within the family; and mental illness within the family.

Participants are asked to indicate whether each item had occurred; if present, the degree of associated distress was rated on a four-point Likert scale (0 = not distressed, 1 = a bit distressed, 2 = quite distressed, 3 = very distressed).

3.3.3.2 *Community Assessment of Psychic Experience – Positive Symptom Scale (CAPE; Stefanis et al., 2002)*

The CAPE is a 42-item self-report questionnaire designed to measure the frequency and associated distress of three dimensions of psychosis: positive symptoms, negative symptoms and depression. The CAPE 20-item positive scale was used in the present study, which factor-analytic research has shown to encapsulate a five-factor model (hallucinations, paranoia, grandiosity, delusions and paranormal; Wigman et al., 2011; Shevlin et al., 2015a). The CAPE positive symptom scale is based on the Peters Delusion Inventory (PDI; Peters et al., 1999) with two additional items to capture hallucinations. The CAPE has been used extensively in research investigating the psychosis continuum and the positive scale has demonstrated good reliability (0.84; Mark & Touloupoulou, 2016) and validity (Stefanis et al., 2002). Participants are required to indicate the degree to which they have experienced 20 specific phenomena on a four-point Likert scale (0 = never, 1 = sometimes, 2 = often, 3 = always) and were then asked to rate the associated distress on a further four-point Likert scale (0 = not distressed, 1 = a bit distressed, 2 = quite distressed, 3 = very distressed), if they

had responded with anything other than 'never' to the initial question.

3.3.3.3 *Gatehouse Bullying Questionnaire (Bond, Wolfe, Tollit, Butler & Patton, 2007)*

The Gatehouse Bullying Scale is a 12-item questionnaire designed to measure direct and indirect bullying, with a target population of 11-15 year olds. It contains four questions on distinct forms of bullying, which are further broken down into subscales to measure severity and frequency. Follow-up questions are only asked if the initial overarching item is endorsed. The four question domains related to: teasing / name-calling, rumour spreading, exclusion from peer groups, and physical violence / threat. The Gatehouse Bullying Questionnaire has demonstrated good reliability and validity (Bond et al., 2007).

3.3.3.4 *Neutral Social Vignettes*

Eight neutral social vignettes were utilised to assess threat perception in neutral stimuli. Each vignette was designed to be realistic, mundane and internally consistent, in line with the recommendations of Wason, Polonksy and Hyman (2002). Each individual measure consisted of a neutral situational statement such as: '*someone in your school year has tagged you in a Facebook post. You are not close friends*'; a neutral

statement: *'based on this statement, use the scale to rate how much you agree with the following statement'*; and a possible conclusion: *'the person has written something to upset / humiliate you'*. Jack and Egan (2016) used similar vignettes in a previous study and reported they had a Cronbach's alpha of 0.78.

3.3.3.5 Social Support

Social support was assessed by five questions, which asked participants to identify their primary caregiver, the quality of the relationship with their primary caregiver, support offered by their primary caregiver and availability of peer support. One item on loneliness was added as this has been identified as a contributing factor to developing psychoses (Shevlin et al., 2015c).

3.3.4 Procedure

Questionnaires were hosted on a research website using the BOS survey building tool. An initial small-scale pilot was conducted to assess readability and estimate an expected completion time. It was found the survey would take between 20 and 40 minutes to complete, with those who had experienced bullying and a greater number of PLEs expected to take the most time (due to necessary follow-up questions pertaining to associated distress). The BOS system

automatically logs participant responses, which can be extracted for data analysis.

To recruit participants, a standardised email was sent to secondary schools in the Midlands region of the United Kingdom with the aim of agreeing collaboration. If no response was forthcoming, a follow-up telephone call was made. In total 10 secondary schools were contacted and three agreed to participate in the project (response rate = 30%). With those schools that did express an interest, initial meetings were held and a procedure was agreed upon; however, logistical difficulties resulted in only one school administering the survey. The survey was administered during designated lessons within the school day, facilitated by research volunteers and supervised by teaching staff.

3.3.5 Treatment of Data

Results were extracted from the BOS system and imported into Statistical Package for Social Sciences (SPSS) 22.0 for analysis. Data was cleaned, with four participants removed from the dataset due to invalid response patterns, which were identified by three validity questions embedded within the survey. Following this, composite scores were constructed for the CHAS, CAPE and GBS using SPSS syntax commands. A composite score was constructed for the CAPE by combining

presence and distress scores for each item before computing a total score, which has been shown to be a viable methodology (Boyda, 2014). A paranoia scale was constructed using items from the CAPE shown to load to the factor in previous research (Boyda, 2014; Shevlin et al., 2015a). Similarly, a composite score was constructed for the CHAS following the same methodology. However, as this scale proved to be unreliable, a simple index of ACEs was utilised in the study (i.e. total number of ACEs experienced: range = 0-7). Composite scores for the GBS were constructed by adding presence, distress and frequency scores before a scale score was constructed for overt (teasing and physical threat), covert (rumour spreading and social exclusion) and total bullying. Consequently, paranoid thinking and bullying scales were considered a composite of presence, frequency and distress.

Neutral social vignettes were coded from -2 (strongly disagree) through 0 (neutral) to 2 (strongly agree); a total score was then calculated across the eight items. Scale scores of below 0 could be interpreted as indicative of an optimism bias, whereas scores over 0 were indicative of over-perception of threat.

3.4 Statistical Analysis

3.4.1 Descriptive Statistics

All measures were found to be reliable, with Cronbach's alpha at minimum good for all tasks (table 1). Skewness and Kurtosis fell within desired parameters and were considered satisfactory for all measures, except for the CHAS; consequently, it was decided that this scaled score would be excluded from the analysis and a simple measure of frequency (i.e. number of ACEs experienced) would be used instead (see previous section).

Table 1: Cronbach's alpha, mean and standard deviations for measures utilised in study one

	Cronbach's alpha	Mean	SD
CAPE Paranoia Scale	.81	5.83	5.41
Gatehouse Bullying Scale	.80	6.88	6.13
Social Perception Vignettes	.90	-2.85	7.51

3.4.2 Incidence of paranoid thinking

The paranoid thinking scale was constructed of five items from the CAPE (Stefanis et al., 2002), which have been shown to form a paranoid thinking factor (Boyda, 2014); the items were found to load to one unifying factor in the present study. Figure 1 describes the percentage of incidence for each experience within the sample, without associated distress.

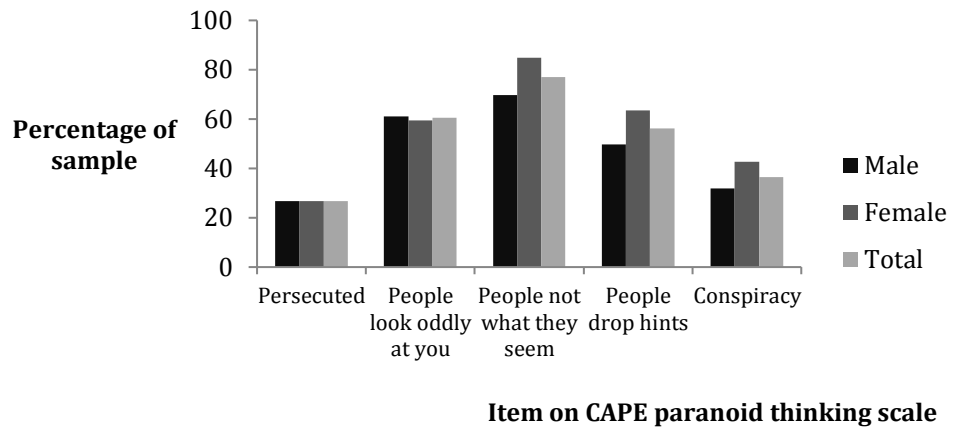


Figure 1: Percentages of response to each item in the paranoid thinking scale, without associated distress

When an interaction between experiences of paranoid phenomena, and associated distress was investigated, results indicated that 17.2% of the sample experienced distress concerning persecution, 38.2% experienced distress concerning people looking oddly at them, 40.4% were distressed by beliefs that people were not what they seemed, 32% were distressed by the perception that others were dropping hints, and 24.6% experienced distress because of a perceived conspiracy.

3.4.3 *Incidence of Childhood Bullying*

From the sample, 175 participants (78%) reported to have experienced some form of bullying, with a minimal difference between males (78.3%) and females (77.3%). Prevalence rates of covert and overt bullying are presented in figure 3, which demonstrates that males were more likely to

experience overt than covert bullying, whereas there was a negligible difference for females.

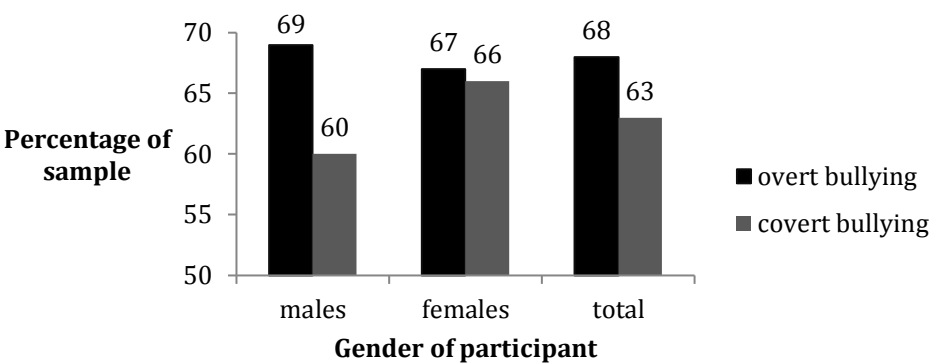


Figure 2: Frequencies of each type of bullying reported in the sample

3.4.4 Incidence of Adverse Childhood Experiences

As described above, the CHAS scale was not determined to be usable within the present study. Consequently, each item was considered as a distinct event. Figure 4 describes frequencies of each experience and table 2 presents the accumulation of ACE experiences across the sample.

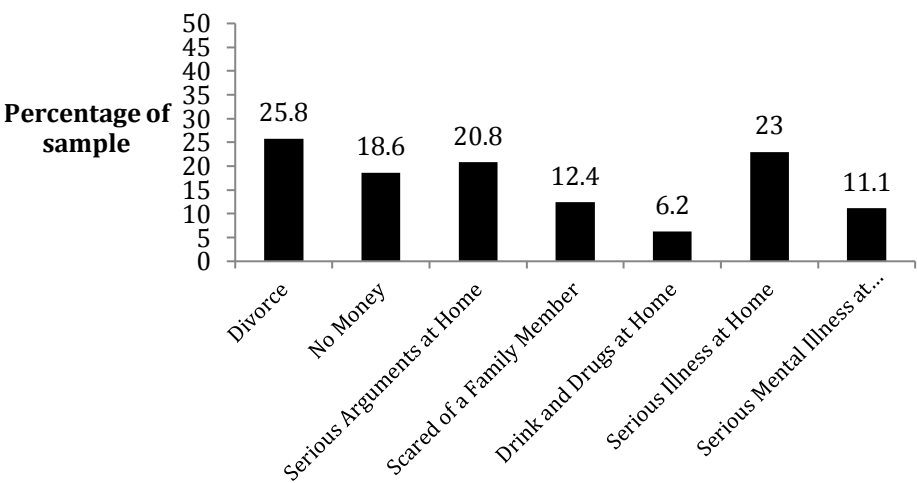


Figure 3: Frequencies of adverse childhood experiences

Table 2: Frequency table depicting accumulation of ACEs across the sample

Total Number of ACEs	Total number of sample (%)
0	96 (42.5)
1	52 (23)
2	43 (19)
3	19 (8.4)
4	6 (2.6)
5	6 (2.6)
6	4 (1.7)
7	0 (0)

3.4.5 Hypothesis One

To investigate whether exposure to childhood bullying predicted paranoid thinking, a simple linear regression was conducted. Findings indicated that exposure to childhood bullying significantly predicted paranoid thinking, $\beta = 0.522$ [95% CI .429, .616], $t(224) = 10.997$, $p = >.001$. Exposure to childhood bullying predicted 34.8% of the variation in outcome scores (adjusted $R^2 = .348$).

Following the initial analysis, a second investigation was conducted to determine the distinct relationships between overt and covert childhood bullying, and paranoid thinking. A bivariate correlation analysis was completed, which revealed that all associations were significant (see table 3).

Table 3: Correlation matrix describing associations between paranoid thinking and different types of bullying. *significant $p = <.05$ ** $p = <.001$.

	Paranoid Thinking	
	r	p
Overt	.508	<.001**
Covert	.573	<.001**

Consequently, a multiple linear regression was undertaken to establish if the forms of bullying predicted paranoid thinking, with findings indicating that the regression equation was significant, $F(2, 223) = 61.710$, $p = <.001$, with an adjusted R^2 of .351. Overt and covert bullying both contributed to the model, with covert bullying ($\beta = 0.669$ [95% CI .443, .896], $t(224) = 5.820$, $p = <.001$) being a stronger predictor than overt bullying ($\beta = 0.370$ [95% CI .136, .604], $t(224) = 3.117$, $p = .002$) on paranoid thinking.

3.4.6 Hypothesis Two

To investigate the extent to which external social and environmental factors impact upon the relationship between bullying and paranoid thinking, an initial bivariate correlation analysis was conducted, which is reported in table 4.

Table 4: Correlation matrix describing associations between paranoid thinking and environmental and social variables. *significant $p = <.05$ ** $p = <.001$.

	Paranoid Thinking	
	<i>r</i>	<i>p</i>
Gender	.242	<.001**
Age	-.037	.577
Loneliness	.543	<.001**
No Support from Adult	-.253	<.001**
No Support from Peers	-.223	.001*
Cannabis use	.205	.002*
Legal high use	.122	.067
Perceived dangerous home	.284	<.001**
Perceived dangerous neighbourhood	.259	<.001**
Perceived dangerous school	.216	.001*
Type of neighbourhood	.032	.637
ACEs	.380	<.001**

The findings indicated that a range of factors correlated with paranoid thinking. A series of hierarchical multiple linear regressions were conducted to establish a more predictive model. The regression equation for the best model was significant, $F(6, 210) = 33.988$, $p = <.001$, with an adjusted R^2 of .478. Overt and covert bullying remained within the model, with being female, use of cannabis, loneliness and perceived dangerous neighbourhoods also contributing to the effect on paranoid thinking (table 5).

Table 5: Forms of childhood bullying, environmental and social predictors of paranoid thinking

	<i>B</i> (95% CI)	SE β	β	<i>p</i>
Constant	-2.525	1.083		.021*
Overt Bullying	.371	.114	.222	.001*
Covert Bullying	.403	.117	.246	.001*
Gender	2.077	.555	.192	<.001**
Cannabis	8.053	2.328	.174	.001*
Loneliness	1.094	.455	.122	<.001**
Perceived Dangerous Neighbourhood	1.897	.499	.235	<.017*

3.4.7 Hypothesis Three

To investigate the extent to which experiences of childhood bullying and paranoid thinking predicted overestimation of threat in neutral social stimuli, a multiple regression analyses was conducted, which indicated that paranoid thinking, $\beta = .281$ [95% CI .066, .495], $t(222) = 2.578$, $p = >.011$, and childhood bullying, $\beta = .194$ [95% CI .005, .383], $t(222) = 2.019$, $p = >.045$, significantly predicted the outcome measure.

To establish whether paranoid thinking mediated the relationship between experiences of childhood bullying and overestimation of threat, a mediation analysis was conducted using the PROCESS Macro for SPSS (Hayes, 2015). Results

indicated that there was a significant indirect effect of childhood bullying on overestimation of threat in neutral social stimuli through paranoid thinking, $ab = .14$ BCa CI [.03, .27]. Paranoid thinking could account for approximately half of the total effect, $P_M = .43$ (figure 4).

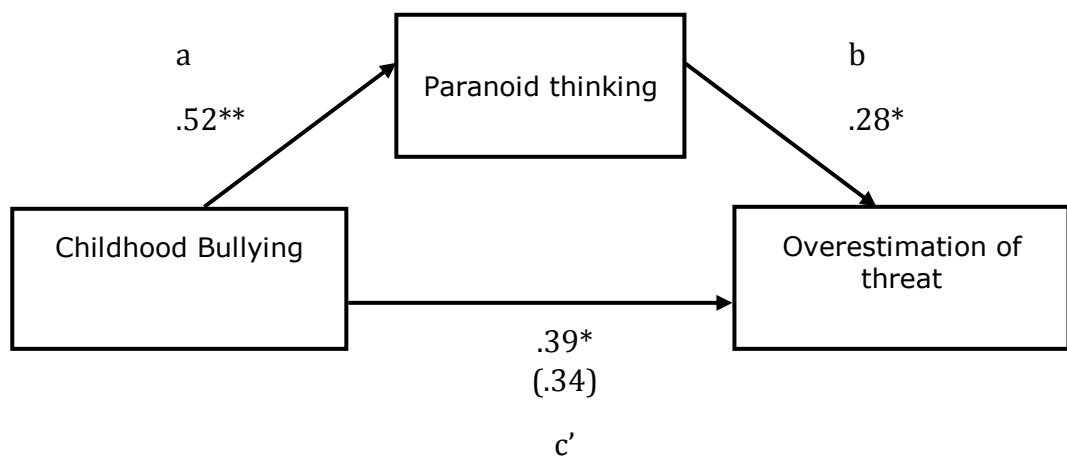


Figure 4: Mediation model for childhood bullying, paranoid thinking, and overestimation of threat in neutral social stimuli

3.5 Discussion

The results of the present study indicate that exposure to childhood bullying is associated with experiences of paranoid thinking, which is generally supportive of the existing literature (Campbell & Morrison, 2007; Wolke et al., 2014; Catone et al., 2015). Further, more severe bullying was associated with greater paranoid thinking, which was suggestive of a linear (Lataster et al., 2006; Schreier et al.,

2009; Mackie et al., 2011) and *proneness-persistence-impairment* interpretation (Cougnard et al., 2007; van Os et al., 2009).

Whilst both covert and overt bullying were significant statistical predictors of paranoid thinking scores, covert bullying demonstrated the strongest effect. Further, when social and environmental factors were considered, cannabis use, living in a perceived dangerous neighbourhood, loneliness, and being female also contributed to the best predictive model. Lastly, paranoid thinkers perceived threat in neutral social stimuli, which is supportive of previous research (Freeman et al., 2008; Jack & Egan, 2016). Paranoid thinking was shown to mediate between experiences of childhood bullying and overestimation of threat.

Cognitive bias is implicated in the development of paranoid thinking (Freeman & Garety, 2014). Smith et al. (2006) have argued that experiences of victimisation contribute towards the development of schematic beliefs concerning danger, and Corcoran et al. (2006) have identified that such internalised beliefs manifest as an availability heuristic when paranoid thinkers appraise situations for threat. Further, Johns et al. (2004) have reported that

experiences of victimisation precipitate a sense of the self as vulnerable.

Experiences of bullying have been shown to have a deleterious effect on the formation of adolescent self-concept and perception of the world around them (Hawker & Boulton, 2000; Cook et al., 2010; Kunitatsu & Marsee, 2012) and it is plausible that bullied adolescents experience a sense of vulnerability and anxiety concerning their peer relationships, which precipitate and maintain the factors foundational to the formation of persecutory beliefs, as identified by Freeman and Garety (2014). In the present study, loneliness was found to be a significant contributor towards paranoid thinking. Shevlin et al. (2015c) reported that loneliness moderated the mediating effect of peer victimisation on the relationship between ACEs and psychosis. When concluding, the authors refer to the 'loneliness loop' (Hawkley & Cacioppo, 2010), which implies that feelings of loneliness, possibly exacerbated by social exclusion and rumour spreading in the present study, may trigger hypervigilance towards the social environment, which precedes the development of problematic cognitive biases. This hypothesis would appear congruent with the finding that covert bullying, constructed of social exclusion and rumour spreading, was a stronger predictor of paranoid thinking than overt bullying, as experiences of social

alienation are a fertile breeding ground for a sense of powerlessness, the formation of cognitive bias and a vulnerable sense of self.

A *proneness-persistence-impairment* interpretation of the phenomenon might find traction in the aforementioned cognitive factors. It is possible that as the severity of bullying increases, the bullied adolescent becomes at greater risk of internalising negative schema concerning interpersonal threat, and forming cognitive biases that precede persistent appraisals of neutral situations as threatening. Without adequate support, or challenges to misappraised perceptions of threat, the adolescent might be cast into a vicious cycle whereby instances of *perceived* victimisation sit alongside *real* victimisation and further reinforce core schematic beliefs and paranoid thoughts. What's more, children who present as paranoid might be perceived as 'odd' by their peers, which might precipitate victimisation.

Living in a dangerous neighbourhood has been shown to increase the risk of paranoid thinking styles (Jack & Egan, 2016). Within the present study, a similar effect was found, which might be indicative of accumulative victimisation (Radford et al., 2013) and exposure to threat both in and outside of school. This type of exposure might reinforce

schematic beliefs concerning danger and exacerbate hypervigilance and cognitive bias. Further, it is also plausible that danger in the community relates to the continuation of childhood bullying outside of the school gates.

Interestingly, girls were found to experience paranoid thinking more than boys, replicating the findings of Wigman et al. (2011). This finding is potentially indicative of the greater social pressures that teenage girls experience. Research has indicated that female bullying tends to be covert and indirect (Whitney & Smith, 1993; Borg, 1999), which is shown to have a stronger association with paranoid thinking in the present study, in comparison to overt bullying. It is plausible that teenage girls are particularly vulnerable to negative social schema and subsequent appraisals, which enhance the risk of paranoid thinking styles in relation to social status.

It has been argued that paranoid thinking might be adaptive in certain circumstances. Indeed, Preti and Cella (2010) posit that a 'paranoid heuristic' and vigilance for danger might serve to protect from future threat those who have experienced prior victimisation. Nevertheless, when removed from a threatening environment, the perception of threat in neutral social stimuli might reinforce paranoid

thoughts and spur migration to clinical thresholds or even reactive violence. Thus, the paranoid thoughts might spiral from adaptation to impairment.

4.0 Chapter Four

Paranoid Thinking and Childhood Bullying; Safety Behaviours and Revenge

4.1 Abstract

4.1.1 Background

Paranoid individuals might use safety behaviours to reduce real and perceived threat. As bullied children are at risk of developing paranoid thinking styles, it is possible that a propensity for internalising or externalising behaviours might result in the use of safety behaviours and aggression towards others.

4.1.2 Aims

The present study sought to explore the relationship between paranoid thinking styles, experiences of childhood bullying, internalising and externalising behaviours, and propensity to endorse revenge as a behavioural response to perceived social threat.

4.1.3 Methodology

The methodology and dataset used in the present study was the same as that used in the previous chapter. As such, 230

adolescents aged between 11 and 14 completed a series of questionnaires hosted on the Bristol Online Survey website.

4.1.4 Results

Results indicated that high levels of paranoid thinking and childhood bullying were associated with externalising symptoms. Externalising symptoms were associated with endorsement of revenge and propensity to fight with peers. There was no direct relationship between paranoid thinking and aggressive outcomes.

4.1.5 Conclusions

Paranoid thinking was not associated with endorsement of revenge or propensity to fight with peers; however, a tendency to externalise behaviour was a consequence of paranoid thinking, and an antecedent to endorsement of revenge. This finding indicates that paranoid thinking heightens the risk of perceiving threat in the environment, which triggers the use of safety behaviours. If the individual tends to externalise behaviours, it is possible that violence will be used to reduce perceived social threat.

4.2 Introduction

Psychotic symptoms and experiences of childhood bullying have been reported to be predictors of aggression and violence. Investigations into the association between psychosis and violence have predominantly focussed on individuals with severe clinical psychopathology, with results indicating a small but positive correlation (Fazel, Gulati, Linsell, Geddes & Grann, 2009; Douglas, Guy & Hart, 2009). Coid et al. (2013) reported that persecutory ideation, feeling as if spied upon, and conspiracy beliefs were predictive of serious violence within an inner-city cohort. a systematic review conducted by Darrell-Berry, Berry and Bucci (2016) reported that an analysis of methodologically sound studies revealed a positive correlation between paranoid thinking and violence; however, the authors note that findings are generally mixed in studies of lesser quality.

A problem with much of this research is that it typically draws samples from clinical populations and/or makes use of diagnostic classifications, thus not accounting for below-threshold PLEs. A study by Mojtabai (2006) investigated the association between PLEs and violence across the continuum, finding that unusual perceptual experiences and persecutory ideation were consistently associated with violence. A further

study by Kinoshita et al. (2011) reported that a range of PLEs, including persecutory ideation, were predictive of interpersonal and object violence in an adolescent sample. In both studies a dose-response relationship was reported.

Acting on delusions is one explanation for the association between persecutory ideation and reactive violence (Wessely, 1993); however, the presence of symptoms alone is not predictive; instead, associated distress is considered to drive the effect (van Dongen, Buck & van Marle, 2012). Individuals who experience paranoid ideation display a proclivity to perceive threat in neutral stimuli (Bentall & Kaney, 1989; Jack & Egan, 2016) and exposure to victimisation leads to a perception of the self as vulnerable, which precedes the development of a hostile attribution bias (Johns et al., 2004; Freeman et al., 2008). Consequently, paranoid thinkers are 'engulfed' by danger signals when processing social information (Fengler & Winkel, 2014), which activates the autonomic fight/flight response system (Kunimatsu & Marsee, 2012) and reliance upon affective – and omission of cognitive – information (Crittenden, 2015). Freeman et al. (2007a) propose that such individuals utilise safety behaviours, such as avoidance or aggression, to reduce perceived threat. Accordingly, experiences of PLEs in adolescence are associated with internalising (anxiety,

depression, social withdrawal etc.) and externalising (hyperactive, aggressive, antisocial or oppositional behaviours) psychopathology (Downs, Cullen, Barragan & Laurens, 2013). Whilst internalising symptoms are considered to inhibit aggression, externalising symptoms have been shown to increase the risk of violent behaviour (Mason et al., 2004).

Interestingly, involvement in childhood bullying is also associated with internalising and externalising psychopathology, with evidence indicating that victims present with internalising symptoms (Klomek et al., 2009) and bully-victims (those who are both the perpetrator and victim of bullying) exhibit externalising symptoms (Kumpulainen et al., 1998). Kelly et al. (2015) described corroborating findings and indicated that whilst victims internalised problems, and bullies externalised problems, bully-victims reported the highest levels of each. Relatedly, Salmivalli and Nieminen (2002) reported that bully-victims display significantly greater reactive and proactive aggression than those not involved in bullying; in the study, bullies were also more aggressive, proactively and reactively, than controls.

Frey, Pearson and Cohen (2015, p.25) note that a “a surprising omission of much research on bullying is the role of retaliation, a common response to bullying that predicts increased victimisation”. The authors say that, in some instances, retaliation might be a morally defensible and adaptive strategy. Indeed, colloquially, many children may be instructed to ‘hit back’, to end victimisation and assert social status (Sercombe & Donnelly, 2013). Frey et al. (2015) identify that peer influence might contribute to potential retributive actions; however, also note that ‘hitting back’ perpetuates the cycle of bullying.

An alternative explanation for retributive aggression is discussed by Dutton, White and Fogarty (2013), who identified that mass shooters in American schools experienced paranoid ideation, revenge fantasy, and a propensity for externalised behaviour (amongst other risk factors). The authors described a typology whereby perpetrators perceived themselves to have been victimised by others and plotted to avenge their experience. Whilst cultural factors might dictate the level of response (i.e. gun control in the UK as compared to the USA), the underlying psychological and social mechanisms might be consistent across populations. Tone and Davis (2012) also posit that paranoid individuals might endorse retribution in response to perceive threat; however,

the authors declare that more research is needed to explore the phenomenon fully.

This study seeks to investigate the relationship between paranoid thinking, experiences of childhood bullying and response to perceived threat. It is of importance to study the association between different forms of bullying and internalising/externalising symptoms and the degree to which paranoid thinking mediates the relationship. It is apparent that exposure to childhood bullying has a well-established association with aggression; however, the extent to which paranoid thinking contributes towards the pathway is important to investigate. Paranoid thinkers might utilise safety behaviours in response to perceived threat, which direct them towards aggression. It is also possible that the isolated victim might ruminate on fantasies of revenge, which propel him or her towards retributive action.

It is hypothesised that: (1) an association will be found between paranoid thinking and internalising / externalising symptoms, and between childhood bullying and internalising / externalising symptoms; and (2) that children who externalise symptoms will endorse revenge as a response to perceived threat and display greater propensity for peer aggression.

4.3 Method

4.3.1 Participants

Participant information is described in the previous chapter.

4.3.2 Measures

The CAPE, GBS and Neutral Social Vignettes are described in the previous chapter; however, an additional component was incorporated within the Neutral Social Vignettes for this study. After rating the intention of threat, participants were asked to identify a choice response to the situation as follows: do nothing (no action is needed); do nothing (it was probably your fault anyway); tell someone; or get revenge.

4.3.2.1 Strengths and Difficulties Questionnaire (SDQ; Goodman, Meltzer & Bailey, 1998)

The SDQ is a 25-item behavioural screening measure that consists of five sub-scales to measure multiple domains of childhood behaviour. It is suitable for children aged between three and 16 inclusive. Participants are required to rate each item on a three-point Likert scale (0=not true, 1=somewhat true, 3=certainly true). Global scores for internalising and externalising behaviour are also included and are the measure of relevance to the present study. The SDQ has demonstrated

satisfactory reliability (mean Cronbach's alpha: 0.73) and validity (Goodman, 2001).

4.3.3 Procedure

The dataset for study two was the same as that for study one; consequently, the procedure is also as per study one.

4.3.4 Treatment of Data

This study utilised the dataset described in chapter three, and was conducted after the initial analysis, so treatment of data is as described previously. For this study it was necessary to conduct split median transformations for paranoid thinking, childhood bullying, externalising symptoms and internalising symptoms. Each of these transformations split the variables into 'high' and 'low' categories. For ease of analysis, the endorsement of revenge item was recoded into dichotomous 'revenge' / 'no revenge' and a mean average taken across the eight vignettes. This was then rounded to the nearest whole number, which allowed for categorical analysis.

4.4 Results

4.4.1 Descriptive Statistics

Descriptive statistics for the paranoid thinking scale, GBS and neutral social vignettes scales are described in the previous chapter. Descriptive statistics for the SDQ are reported in

table 6. The measure was considered reliable in the present study, showing acceptable skewness and kurtosis.

Table 6: Cronbach's alpha, mean and standard deviations for measures utilised in study two

		Cronbach's alpha	M	SD
Strengths and Difficulties	Total	.79	12.81	6.56
	Externalising	.80	7.09	3.78
	Internalising	.79	5.73	3.90

4.4.2 Hypothesis One

An initial bivariate correlation analysis was conducted to investigate the association between paranoid thinking, overt and covert bullying, and internalising and externalising symptoms. Results indicated that there were no significant correlations between the variables and internalising or externalising symptoms (table 7); however, there was a correlation between internalising and externalising symptoms ($r = .43, p < .001$).

Table 7: Correlation matrix describing association between internalising / externalising symptoms, and paranoid thinking, and overt and covert bullying

	Internalising		Externalising	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>P</i>
Paranoid thinking	-.008	.902	-.089	.182
Overt bullying	-.026	.697	-.023	.730
Covert bullying	.008	.909	.014	.831

Scatterplots to describe the association between the variables are reported below (figure 5-8).

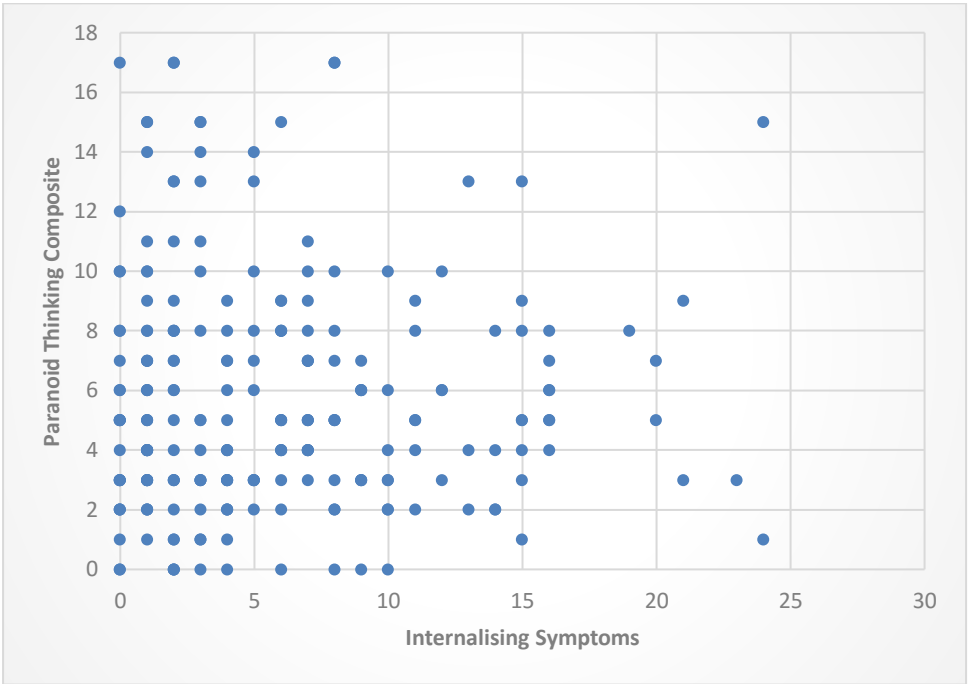


Figure 5: Scatterplot to describe relationship between paranoid thinking composite score and internalising symptoms

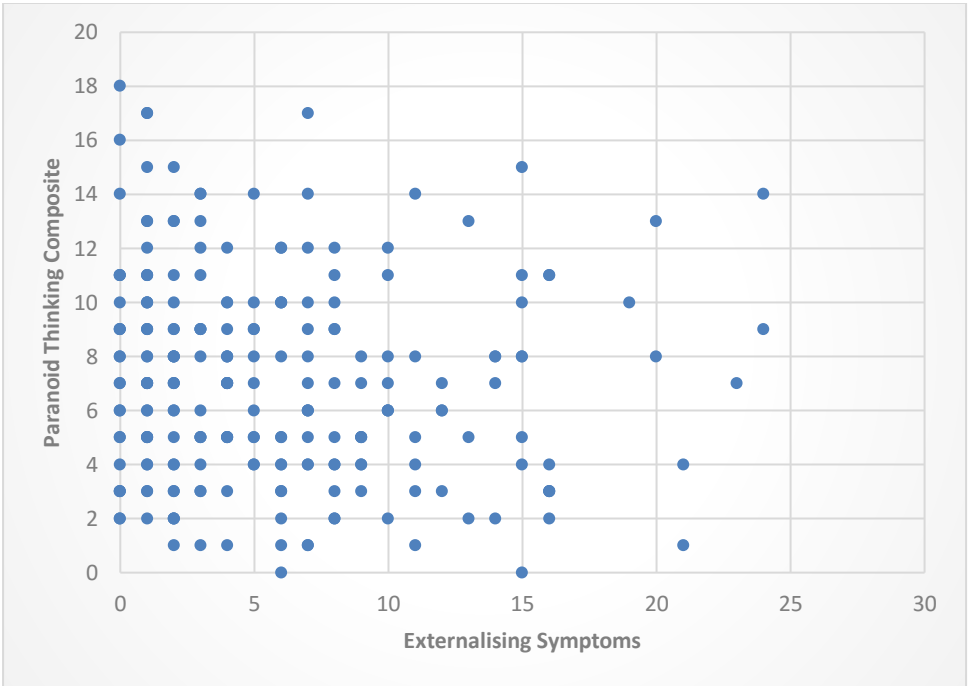


Figure 6: Scatterplot to describe relationship between paranoid thinking composite score and externalising symptoms

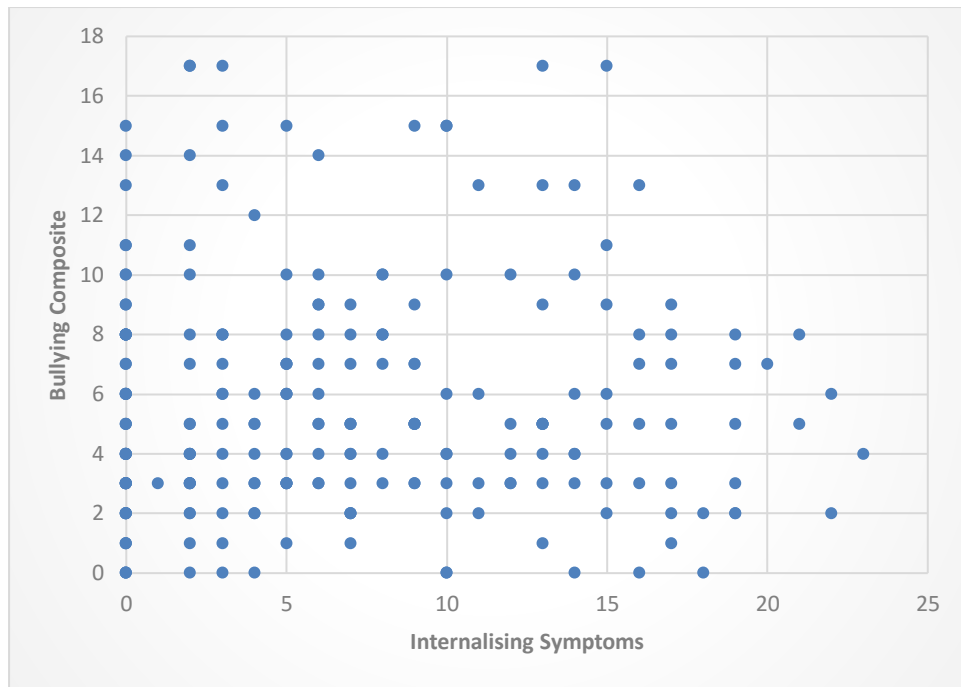


Figure 7: Scatterplot to describe relationship between bullying composite score and internalising symptoms

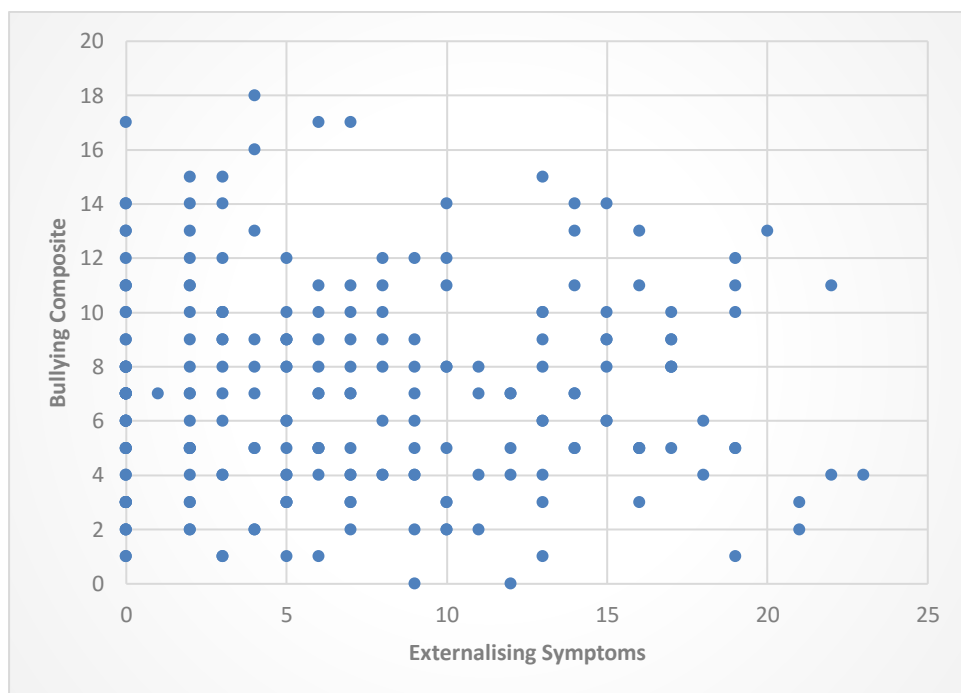


Figure 8: Scatterplot to describe relationship between bullying composite score and externalising symptoms

The above analysis conceptualised the variables as continuous data, in line with a dimensional model of the phenomena. However, as safety behaviours are hypothesised to be utilised when paranoia is problematic (and approaching clinical thresholds), it was considered appropriate to reanalyse the data as dichotomous. As such, to establish the extent to which high levels of paranoid thinking, and bullying, were associated with internalising and externalising symptoms, split median transformations were conducted to allow for cross tab and chi-square analysis. Results indicated that there was a significant association between high levels of paranoid thinking and high levels of externalising symptoms (table 8), $\chi^2(1) = 38.049, p = <.001, \Phi = .41$, and between high levels of paranoid thinking and high levels of internalising symptoms (table 9), $\chi^2(1) = 30.189, p = >.001, \Phi = .37$.

Table 8: Cross tabulation table describing relationship between paranoid thinking and externalising symptoms

		Paranoid thinking		
		Low	High	
Externalising symptoms	Low	78	28	106
	High	39	81	120
		117	109	226

Table 9: Cross tabulation table describing relationship between paranoid thinking and internalising symptoms

		Paranoid thinking		
		Low	High	
Internalising symptoms	Low	73	28	101
	High	44	80	124
		117	108	225

Concerning bullying, high levels of bullying were associated with high levels of externalising symptoms (table 10), $\chi^2(1) = 35.659, p = <.001, \Phi = .41$, and high levels of internalising symptoms, $\chi^2(1) = 37.596, p = <.001, \Phi = .40$ (table 11).

Table 10: Cross tabulation table describing relationship between bullying and externalising symptoms

		Bullying		
		Low	High	
Externalising symptoms	Low	76	30	106
	High	37	83	120
		113	113	226

Table 11: Cross tabulation table describing relationship between bullying and internalising symptoms

		Bullying		
		Low	High	
Internalising symptoms	Low	73	28	113
	High	40	84	112
		101	124	225

4.4.3 *Hypothesis Two*

To investigate the extent to which externalising symptoms, internalising symptoms, bullying, and paranoid thinking, predicted endorsement of revenge in response to perceived threat, a binomial logistic regression was conducted. As per hypothesis three, split median transformations were utilised to separate variables into 'high' and 'low' frequencies. Results indicated that the best model excluded internalising symptoms, bullying and paranoid thinking; however, externalising symptoms significantly predicted endorsement of revenge in response to perceived threat, $\chi^2(1) = 16.314$, $p = <.001$ (Wald statistic, $p = .001$). Nagelkerke's R^2 of .130 indicated that the model accounted for 13% of the variance.

A final cross tabs analysis was conducted to ascertain the extent to which endorsement of threat correlated with a propensity to fight with peers. Results indicated that there was a significant association between endorsement of revenge in response to perceived threat and propensity to fight with peers, $\chi^2(1) = 14.968$, $p = <.001$, $\Phi = .26$ (table 12).

Table 12: Cross tabulation table describing relationship between endorsement of revenge and propensity to fight with peers.

		Fight with peers		
		No	Yes	
Revenge	No	162	33	195
	Yes	15	14	29
		177	47	224

4.5 Discussion

The findings of the present study indicate that there is an association between paranoid thinking and both internalising and externalising symptoms; however, associations were not linear. These results are generally supportive of previous findings (Downs et al., 2013).supporting the existing literature (Klomek et al., 2009; Kumpulainen et al., 1998; Kelly et al., 2015) an association was also found between childhood bullying and internalising and externalising symptoms, which, again, was not linear.

The present study found that paranoid thinking was not directly associated with endorsement of revenge to perceived threat; however, a propensity to externalise symptoms was associated with endorsement of revenge, which, in turn, was associated with fighting with peers. This is congruent with previous research, which has identified a link between

externalising – but not internalising – symptoms and violence (Mason et al., 2004).

The findings of the present study indicate that potentially distressing experiences of paranoid thinking are likely to be associated with internalising and externalising phenomena, whilst lower level transitory experiences are not. This supports the assertion that psychotic phenomena that migrate towards a clinical threshold – demarcated by distress – might draw an association with violence (van Dongen et al., 2012; Coid et al., 2013); however, only if aggression is an aspect of the individual's behavioural repertoire. Previous studies by Mojtabai (2006) and Kinoshita et al. (2011) have identified dose-response relationships between PLEs and violence, which is further evidence of the importance of delusional distress as an accompaniment to PLEs and reactive behaviours (van Dongen et al., 2012).

Freeman and colleagues (2007a) posit that paranoid individuals utilise safety behaviours to reduce perceived threat, with Downs et al. (2013) further reporting that this occurs in non-clinical populations for those who experience PLEs. It was apparent from the findings of the present study that individuals who scored highly on the distress X frequency composite of paranoid thinking were likely to either internalise

or externalise symptoms, which could be indicative of the use of safety behaviours. These findings indicate that paranoid thinking might increase perceived threat, which is likely to stimulate the autonomic nervous system and prepare the bullied adolescent for fight or flight (Fengler & Winkel, 2014; Kunimatsu & Marsee, 2012). When in a state of threat-induced arousal, a propensity to externalise symptoms might precipitate aggression to reduce threat as a safety behaviour. It is plausible that this mechanism relates to both *real* and *perceived* threat, hence the association that was also found between childhood bullying and externalising symptomatology.

The findings of the present study indicate that retribution – or revenge – is a real concern within the context of childhood bullying. Retribution has been noted to be a potentially adaptive strategy, with ‘hitting back’ an oft-promoted defensive strategy (Sercombe & Donnelly, 2013); however, Frey et al. (2015) report that aggression in response to peer victimisation perpetuates the cycle of bullying. It is also likely that those who externalise, and seek retribution, are those who fit the bully-victim typology, as evidenced by the noted correlation between internalising and externalising symptoms in the present study.

5.0 Chapter Five

Integration of Research Studies Findings

5.1 Discussion

When the findings of study one and study two are considered in unison, a potential trajectory between childhood bullying and aggressive behaviours, via paranoid thinking, can be posited. A linear relationship was found between experiences of childhood bullying and paranoid thinking, which indicated that as bullying becomes increasingly severe, paranoid thoughts (as a composite of frequency and distress) becomes greater. This is supportive of previous studies that have explored the relationship (Lataster et al., 2006; Schreier et al., 2009; Mackie et al., 2011) and suggestive of a migration from transitory to persistent PLEs, as precipitated by increased traumatic exposure (van Os et al., 2009).

It was apparent that paranoid thinking mediated the relationship between childhood bullying and overestimation of threat in neutral social stimuli. Cognitive biases are implicated in the development and maintenance of paranoid thinking (Freeman & Garety, 2014) and it is plausible that a perception of the self as vulnerable, and other people as threatening, derived from childhood bullying, contributes to the development of schematic beliefs concerning danger (Hawker

& Boulton, 2000; Smith et al., 2006). Also, the 'loneliness loop', as posited by Hawkley and Cacioppo (2010) indicates that social exclusion precipitates hypervigilance for threat in the social environment. This hypothesis is consistent with the finding that covert bullying was strongly associated with paranoid thinking in the present study. Other factors such as ACEs (Varese et al., 2012) and threat outside of the school gates (Jack & Egan, 2016), might contribute towards a series of repeat victimisations (Radford et al., 2013), which reinforce negative schematic beliefs and lead to the internalisation of paranoid thoughts. Thus, when appraising stimuli like that experienced as threatening, the availability heuristic is utilised (Corcoran et al., 2006) and neutral situations are perceived as threatening.

As overestimated threat is processed within an internalised schematic model, even neutral events are added to an evidence base of threat, particularly if reasoning biases are not countered by adequate social support. As experiences become increasingly distressing, the risk of transitory paranoid thoughts migrating towards persistent and eventually impairing symptoms of clinical disorder is increased (van Os et al., 2009).

A moveable threshold demarcated by distress is a gateway to clinical disorder; however, distressing experiences are also predictive of safety behaviours (Freeman et al., 2007a). The present study supported previous literature and found that internalising and externalising symptoms were associated with paranoid thinking (Downs et al., 2013), and severe childhood bullying (Kelly et al., 2015). It can be extrapolated that at the extremities of each continuum, the individual, distressed by their experiences, engages in behaviours with the intention of reducing perceived threat, be it *real* or *overestimated*.

Externalising symptoms were found to be associated with the endorsement of revenge for perceived social threat, which in turn was associated with a propensity to fight with peers. Importantly, this reveals that paranoid thinking is not directly associated with aggressive behaviours; rather bullied adolescents who display paranoid thinking are vulnerable to overestimating threat, which further precipitates and then maintains more problematic experiences of the phenomenon. Aggression will only arise if the adolescents have a predisposition to externalise symptoms when threatened. Accordingly, such individuals might seek retribution (Frey et al., 2015) and 'hit back' (Sercombe & Donnelly, 2013) or

ruminate and instrumentally take revenge (Dutton et al., 2013).

It has been argued that paranoid thinking is an adaptive cognitive heuristic (Preti & Cella, 2010), which protects the individual from further exposure to harm. Further, retribution in response to childhood bullying has also been considered adaptive (Frey et al., 2015). Nevertheless, the use of safety behaviours has been shown to maintain paranoid thinking (Freeman et al., 2007) and aggression in response to bullying perpetuates a cycle of bully-victim interactions. Indeed, even those who internalise and 'shy away' from peers to maintain safety might become the target for others who perceive them as 'odd' or 'an outsider'.

5.2 Clinical Implications

The findings of this study reinforce previous findings that transitory and non-distressing PLEs are not inherently indicative of psychopathology, nor associated with behavioural difficulties. Despite this, if paranoid thinking migrates towards a clinical threshold demarcated by distress, then potentially harmful safety behaviours may ensue, depending on the predisposition of the individual to internalise or externalise symptoms.

As childhood bullying has been implicated as a risk factor for paranoid thinking, an understanding of the cognitive processes that underpin the association might help professionals, parents and teaching staff to identify the early signs of emerging difficulties. This would allow for the provision of social support and cognitive reappraisals of schematic beliefs, with the aim of halting the spiral towards persistent and impairing difficulties. Further, a formulation of behavioural difficulties that encompasses the notion of safety behaviours would be advantageous when working with bullies and bully-victims. This would allow alternative pro-social behaviours to be introduced and aggression understood as serving the function of reducing perceived threat. The use of positive behaviour support (PBS: Sugai et al., 2000) could facilitate this intervention.

5.3 Limitations of study

There are several limitations to the present study, which should be addressed in the case of replication. Firstly, causality could not be identified due to the cross-sectional design. Secondly, the study made use of self-report questionnaires, which can lead to misunderstanding or inaccuracy of data; however, this methodology has been found to be acceptable in studies investigating psychotic

phenomena (Allardyce, Suppes & van Os, 2007) and bullying (Cornell & Bandyopadhyay, 2009) in adolescents. Further, a series of validity items were included to prevent random or exaggerated response styles. Whilst self-report questionnaires are a valid methodological approach, future studies might make use of corroborative teacher or peer reports, particularly in relation to bullying.

A third weakness of the methodology is related to the measurement of paranoid thinking and bullying as distinct phenomena. Whilst this was the intention within the present studies, it is important to acknowledge that some items that define paranoid thinking (e.g. "do you ever feel as if you are being persecuted in some way?") might also extract information pertaining to bullying. For example, a bullied child might accurately define their victimisation as persecutory. Likewise, a paranoid child might perceive the actions of others to constitute bullying (as evidenced in the neutral social stimuli test) when this is not the case. This is a vulnerability in any research methodology that addresses an association between bullying and paranoid thinking, and careful design is called for. Future studies in this area might make use of multiple reporters (to reduce the impact of paranoid thinkers misinterpreting neutral events as threatening), and carefully select measures or techniques to elicit information about pure

paranoia that reduce contamination on account of bullying experiences.

Several schools were contacted with an invitation to participate; however, a general reluctance prevented a truly representative sample. Consequently, participants were recruited from only one school, with an unrepresentative sample regarding neighbourhood and likely socio-economic status. Consequently, it is probable that the extent of the significant variables across the sample was reduced, in comparison to national averages. Despite this limitation, it is plausible to suggest that the relative absence of confounding external factors, such as ACEs, allowed for the association between bullying and paranoid thinking to be established without excessive statistical noise.

A fifth limitation relates to the measurement of ACEs in the present study. Varese et al. (2012) have identified that specific early experiences of neglect and abuse are associated with paranoid thinking; however, in the present study the school gatekeepers did not consider it acceptable to ask participants to disclose such experiences. It is therefore possible, that unreported ACEs may have acted to confound results in the present study, though it is important that this effect is not overstated. Further, this is a problem that is

likely to occur in any research that does not control for all known effecting variables.

A penultimate limitation relates to the use of split-median transformations in chapter four. It is possible that skew in the data, as evidenced in the scatterplots, meant that the median score for paranoid thinking, bullying, and internalising and externalising symptoms was relatively low and below the score on each scale that would imply clinical relevance. As such, those who scored within a healthy range were included in the 'high' group, and there is also a potential lack of nuance in the interpretation of the scores for those who do score highly. In future replications, it might be advisable that superior methods of binary segregation are applied (i.e. along clinical threshold scores). This would allow for demarcations to be made along more evidence-based guidelines.

A final limitation relates to the way violent outcomes were measured in chapter four. Endorsement of revenge was ascertained via an adjunctive question for each neutral social vignette and propensity to fight with peers was rated using a single item from the Strengths and Difficulties Questionnaire. In the case that this study was to be replicated, a more nuanced approach to measuring violence as an outcome

would be advantageous. This might involve the addition of specific targeted questions or third party information in the form of teacher and peer reports, or use of behavioural school records if available. Further, it would be of value to consider the impact of personality factors on the outcome measure.

5.4 Future directions

There are several future directions that emerge from the findings of the present study. Firstly, it would be advantageous to explore the threshold whereby paranoid thinking becomes of clinical concern, and the relation between this point and violent behaviour. The present study identified that PLEs were not associated with externalising symptoms, unless distressing. Further understanding of this would allow for conclusions to be drawn regarding the extent to which the relationship is dose-response, or demarcated by clinical disorder.

Future research might also examine the cycle of bullying and paranoid thinking. Whilst it is established that childhood bullying contributes towards the development of paranoid thinking, and a process whereby hypervigilance for threat can contribute towards behaviours that perpetuate peer difficulties, it would be of clinical use to understand whether the presence of PLEs makes the adolescent vulnerable to

victimisation. If an association were to be found, a pathway between transitory experiences, victimisation, and persistent symptoms could be described.

A final research direction that might arise from the present study concerns the notion of retribution. Two alternative explanations for revenge are posited in this study, that is, that victims might 'hit back' to assert social status and reduce threat, or that victims might ruminate on perceived bullying and seek revenge instrumentally. Future research might seek to tease apart these typologies. Further, investigations that explore the interaction between paranoid thinking, bullying and personality would be welcome additions to the current literature.

6.0 Chapter Six

Paranoid thinking as a consequence of Exposure to Childhood Bullying: A Systematic Review

6.1 Abstract

6.1.1 Background

Adverse childhood experiences are predictive of later psychotic and psychotic-like phenomena; childhood bullying has been identified as one such traumatic event. Increasingly, studies have indicated that distinct aetiologies exist for specific psychotic experiences, and some evidence has emerged to suggest that childhood bullying specifically begets paranoid thinking.

6.1.2 Objectives

The objective of the present paper was to systematically review and report the existing literature that concerns the association between childhood bullying and paranoid thinking.

6.1.3 Data Sources

Systematic searches were conducted on the PsycINFO, EMBASE, Medline, Web of Science, and ProQuest databases, using derivations of (1) paranoid thinking, (2) bullying, and

(3) childhood. A further search of the reference sections of relevant reviews was also conducted.

6.1.4 Study Selection

In total, 2854 studies were found after the initial database search, with 12 additional papers located via reference search. After duplicates were removed, 1724 studies were screened for title and abstract, which resulted in 79 studies being considered eligible for quality assessment. Of those quality assessed, 11 studies were included in the qualitative data extraction stage.

6.1.5 Data Extraction

Eleven studies were identified as appropriate for inclusion, though two studies made use of the same dataset. As such, ten distinct studies were included in the review. Nine studies were cross-sectional by design, one used a retrospective cohort design, and one used a prospective twin-cohort design. Studies were conducted in a variety of sample types, with non-clinical adolescent (two studies), non-clinical adult (six studies), Ultra-high risk adolescent (one study), and clinical outpatient (one study) samples used.

6.1.6 Data Synthesis

All but one of the studies included in the review identified an association between childhood bullying and paranoid thinking, either as a co-occurring experience, or later consequence.

6.1.7 Limitations

There were significant methodological weaknesses across the studies included in this present systematic review. There was a lack of consistency regarding measurement of bullying and paranoid thinking; self-report measures were used in each study, and it was difficult to confirm causality from the overall findings.

6.1.8 Conclusions

The existing literature indicates an association between experiences of childhood bullying and paranoid thinking, though the results are not certain due to methodological weaknesses across studies. A high quality prospective study is needed, which makes use of validated measures of both variables.

6.2 Introduction

An extensive body of research has demonstrated an association between adverse childhood experiences (ACEs) and psychotic phenomena (Read et al., 2005; Varese et al., 2012). Whilst a biological understanding of psychotic experiences had dominated twentieth century research and practice, social and psychological factors are not without relevance. For example, Read and colleagues (2005) conducted a seminal review, encapsulating all previous relevant literature, which highlighted that incidences of child sexual abuse (CSA) and child physical abuse (CPA) were disproportionately represented in the personal histories of psychotic individuals. The authors argued that a distinction between some post-traumatic psychopathology and psychosis was unjustified within the context of research findings. An updated systematic review and meta-analysis conducted by Varese et al. (2012), further explored the relationship between ACEs and psychotic phenomena, demonstrating that the available evidence indicated a causal pathway. Indeed, Varese and colleagues reported that psychotic patients were almost three times more likely to have experienced trauma compared to non-psychotic controls.

Psychotic phenomena have been identified in non-clinical populations (van Os et al., 2009), with similar risk

factors associated at both clinical and sub-clinical levels (Rössler et al., 2011). Thus, it seems ACEs are implicated in the development of non-clinical psychotic-like experiences (PLEs: Trotta, Murray & Fisher, 2015). As such, researchers have investigated the developmental trajectories of PLEs from childhood into adulthood (Fisher et al., 2013; Mackie et al., 2011), and from transient experiences into clinically relevant symptoms (van Os et al., 2009; Poulton et al., 2000). Psychiatric disorder is oft distinguished by clinical diagnosis; however, Shevlin et al. (2015a) have argued that distress is a necessary consideration, with Hanssen et al. (2005) reporting that distressing symptoms are predictive of help-seeking.

A systematic review and meta-analysis conducted by Trotta et al. (2015) investigated the impact of ACEs on the persistence of psychotic symptoms and concluded that there was an effect, reporting a weighted odds-ratio (OR) of almost two (i.e. persons who had experienced ACEs were almost two times more likely to develop persistent psychotic symptoms). A further study by Mackie et al. (2013) identified three developmental PLE subgroup trajectories in adolescents: persistent, increasing, and low. The authors noted that persistent psychotic experiences were associated with frequent victimisation and co-occurring anxiety and depression, whilst increasing (i.e. transitioning from transient

to impairing) experiences were associated with substance use. Cougnard and colleagues (2007) posited the *proneness-persistence-impairment* model of PLEs, corroborated by van Os et al. (2009) in a systematic review and meta-analysis. Although most PLEs abate over time (Dominguez et al., 2011), this model implies psychotic phenomena migrate from transient experiences to persistent and impairing symptoms if the afflicted person has greater exposure to traumatic events. As such, adolescents who experience PLEs are at significant risk of developing clinically relevant psychosis (Poulton et al., 2000; Cougnard et al., 2007).

Whilst much of the existing research has focussed on the association between ACEs and generic psychosis, there is growing evidence to indicate distinct trajectories between specific traumas and individual PLEs (Bentall et al., 2014; Fisher et al., 2013). Bentall and colleagues (2012) analysed data from the 2007 Adult Psychiatric Morbidity Survey and found experiences of sexual abuse strongly associated with hallucinations, whereas chronic victimisation predicted paranoid thinking styles. The authors found disrupted attachment patterns and institutional care were particularly predictive of risk, which is a finding consistent with those of Fisher et al. (2013), who found that a pathway between harsh parenting and psychotic symptoms fully mediated by anxiety,

depressive symptoms, external locus of control, and low self-esteem. A further pathway between childhood experiences of bullying and psychotic symptoms was also noted, which was partially affected by the same mediating factors. Catone and colleagues (2015) made use of the 2000 and 2007 Adult Psychiatric Morbidity Surveys and reported that experiences of bullying were predictive of persecutory ideation and hallucinations.

Childhood bullying, or peer victimisation, is a pervasive problem that directly impacts on between nine and 54% of children worldwide (Nansel et al., 2004). Bullying is defined as a behaviour that occurs between individuals of the same age group where there is an intention to cause harm and distress (Olweus, 1996), and where there is a repeated and systematic abuse of power (Olweus et al., 1999). Further, it has been identified that bullying had three universal characteristics: it occurs amongst individuals of the same age; it is repeated over time; and that there is a power imbalance whereby the victim struggles to defend himself (Arseneault, Bowes & Shakoor, 2010). As such, exposure to childhood bullying has a severe and deleterious effect on the victim's wellbeing, with both short and long-term cognitive, affective and behavioural consequences (Hawker & Boulton, 2000; Klomek et al., 2009).

A review and meta-analysis conducted by van Dam et al. (2012) found exposure to bullying during childhood predicted the development of psychotic symptoms in non-clinical populations. The authors considered evidence relating to clinical manifestations too limited to draw firm conclusions. Nevertheless, by pooling effect sizes from seven eligible studies, it was found the risk of developing non-clinical psychotic symptoms increased by an OR of almost three in the bullied group compared to non-bullied controls. Bullying experiences of greater frequency, duration and severity were more predictive of psychotic symptoms; this finding was consistent with a *proneness-persistence-impairment* understanding of the phenomena (Cougnard et al., 2007; van Os et al., 2009), though the association was not highlighted by the authors.

Cunningham, Hoy and Shannon (2016) conducted a later systematic review and meta-analysis, and found, in high-quality prospective studies, similar results to van Dam and colleagues. The authors concluded that exposure to bullying predicted the development of psychosis, with evidence indicating a dose-response effect based on the severity and frequency of victimisation.

Consistent with the findings of Bentall et al. (2012), described previously, an increasing body of research has

investigated the association between childhood bullying and specific psychotic phenomena; primarily, paranoid thinking. Findings from a range of studies have repeatedly identified an effect (e.g. Campbell & Morrison, 2007; Shevlin et al., 2015b; Catone et al., 2015).

6.2.1 Objectives

Whilst the reviews conducted by van Dam et al. (2012), and Cunningham et al. (2016) provide valuable insight into the predictive impact of bullying on the development of psychosis, neither group differentiated between distinct PLE phenomena, such as paranoia and hallucinations. As such, to the authors' knowledge, no review has been conducted with the expressed aim of investigating the association between childhood bullying and paranoid thinking, as a specific psychotic phenomenon. As the evidence of an association has increased in recent years, a systematic review is timely.

The aim of the present systematic review was, therefore, to update the work of van Dam et al. (2012), and Cunningham, Hoy and Shannon (2016), with the explicit focus of pooling research investigating paranoid thinking as a distinct consequence of childhood bullying. The following objectives were identified:

- To systematically review studies that have utilised non-clinical and clinical samples and described an association between childhood bullying and paranoid thinking.
- To determine a paradigm for future high quality research investigating the association between experiences of childhood bullying, and paranoid thinking.

6.3 Methods

6.3.1 Information Sources

This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). Systematic database searches were conducted on Medline (PubMed), EMBASE, Web of Science, and PsychINFO, to identify studies (dated from inception to November 2016) that met the eligibility criteria listed below. Grey literature was searched using the same terms on ProQuest.

6.3.2 Search Strategy

All possible variations of search terms relating to (1) paranoid thinking (paranoi* OR persecut* OR delu* OR schizo* OR psychot* OR psychos* OR severe mental* OR major mental* OR psychiatric diagno*), (2) childhood bullying (bull* OR peer victim* OR victim* OR cyberbull* OR cyber-bull* OR cybervictim* OR cyber-victim* OR covert* aggress* OR

overt* aggress* OR relational aggress* OR physical* aggress* OR physical* violent* OR teas* OR gossip* OR rumour* or rumor*), and (3) childhood (child* OR adolescen* OR young pe* OR young adult* OR teen* or youngster* OR kid*), were entered simultaneously into database search engines using the Boolean operator "and". Search areas included subject headings, and title, abstract, key words and topic.

A second search strategy involved investigation of the reference lists of all studies identified as relevant (following title and abstract review) during the preliminary database search. Further, the reference lists of relevant systematic reviews and meta-analyses (e.g. Read et al., 2005; Varese et al., 2012; Trotta et al., 2015; van Dam et al., 2012; Cunningham et al., 2016) were scanned for studies that may not have been identified in the initial database search.

6.3.3 Eligibility Criteria

Database searches were conducted to locate studies from inception to November 2016. Potential studies investigated an association between childhood bullying and paranoid thinking, and employed the following methodologies: prospective and retrospective cohort studies, case-control studies, and cross-sectional studies. Childhood was defined as <18 years of age.

Potential studies were considered eligible if they met the following criteria: (1) the paper must be an original research article; (2) an assessment of paranoid thinking, either as a standalone measure or component of a broader tool, must be used; (3) a distinct measure of exposure to bullying was used, with validated measures preferred.

Papers were adjudged to be ineligible if they did not meet the above criteria. For example, qualitative studies, conference abstracts, and single case studies. Studies that conceptualised bullying within a broader construct of victimisation, or investigated experiences of bullying during adulthood, were also excluded. Clinical samples were defined by the participants' contact with mental health services, irrespective of diagnosis or treatment offered, whereas non-clinical samples were defined as encompassing individuals who had not encountered mental health services or sought help (for example, population studies of young people in schools).

6.3.4 Study Selection

Found references were extracted from searched databases and stored within reference management software (myendnote.com). The strategy for study evaluation involved manual removal of duplicate articles, before the remaining

studies were screened by title and then by abstract. Studies were excluded at the title stage if reference was not made to a series of key words (i.e. psychosis, paranoia, bullying etc.). At the abstract stage, the same process was applied; studies were excluded if specific reference was not made to psychosis, paranoia or related terms, and trauma, or bullying specifically.

Studies that were considered relevant after the abstract screen were quality assessed by the author, with a randomly selected 20% independently evaluated by a second reviewer. Disagreements between reviewers were resolved by consensus. The quality assessment checklist used in the present study was developed with reference to a number of existing tools, and in accordance with guidelines presented by Sanderson, Tatt and Higgins (2007). Additionally, two screening questions were included in the assessment proforma to determine if: (1) the study measured for an association between childhood bullying (independent variable) and paranoid thinking (dependent variable); and (2) the study design was as specified in the inclusion criteria described above. If the study did not meet the criteria for each of these screening questions, it was excluded from the present review. Studies that did conform to the inclusion criteria were then assessed across three domains of potential bias: sampling

(eight items); measurement (six items); and reporting (five items). Each item was scored as '1' if the criterion was met, and '0' if the criterion was not met. An overall score was calculated by dividing the total number of endorsed items by the total number of applicable items, and generating a percentage score. Studies that achieved a percentage score within the upper third were considered high quality, those in the middle third of moderate quality, and those in the bottom third of low quality.

An additional data extraction tool was used for those studies deemed appropriate for inclusion in the review. This tool sought specific information relating to the methodology and results of each study.

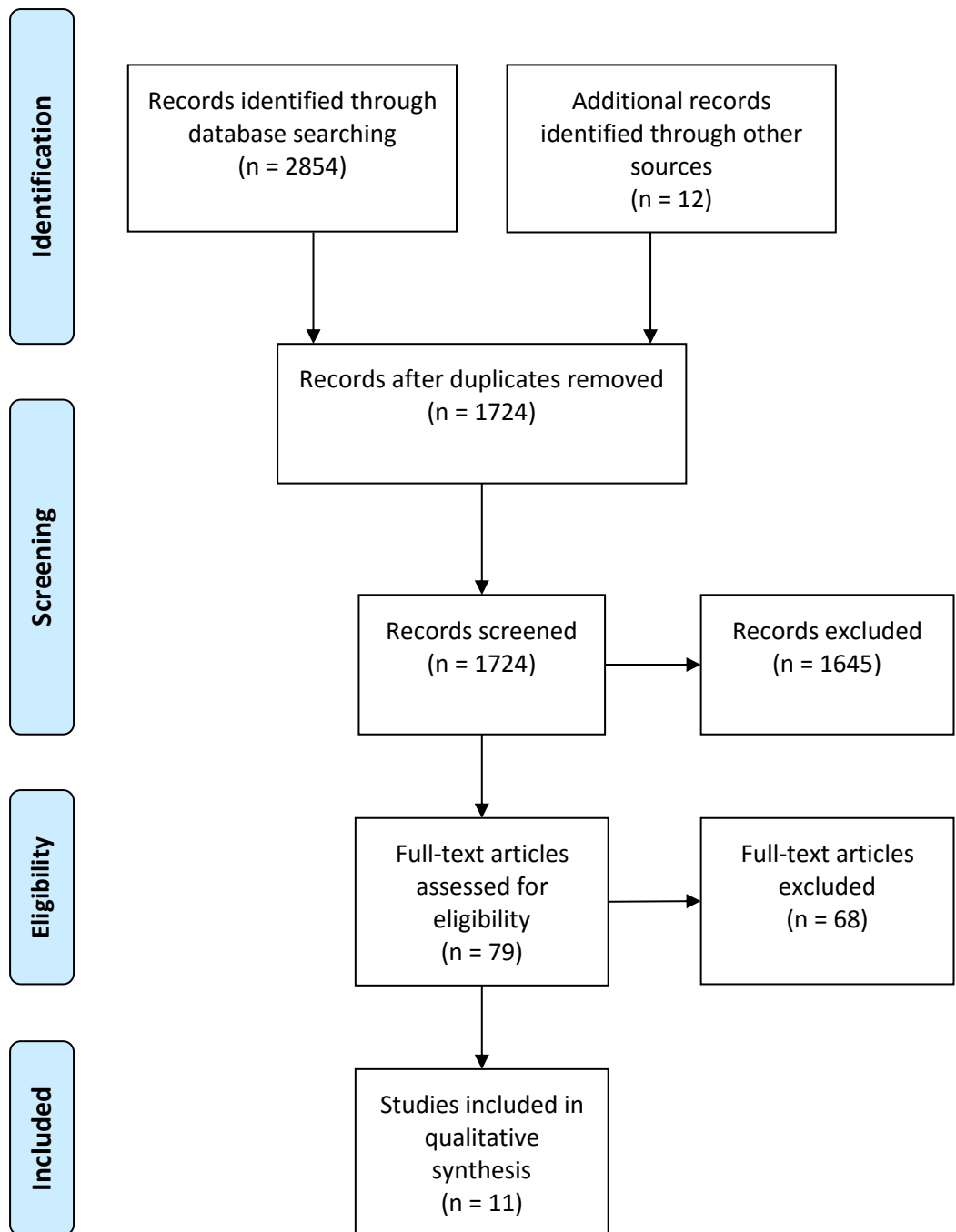


Figure 9: PRISMA flow diagram depicting search strategy

6.4 Results

6.4.1 Study Selection

A total of 2854 articles were identified during the database search, and a further 12 studies found after examination of the reference lists of relevant review articles. Duplicate studies were removed ($n = 1112$), which resulted in 1724 studies being screened by title and then by abstract; studies were included if reference was made to psychosis, paranoia or related terms, and trauma, if not bullying specifically. After screening, it was considered appropriate to include 79 articles for eligibility assessment.

6.4.2 Quality Assessment

Studies were evaluated for risk of bias using the quality assessment checklist described above. The author assessed each study before a second reviewer independently evaluated 16 studies (20%) for concordance; inter-rater reliability was absolute ($\kappa = 1$). Eleven studies were considered appropriate for inclusion, and data extraction was completed (see table 1).

Studies were excluded from the present review if they did not report an association between paranoid thinking and childhood bullying. It was notable that several high-quality studies (i.e. those that made use of large datasets,

sophisticated methodologies, and prospective designs) were rejected from the present review due to inclusive measures of psychosis or delusions, and an absence of any distinct measurement of paranoid thinking. Some of these excluded studies measured for a relationship between psychosis and bullying (e.g. Schreier et al., 2009; Asher, Zammit, Sullivan, Donnington, Heron & Lewis, 2013; Fisher et al., 2013; Wolke et al., 2014), whilst others measured an association between psychosis and childhood trauma, without the specified inclusion of childhood bullying (e.g. Trotta et al., 2016; Wigman, van Winkel, Ormel, Velthulst, van Os & Vollebergh, 2012). Two studies made use of the Adult Psychiatric Morbidity Survey (Bentall, Wickham, Shevlin & Varese, 2012; Catone et al. 2015); however, Bentall and colleagues used only phase one of the 2007 sample, whereas Catone and colleagues combined both phases. Whilst phase one measured childhood bullying, phase two version was adjusted to consider *lifetime* bullying. As this review concerned childhood bullying, Catone and colleagues' study was excluded. Likewise, Lopes (2013) included a question on adult workplace bullying, and Schenk and Fremouw (2012) measured for an association between paranoid thinking and adulthood experiences of bullying; as both papers considered adult bullying, they were also excluded from review.

6.4.3 *Study Characteristics*

Eleven studies met the inclusion criteria for the present review. Of these studies, two were doctorate theses (Ashford, 2010; Chaudhry, 2012), one was not yet in press (Jack & Egan, submitted for publication), and the remaining eight were published in peer-review journals. Two reports, (Cristobal-Narvaez et al., 2016a; 2016b) made use of the same dataset and, as such, were included in the present review as one distinct study.

The characteristics of the included studies are reported in table one. A total of 18092 participants were recruited across the ten studies, though 15554 (85.9%) were from only three studies (Bentall et al., 2012; Shevlin et al., 2015b; Shakoor et al., 2015). Of the participants, 12430 were adults, and 5662 were adolescents (Campbell & Morrison, 2007; Jack & Egan, submitted for publication; Shakoor et al., 2015). Further, 220 participants were clinical outpatients (Chaudhry, 2012; Sansen, Iffland & Neuner, 2014), 995 were community outpatients (non-psychotic complaints: Sansen et al., 2014), and 64 were individuals at UHR for psychosis (Valmaggia et al., 2015). It was not possible to accurately record gender split, as this was not measured consistently across studies.

Sample selection varied significantly across studies. A mark of low quality sampling methodologies was the use of opportunistic student samples (Ashford, 2010; Cristóbal-Narváez et al., 2016; Sansen et al., 2014), and cross-sectional design. Further, no studies reported a power analysis, and only four studies reported response rates (Campbell & Morrison, 2007; Bentall et al., 2012; Chaudhry, 2010; Shakoor et al., 2015). The study by Shakoor et al. (2015) employed a prospective twin design, Jack and Egan (submitted for publication) employed a retrospective – but cross-sectional – methodology, and all other studies were cross-sectional. As such, causality was difficult to determine.

A variety of measures were used to assess childhood bullying, and paranoid thinking; however, measurement quality was limited. All studies utilised self-report, which is potentially prone to measurement bias (Cornell & Bandyopadhyay, 2009). Further, there is debate as to the reliability of such measures when applied to psychotic participants with the intention of capturing the recollection of prior events (Morgan & Fisher, 2007; Fisher et al., 2011). Importantly, no study corroborated the information gathered with third party respondents.

Concerning bullying, six established and validated measures were used across eight studies; the studies by

Bentall et al. (2012) and Shevlin et al., 2015b) used checklist items (see table 13). Further, no study operationalised a definition of bullying in line with supporting theoretical evidence (i.e. Olweus, 1996; Olweus et al., 1999; Arseneault et al., 2010). As such, conceptualisations of bullying ranged from dichotomous checklist items (Bentall et al., 2012; Shevlin et al., 2015b) to continuous scaled scores (Shakoor et al., 2015; Sansen et al., 2014). Some measures considered forms of bullying, such as direct or indirect (Ashford, 2010; Chaudhry, 2012; Jack & Egan, submitted for publication), though this was not consistent across the sample. Cristóbal-Narváez et al. (2016) reported that they applied criteria to establish a formal definition of bullying; however, this was not reported in their paper. Valmaggia and colleague's (2015) did describe a procedure to distinguish between bullying, and other forms of peer aggression or play; however, this, again, did not conform to established evidence-based definitions.

Table 13: Measures of childhood bullying used by the included studies. The studies conducted by Bentall et al. (2012); Shevlin et al. (2015b), and Cristobal-Narvaez et al. (2016) did not use validated tools.

Measure	Author	Description	Notes
Bully/Victim Questionnaire (BVQ)	Olweus (unpublished)	Twenty-nine item self-report scale with a global bullying score calculated.	Used by Campbell and Morrison (2007).
Gatehouse Bullying	Bond, Wolfe, Tollit, Butler	Twelve item self-report measure of	Jack and Egan (submitted for

Questionnaire (GBS)	and Patton (2007)	direct and indirect bullying. Incorporates measurement of severity and frequency.	publication) added a further subscale to measure distress.
Modified Direct and Indirect Aggression Scales (Modified DIAS)	Owens, Shute and Slee (2000)	Eighteen item self-report measure of victimisation, comprised of three subscales: direct physical aggression; direct verbal aggression; and indirect aggression.	Two studies used the Modified DIAS (Ashford, 2010; Chaudhry, 2012).
Multidimensional peer victimization scale (MPVS)	Mynard and Joseph (2000)	Sixteen item self-report measure comprised of four subscales: physical victimisation; verbal victimisation; social manipulation; and attacks on property. Each subscale is rated 0-8, with higher scores indicating greater difficulties.	Shakoor et al. (2015) used a globalised total score in their study.
Questionnaire on Stressful Social Experiences in the Peer Group (FBS)	Sansen, Iffland, Catani and Neuner (2013)	Twenty-two item self-report measure of childhood and adolescent bullying. Scores (range:0-22) are calculated for both scales, with a global score (range: 0-44) also calculated.	Used by Sansen et al. (2014).

Retrospective Bullying Questionnaire (RBQ)	Schäfer et al. (2004)	Forty-four item self-report questionnaire that measures the: frequency; identity; and duration of bullying, as well as the gender and number of perpetrators. The RBQ has three subscales: physical; verbal; and indirect forms of bullying.	In the Valmaggia et al. (2015), victimisation status was determined if the participant had experienced bullying, at least 'sometimes', and the experience was considered at least 'somewhat' severe.
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The measurement of paranoid thinking was conducted via various tools, with six validated measures used across seven studies. Bentall et al. (2012) and Shevlin et al. (2015b) used single questions to dichotomously code participants as paranoid or not paranoid, whilst Cristóbal-Narváez et al. (2016) used an experience sampling methodology to gather insights into participants' paranoid thoughts throughout the day, based on two questions. As such, the measurement of paranoid thinking was generally adequate across the studies using validated measures, though it is noteworthy that different measures conceptualise paranoid thinking differently. For example, certain measures consider distress, whereas others do not (see table 14).

Table 14: Measures of paranoid thinking used by the included studies. The studies conducted by Bentall et al. (2012); Shevlin et al. (2015b), and Cristobal-Narvaez et al. (2016) did not use validated tools.

Measure	Author	Description	Notes
Brief Symptom Inventory (BSI: German version)	Franke (2000)	Fifty-three item measure of psychopathology. Paranoid ideation is measured amongst eight other symptom dimensions.	Used by Sansen et al. (2014).
Community Assessment of Psychic Experiences (CAPE)	Stefanis et al. (2002)	The CAPE positive symptom scale is a 20-item measure of positive psychotic experiences. It incorporates measurement of frequency and distress.	Jack and Egan (submitted for publication) adapted the CAPE positive symptom scale to construct a 5-item paranoia scale, based on previous factor-analytic investigation (Boyda, 2014; Shevlin et al., 2015a).
Paranoia Scale (PS)	Fenigstein & Vanable (1992)	Twenty-item self-report measure of the personal feelings, attitudes, traits and behaviours associated with paranoia. Total scores range from 0 to 100, with higher scores indicating greater global paranoia.	Used by Campbell and Morrison (2007).
Specific Psychotic	Ronald et al. (2014)	The paranoia subscale of the	Shakoor et al. (2015) used the

Experiences Questionnaire (SPEQ)		SPEQ is constructed of 15 items, with an additional rating of distress. The SPEQ is a self-report measure.	SPEQ, though it was unclear whether their study also incorporated the measurement of distress.
State Social Paranoia Scale (SSPS)	Freeman et al. (2007b)	Twenty-item self-report measure of paranoid, neutral and positive ideation in the context of virtual reality (VR) avatars. THE SSPS measures state paranoia in controlled social conditions.	Used by Valmaggia et al. (2015).
The Green et al. Paranoid Thoughts Scale (GPTS)	Green et al. (2008)	Thirty-two item self-report measure of persecution (16-items), and ideas of social reference (16-items). Measurement of conviction, preoccupation, and distress are incorporated and each subscale is scored from 16-80, with higher scores indicating greater paranoid thinking.	Used by Ashord (2010), and Chaudhry (2012).

In addition to the information described therein, it is noteworthy that eight studies sought to examine the association between childhood bullying and paranoid thinking

directly (Ashford, 2010; Bentall et al., 2012; Campbell & Morrison, 2007; Chaudhry, 2012; Jack & Egan, submitted for publication; Shakoor et al., 2015; Shevlin et al., 2015b; Valmaggia et al., 2015), whilst two studies reported associations as incidental to the primary research question (Cristóbal-Narváez et al., 2016; Sansen et al., 2014). As such, not all studies adequately considered the findings in the context of existing and relevant theory.

When overall study quality was calculated, studies were ascribed a rating of 'high', 'moderate', or 'low'. All studies fell into the 'moderate' category, except for Shakoor et al. (2015), which was given a rating of 'high'.

Table 15: Studies included in the review

Study	Project	Measure of bullying	Measure of paranoid thinking	Study design	Participants	Mean age (years)	Conclusions
Ashford (2010)	NA	Modified direct and indirect aggression scales	Green et al. Paranoid thoughts scale	Cross-sectional	135 undergraduate psychology students (M=12: F=123)	Not reported	Direct and indirect bullying were predictors of paranoid thinking
Bentall et al. (2012)	Adult Psychiatric Morbidity Survey (2007)	Respondents were required to choose bullying from a list of potential traumatic childhood events	'Paranoia' question from the Psychosis Screening Questionnaire	Cross-sectional	7353 general population adults (16+)	Not reported	No significant association between childhood bullying and paranoid thinking
Campbell & Morrison (2007)	NA	Bully/Victim Questionnaire	Paranoia Scale	Cross-sectional	373 non-clinical adolescents aged 14-16	14.8 years	Self-perceived bullying victimisation was associated with increased paranoid thinking.
Chaudhry (2012)	NA	Modified Direct and Indirect Aggression Scales	Green et al. Paranoid Thoughts Scale	Cross-sectional	52 clinical outpatients (M = 31: F = 21)	25.65 years	There is an association between direct and indirect childhood bullying and paranoid thinking
Cristobal-Narvaez (2016a; 2016b)	PSYRIS (Barcelona)	Bullying question from Childhood Experiences of Care and Abuse (CECA) semi-structured interview	Experience-sampling methodology (ESM) collected data on two questions concerning paranoia		206 undergraduate students (M = 33: F = 173) chosen from 189 who displayed some	21.3 years	Childhood bullying predicted paranoid thinking via an interaction with the FKBP5 gene

					schizotypal traits and 150 random selected participants		
Jack & Egan (submitted for publication)	NA	Gatehouse Bullying Scale	'Paranoia scale' constructed from Community Assessment of Psychic Experiences (CAPE) positive symptom scale	Retrospective cohort	230 non-clinical adolescents (M =123: F = 107)	12.57	There was a positive dose-response relationship between exposure to childhood bullying and paranoid thinking
Sansen et al. (2014)	NA	Questionnaire on Stressful Social Experiences in the Peer Group	Brief Symptom Inventory	Analysis of three cross-sectional samples	Sample one: 168 clinical participants; sample two: 995 self-selected sample; sample three: 272 student sample	Sample one: 44.51 years; sample two: 31.25 years; sample three: 24.35 years	Peer victimization is associated with a range of psychopathology, including paranoid ideation
Shakoor et al. (2015)	Twins Early Development Study (TEDS)	Multidimensional Peer Victimization Scale	Specific Psychotic Experiences Questionnaire	Prospective Twin Cohort	Twin sample: 5858 at baseline; 5059 at follow-up	11.56 years at baseline; 16.32 years at follow-up	Bullying victimization in late childhood is linked to paranoid thinking in adolescence via a shared genetic propensity
Shevlin et al. (2015b)	Survey of Psychiatric Morbidity among Prisoners in	Respondents were required to choose bullying from a list of potential	'Paranoia' question from the Psychosis Screening Questionnaire	Cross-sectional	3142 prisoners (M = 2372: F =770)	Not reported	Victims of childhood bullying almost twice as likely as non-victims to be paranoid in adulthood

	England and Wales	traumatic childhood events					
Valmaggia et al. (2015)	NA	Retrospective Bullying Questionnaire	State Social Paranoia Scale	Cross-sectional (Ultra-high risk for psychosis group and matched controls)	UHR group: 64 participants (M = 38; F = 26); 43 healthy controls (M = 20; F = 23)	UHR: 22.55 years; Healthy controls: 24.02 years	Bullying was associated with paranoid ideation in both groups on experimental task. UHR group reported more bullying and paranoia than controls

6.5 Descriptive Data Synthesis

Ten studies were included in the descriptive data synthesis, and nine reported a significant positive association between exposure to childhood bullying and paranoid thinking.

However, one study reported a non-significant relationship (Bentall et al., 2012). A wide range of methodologies were used, and a variety of populations sampled.

In adolescent samples, Campbell and Morrison (2007), Jack and Egan (submitted for publication), and Shakoor et al. (2015) reported that bullied adolescents scored higher on measures of paranoid thinking. However, the studies had significant methodological differences. For example, Campbell and Morrison analysed data as dichotomous – reporting that the ‘bullied’ group displayed greater paranoid thinking scores – whereas Jack and Egan, and Shakoor and colleagues conceptualised bullying and paranoid thinking as continuous phenomena. Further, both studies considered duration of bullying in their analyses, with Jack and Egan opting for retrospective reporting of prior bullying experiences, whereas Shakoor et al. made use of a prospective design. As such, Jack and Egan demonstrated a dose-response relationship between the variables, and Shakoor et al. reported that experiences of bullying at 12-years were correlated with paranoid thinking at 16-years. Further, as Shakoor et al.

advanced their analysis, they demonstrated that being the victim of bullying was associated with paranoid thinking via a shared and underlying genetic propensity.

Like Campbell and Morrison, the studies conducted by Cristóbal-Narváez et al., (2016), Bentall et al. (2012), and Shevlin et al. (2015b) conceptualised paranoid thinking as dichotomous data. However, these studies did not use standardised tools to measure the relevant phenomena, as the former used ESM, whilst the latter two employed epidemiological methodologies. In support of the findings of Shakoor et al. (2015), Cristóbal-Narváez et al., (2016) noted that childhood experiences of bullying were associated with paranoid thinking only when the *FKBP5* gene was included within the interaction. Further, the authors noted that those who had been bullied experienced greater paranoid thinking, when social stress was high.

Bentall and colleagues (2012) used data from the Adult Psychiatric Morbidity Survey and hypothesised that experiences of childhood bullying would be associated with paranoid thinking. However, a significant effect was not found. Shevlin et al. (2015b) used an identical battery of assessments to measure for an effect in a large sample of adult prisoners, which proved to be significant – victims of childhood bullying were almost twice as likely as non-victims

to be paranoid in adulthood. It is noteworthy that such epidemiological methodologies have substantial power to determine the extent to which an effect is present or not; however, the use of dichotomous measures preclude a nuanced understanding of targeted phenomena. This is particularly pertinent, as theoretical evidence supports the notion of a psychosis continuum (van Os et al., 2009), and many of the studies included in this data synthesis considered both variables of interest to be continuous.

In further adult populations, several studies did explore the association between childhood bullying and paranoid thinking, with the use of continuous data. In an unpublished doctoral thesis, Ashford (2010) reported that the three forms of childhood bullying measured (direct physical aggression, direct verbal aggression, and indirect aggression) significantly correlated with the persecution subscale of the GPTS. However, it is noteworthy that the sample comprised of predominantly female university students, which limited the extent to which results can be generalised. In an experimental study, Valmaggia et al. (2015) used a virtual reality (VR) paradigm to measure state paranoia, within a cohort of young adults at UHR of psychosis, and healthy controls. The authors reported that those at UHR for psychosis were more likely to have experienced bullying, and demonstrated greater

paranoid thinking than controls. However, it was reported that, after the VR experiment, those who had reported bullying victimisation scored higher on state paranoid thinking, irrespective of clinical status.

Sansen and colleagues (2014) made use of an interesting cross-sectional design, whereby they employed the same methodology with three distinct populations: a clinical sample; a self-selecting community mental health sample; and a student sample. The authors reported hierarchical multiple regression analyses that demonstrated peer victimisation to be a highly significant predictor of paranoid ideation in both the self-selected community sample, and the student sample, but not in the clinical sample. The authors concluded that childhood bullying was positively associated with a wide range of psychopathology, including paranoid ideation. Contrary to the non-significant result in Sansen et al.'s clinical sample, Chaudhry (2012) reported that, in a sample of 52 clinical outpatients (diagnoses of schizophrenia or schizoaffective disorder), direct and indirect forms of bullying were associated with paranoid thinking. However, the relatively small sample size used by Chaudhry cannot be considered representative of either clinical or non-clinical populations, and the confounding effect of medication was not allowed for within the analysis.

6.6 Discussion

Ten distinct studies have explored the association between experiences of childhood bullying and paranoid thinking, with nine finding a positive association, and only one (Bentall et al. 2012) reporting non-significant results. Therefore, it can be tentatively concluded that the existing evidence does indicate that exposure to childhood bullying does lead to the development of paranoid thinking. However, it is notable that there is a paucity of high quality research that has investigated the interaction between the two variables and, as such, conclusions are somewhat uncertain.

Most studies were cross-sectional, with only one high quality prospective study investigating the interaction between the variables (Shakoor et al., 2015). Relatedly, sample sizes were typically small, except for that used by Shakoor et al. (2015), and two epidemiological studies (Bentall et al., 2012; Shevlin et al., 2015b). However, these epidemiological studies did not use sophisticated tools to investigate either bullying exposure or paranoid thinking. Further, the measurement of bullying and paranoid thinking was inconsistent across the reviewed articles, with a lack of consensus as to the constituent parts of each phenomenon. For example, less than half of the reviewed articles made use of bullying questionnaires that differentiated between direct

and indirect bullying, and distress was not accounted for in most paranoid thinking measures. This is significant, as Shevlin et al. (2015a) have stated the centrality of distress to the measurement of PLEs. The use of self-report in each of the studies was also problematic, as various biases are likely to manifest. For example, there is a common-sense criticism to state that bullied and paranoid individuals might overestimate the extent to which others have victimized them in the past; the evidence concerning such recall bias is uncertain about the risk to validity (e.g. Hardt & Rutter, 2003; Morgan & Fisher, 2007).

Nonetheless, the findings of the present review do point towards an positive association between childhood bullying and paranoid thinking, with some evidence of a dose-response relationship (Jack & Egan, submitted for publication; Shakoor et al., 2015), which is in support of the more general bullying and psychosis literature (Schreier et al., 2009; van Os et al., 2009). Further, tentative findings appear to indicate that indirect – rather than direct – forms of bullying might be the greater predictor of paranoid thinking (Ashford, 2010; Chaudhry, 2012; Jack & Egan, submitted for publication). An interesting addition to the literature were the findings of Cristóbal-Narváez et al. (2016) and Shakoor et al. (2015), with both studies pointing to the significant interaction of

genetics within the bullying and paranoid thinking paradigm. Shakoor and colleagues demonstrated that a shared genetic propensity linked experiences of bullying victimisation and paranoid thinking, whilst Cristóbal-Narváez and colleagues specified that the *FKBP5* gene was responsible for facilitating the interaction. This is an important finding, as the other studies included in this review, broadly, were unable to conclusively demonstrate a direct causal relationship between childhood bullying (as an antecedent) and paranoid thinking (as a consequence). That is, that a bi-directional association may be present, whereby experiences of paranoid thinking in childhood might evoke behaviours that attract bullying behaviour, which then serve to heighten the perception of events as persecutory. Genetic data might support this position (Shakoor et al., 2015; Cristóbal-Narváez et al., 2016).

6.6.1 Mechanisms of Association

There is evident face validity to the notion that experiences of victimisation beget paranoid thinking, and cognitive models go some way to explain this. As such, it has been repeatedly identified that cognitive bias is implicated in the development of paranoid thinking (Freeman & Garety, 2014), with victimisation experiences contributing to schematic beliefs about a dangerous world (Smith et al., 2006) and vulnerable

self (Johns et al., 2004). Numerous studies considered in this review reported that negative beliefs about the self and other were mediators – or at least correlates – of the association between childhood bullying and paranoid thinking, and Morrison and Campbell (2007) noted that negative post-traumatic cognitions – and positive metacognitive beliefs about paranoia – were a significant predictor of the phenomenon. There is some evidence to indicate that such schematic mechanisms may result from experiences of childhood bullying (Cook et al., 2010; Rosen, Milich & Harris, 2007), and bullying experiences have been reported to have a deleterious effect on self-esteem, and precipitate depressive and anxious states (Hawker & Boulton, 2000). Depression and anxiety have been implicated as contributing factors to paranoid thinking (Garety & Freeman, 2013).

Cognitive appraisals are important when considering the aetiology of paranoid thinking. For example, paranoid thinkers have been reported to show a bias towards threatening stimuli (Freeman et al., 2008), with Jack and Egan (submitted for publication) noting that paranoid thinking mediated the association between experiences of bullying victimisation and overestimation of threat in neutral social stimuli in their study. This effect was further evidenced in the VR experiment conducted by Valmaggia et al. (2015). As such, bullied

children and adolescents might learn that the world and other is dangerous, that the self is vulnerable, and such beliefs might precipitate evaluations of social situations as containing threat. A tendency towards such beliefs might service as an adaptive evolutionary strategy, whereby paranoid thoughts protect the individual from danger (Preti & Cella, 2010; Shevlin et al., 2015b), with the genetic evidence perhaps in support of this hypothesis. However, as the individual is engulfed by real and perceived danger there is an increased risk of paranoid thoughts becoming distressing and impairing.

6.6.2 Conclusions

The studies included in this review provide some evidence to suggest that childhood bullying begets paranoid thinking; This is an important area for further investigation, as distinct trajectories and risk factors are increasingly being implicated in the development of specific psychotic phenomena (Bentall et al., 2014; Fisher et al., 2013) however, there is a paucity of high quality research that has investigated the matter to this point. Due to the differing quality of studies included in this review, and the variety of definitions, methodologies, and samples employed, it was considered inappropriate to conduct a meta-analysis. Prospectively, if high quality studies investigating the phenomena emerge, it will be prudent for a future review and meta-analysis to be conducted to determine

an overall effect. Such studies will be prospective by design, whereby experiences of childhood bullying and paranoid thinking are measured at baseline, before subsequent follow-up tests are conducted. Ideally, such an experiment would be constructed of a large representative sample of general population school-children, begin in early childhood, and proceed until late adolescence. Measurement tools must be selected carefully, demonstrate relevance to a clear definition of the phenomena, and incorporate dimensions of the bullying experience (i.e. direct and indirect forms), or account for factors such as PLE-associated distress. It would be advantageous for data to be collected from multiple sources (i.e. teacher and parent report). Such a study might provide a more definitive understanding of the association explored in the present review.

7.0 Chapter Seven

Conclusion to Academic Thesis

This thesis has explored the association between childhood bullying victimisation and paranoid thinking. Attention has focused on the cognitive and behavioural consequences of the phenomena; namely, misperception of social threat, and the use of potentially harmful safety behaviours.

In chapter two, it was established that the CAPE (Stefanis et al., 2002) was a viable measure of psychotic phenomena across the continuum of experience. Further, it was identified that it was possible to construct a reliable paranoia scale from its items, after factor analysis (see Boyda, 2014). As such, the original research study used the CAPE to measure for paranoid thinking, and associated distress; distress is considered a necessary adjunct to assessment of the phenomena (Shevlin et al., 2015a).

The findings from the original research studies were supportive of the existing literature (e.g. Campbell & Morrison, 2007; Ashford, 2010: as discussed in the systematic review), with a linear relationship observed between experiences of childhood bullying victimisation and paranoid thinking: severe forms of bullying predicted paranoid thinking that was a composite of frequency and distress.

Additionally, paranoid thinking was evidenced to mediate the relationship between childhood bullying and misinterpretation of threat in neutral social stimuli. As such, it was concluded that victims of childhood bullying might be at risk of developing paranoid thinking styles, which precipitated a heightened sense of threat; such individuals might be beset by a toxic combination of real and perceived threat in their social environment.

Safety behaviours are employed to reduce perceived threat (Freeman et al., 2007a). The second part of the original research study sought to develop the ideas presented in part one, and identify the behavioural consequences of paranoid thinking and overestimation of social threat that might lead to aggression and violence. The results indicated that severe bullying and greater paranoid thinking were associated with both internalising and externalising behaviours; these findings were supportive of previous research (Downs et al., 2013; Kelly et al., 2015). Such internalising and externalising behaviours were considered to correspond to the use of safety behaviours, and externalising behaviours were further found to be related to a propensity to seek retribution (Frey, Pearson & Cohen, 2015), which, in turn, was associated with fighting peers (Sercombe & Donnelly, 2013). For those individuals who had a propensity

to externalise behaviours, it was extrapolated that violence might be the strategy of choice to reduce perceived threat. As such, a trajectory between childhood bullying victimisation and later aggression, via paranoid thinking and cognitive bias, was posited.

The implications of these findings are significant for both clinical and forensic practice, and for children and adult populations. The findings of the original research study, and collated evidence presented in the systematic review, indicate that exposure to bullying victimisation might be a risk factor for the development of paranoid thinking styles. As such, therapeutic intervention might be offered to victims of bullying, with an understanding that early intervention and the targeting of cognitive bias towards perceived threat may prevent the migration from transient paranoid thoughts to persistent and impairing symptoms. Further, aggressive behaviour in settings such as schools, young offender institutions and prisons, could be formulated within the context of the present findings. It is possible that violence is utilised by victimised and paranoid individuals to reduce perceived threat in the social environment. Indeed, Shevlin et al. (2015b) reported that bullied prisoners were more likely to experience paranoid thoughts than non-bullied prisoners; it can be hypothesised that these prisoners would be at risk of

committing acts of violence in return. The implementation of positive behaviour support plans (PBS: e.g. Sugai et al., 2000), or similar, should be directed by an awareness of this underlying function and seek to address behaviour appropriately.

Future research attention should be focussed on the development of high quality prospective studies to definitively determine the nature of the relationship between childhood bullying victimisation and paranoid thinking. Further, the association between cognitive bias, misinterpretation of threat in social stimuli, and subsequent safety behaviours should be explored with multi-informant research designs. Such research would be viable in community, school, and forensic settings, and might disentangle the contentious association between psychotic phenomena and violence.

7.1 Reflection on Academic Thesis

The process of conducting this research has been at times challenging, but always intriguing. From the outset, it has been important to align intuitive clinical ideas alongside empirical evidence and the scientific method. This has allowed for the adoption of a particular theoretical framework without becoming a slave to ideology.

The nature of my research determined that I needed the support of external agencies (i.e. secondary schools). This added a complexity to the research process, which, as I disentangled the challenges, greatly improved my understanding of the 'hidden' work that can be involved in bringing a research question to life. When planning future projects, I will ensure that I take due time to consider potential procedural and organisational barriers.

It is apparent that psychological mechanisms are integral to the formation and manifestation of paranoid phenomena, and the behavioural consequences. An awareness of this, which has been bolstered significantly by the research process, can only inform my present and future practice. Positioning myself as a 'researcher-practitioner' will give me access to the most up to date studies and, I hope, allow me to contribute to a greater shared understanding of the area I work in. Moreover, I have found that I greatly enjoyed the research process, and I am eager to move onto the next project.

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Appendices

Appendix A

Item	Dimension of the CAPE		
	Positive	Negative	Depression
Do you ever hear voices talking to each other when you are alone?	X		
Do you ever feel that you are being persecuted in some way?	X		
Do you ever feel you are destined to become someone special?	X		
Do you ever feel that a double has taken the place of a family member?	X		
Do you every feel that people can communicate telepathically?	X		
Do you see objects, people or animals others cannot see?	X		
Do you feel that people look at you oddly because of your appearance?	X		
Do you ever feel that you are a very special or unusual person?	X		
Do you ever feel that you are under the control of some force or power other than yourself?	X		
Do you believe in the power of witchcraft, voodoo or the occult?	X		
Do you ever feel as if electrical devices (like computers) can influence the way you think?	X		
Do you ever hear voices when you are alone?	X		
Do you ever feel that some people are not what they seem to be?	X		
Do you ever feel as if thoughts in your head are being taken away?	X		

Do you ever feel that things in magazines and on TV are written especially for you?	X	
Do you ever feel people drop hints about you or say things with a double meaning?	X	
Do you ever feel that thoughts in your head are not your own?	X	
Do you ever feel that there is a conspiracy against you?	X	
Do you ever hear your own thoughts being echoed back at you?	X	
Do you ever worry that other people could hear your thoughts?	X	
Do you ever feel you are not a very animated person?		X
Do you ever feel that you are not much of a talker when you are conversing with other people?		X
Do you ever feel that you experience few or no emotions at important events?		X
Do you ever feel that you have no interest to be with other people?		X
Do you ever feel that you are lacking in motivation to do things?		X
Do you ever feel you are lacking in energy?		X
Do you ever feel your mind is empty?		X
Do you ever feel that you are spending all your days doing nothing?		X
Do you ever feel that your feelings are lacking in intensity?		X
Do you ever feel that you are lacking in spontaneity?		X

Do you ever feel that your emotions are blunted?	X	
Do you ever feel that you are neglecting your appearance or personal hygiene?	X	
Do you ever feel that you can never get things done?	X	
Do you ever feel that you have only few hobbies or interests?	X	
Do you ever feel guilty?		X
Do you ever feel like a failure?		X
Do you ever feel tense?		X
Do you ever feel sad?		X
Do you ever feel pessimistic about everything?		X
Do you ever feel as if there is no future for you?		X
Do you ever feel as if you do not want to live anymore?		X
Do you ever cry about nothing?		X

Appendix B

To whom it may concern,

I am a final year doctoral researcher, reading forensic psychology at the University of Nottingham. I am contacting you to enquire if your school would be interested in collaborating in a research project.

I am investigating the association between childhood experiences of bullying, mental health difficulties and consequent behaviours. This is an important area of research and my finished study will be published in an academic journal, hopefully contributing towards advances in early intervention.

I would be looking to ask the school to help recruit participants and facilitate an online survey. The survey takes approximately 30 minutes to complete and could be done within a specifically designated lesson. For example, the school might incorporate the research within a mental health awareness campaign, which would allow the pupils to discuss the serious and pertinent issues of bullying and mental health in a safe environment.

Ideally, I am hoping to recruit as many participants (between the ages of 11-16) as possible; however, I would be grateful if your school were to support the research in any way, no matter how small. In return, I would be happy to provide my services to the school if it were to be desired (leading seminars, reporting my findings etc.).

The study has been granted ethical approval from the University of Nottingham ethics committee.

I will happily provide more information upon request and I look forward to hearing from you

Kind regards

Alex

Alexander Jack

Trainee Forensic Psychologist - (DForenPsy)
Centre for Forensic and Family Psychology
School of Medicine
University of Nottingham

Appendix C



University of Nottingham, School of Medicine, Division of Psychiatry and Applied Psychology

Participant Information sheet

Your child has been invited to participate in a research study. Before you decide whether to give consent for them to take part it is important for you to understand why the research is being done and what it will involve for your child. Please take time to read the following information carefully and discuss it with friends and relatives if you wish. You can also contact the researchers if there is anything that is not clear or if you would like more information. Take your time before making a decision. Thank you for reading this.

Background to the study

School can be a tough time for many children and difficult peer relationships can have a significant effect on mental wellbeing. Children who experience difficulties might come to anticipate more problems in the future and develop anxieties about relationships with others. These problems can be long-term. Furthermore, some children might feel threatened and this might lead to aggression in response, causing problems for themselves and others. This research seeks to investigate how different types of peer difficulties can lead to thinking styles that contribute towards children becoming anxious about potential threat. This is important because if we increase our understanding of the difficulties children face at school, we can design better interventions to prevent long-term problems.

What does the study involve?

Your child will be required to complete a series of questionnaires designed to measure his/her experience of peer relationships and the way that he/she thinks about these experiences. These questionnaires will be completed in a classroom and administered by a teacher. It is expected that it will take two sittings of 45 minutes to complete the entire assessment.

Why has my child been chosen?

Your child is aged between 11 and 16 and attends a school that has agreed to support the research.

Does my child have to take part?

Your child does not have to take part. It is up to you – and your child – to decide if it is appropriate for your child to participate. You have

the right to withdraw at any time and without giving a reason. The research has been approved by the University of Nottingham ethics committee and by the school.

Will my child's taking part in the research be kept confidential?

Your child's information and responses will be kept confidential. All data is anonymised and stored – password protected – on a computer at University of Nottingham and will not be traceable to your child.

What will happen to the results of the research study?

The results of the study will contribute towards the award of a Doctorate in Forensic Psychology and will also be published in a peer reviewed academic journal. You can request a copy of the results from the author via email.

What if I have a complaint about the research?

In case you have a complaint about your child's treatment by a member of staff or anything to do with the study, you can initially approach the lead investigator. If this achieves no satisfactory outcome, you should then contact the Ethics Committee Secretary, Mrs Louise Sabir, Division of Therapeutics and Molecular Medicine, D Floor, South Block, Queen's Medical Centre, Nottingham, NG7 2UH. Telephone 0115 8231063. E-mail louise.sabir@nottingham.ac.uk.

Who to contact for further information?

Dr Vincent Egan – Lead investigator:

vincent.egan@nottingham.ac.uk

Alexander Jack – Doctoral trainee:

lwaj4@nottingham.ac.uk

Appendix D

University of Nottingham, School of Medicine, Division of Psychiatry and Applied Psychology

Title of Project:

Name of Investigators: Alexander Jack and Vincent Egan

Before completing this form, please read the attached information sheet.

If you consent for your child to take part in this study then you do not have to do anything. If you **do not** consent then please complete the form below and return it to:



Name of child:

Your name:

Your Signature:

Date:

Appendix E



Direct line/e-mail
+44 (0) 115 8232561
Louise.Sabir@nottingham.ac.uk

13th July 2015

Alexander Jack
c/o Dr Vince Egan
Associate Professor of Forensic Psychology Practice
Centre for Family and Forensic Psychology
Psychiatry and Applied Psychology
School of Medicine
Room B23, YANG Fujia Building
Jubilee Campus
Nottingham
NG8 1BB

Faculty of Medicine and Health Sciences

Research Ethics Committee
School of Medicine Education Centre
B Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham
NG7 2UH

Dear Alexander

Ethics Reference No: R14052015 SoM PAPsych DFP– please always quote

Study Title: Childhood Bullying: Implications for biased perceptions of the present and the future.

Chief Researcher/Academic Supervisor: Dr Vince Egan, Associate Professor of Forensic Psychology Practice, Centre for Family and Forensic Psychology, Psychiatry and Applied Psychology, School of Medicine

Lead Researcher/student: Alexander Jack, Doctorate in Forensic Psychology Student, , Centre for Family and Forensic Psychology, Psychiatry and Applied Psychology, School of Medicine.

Duration of Study: 01/10/2015-30-09/2016 12mths

No of Subjects 90+ (11-16yrs)

Thank you for submitting the above application which has been considered and the following documents were received:

Childhood Bullying; the present and the future:

- Division of Psychiatry and Applied Psychology Ethics Form, Final Version 1.0, Date: 04.05.2015
- Proposal, Final Version 1.0, Date: 04.05.2015
- Appendix A: Letter from Bluecoat Academy dated 20th April 2015
- Appendix B: Consent Form – Parent, Final Version 1.0, Date: 04.05.15
- Appendix C: Information Sheet – Parent, Final Version 1, 28.4.15
- Appendix D: Assessments to be delivered, Final Version 1.0, Date 04.05.2015
- Appendix E: Invite letter to Schools, Final Version 1.0, Date: 04.05.2015
- Appendix F: Executive Summary sent to Schools, Final Version 1.0, Date: 04.05.2015

These have been reviewed and are satisfactory and the study is approved.

When the online survey has been developed please can you submit this for our information either as a paper version or the link would be acceptable.

Approval is given on the understanding that the Conditions of Approval set out over the page are followed.

1. You must follow the protocol agreed and inform the Committee of any changes using a notification of amendment form (please request a form).
2. You must notify the Chair of any serious or unexpected event.
3. This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.
4. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely



Dr Clodagh Dugdale
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

Appendix F

PsycINFO (search conducted 18th November 2016)

paranoia.sh or paranoid schizophrenia.sh or psychosis.sh or schizophrenia.sh or paranoi*.ti,ab. or persecutory delus*.ti,ab. or delus*.ti,ab. or schizo*.ti,ab. or psychot*.ti,ab. or psychosis.ti,ab. or psychoses.ti,ab. or severe mental*.ti,ab. or serious mental*.ti,ab. or major mental*.ti,ab. or psychiatric diagno*.ti,ab.

bullying.sh or bully*.ti,ab. or bullied.ti,ab. or peer victim*.ti,ab. or peer-victim*.ti,ab. or victim*.ti,ab. or cyberbully*.ti,ab. or cyber-bully*.ti,ab. or cybervictim*.ti,ab. or cyber-victim*.ti,ab. or covert aggression.ti,ab. or overt aggression.ti,ab. or direct aggression.ti,ab. or indirect aggression.ti,ab. or relational aggression.ti,ab. or physical aggression.ti,ab. or physical violence.ti,ab. or teas*.ti,ab. or intimidat*.ti,ab. or gossip*.ti,ab. or rumour*.ti,ab. or rumor.ti,ab.

infant*.ti,ab. or toddler*.ti,ab. or preschool*.ti,ab. or pre-school*.ti,ab. or child*.ti,ab. or kid*.ti,ab. or kindergarten.ti,ab. or juvenile.ti,ab. or young*.ti,ab. or adolescen*.ti,ab. or teen*.ti,ab. or peer*.ti,ab. or same age.ti,ab. or same-age.ti,ab. or class mate*.ti,ab. or class-mate*.ti,ab. or school mate*.ti,ab. or school-mate*.ti,ab. or friend*.ti,ab.

MEDLINE (search conducted 18th November 2016)

schizophrenia, paranoid/et, px [etiology, psychology]; psychotic disorders/et, px [etiology, psychology]; paranoid disorders/et, px [etiology, psychology];

paranoi*.ti,ab. or persecutory delus*.ti,ab. or delus*.ti,ab. or schizo*.ti,ab. or psychot*.ti,ab. or psychosis.ti,ab. or psychoses.ti,ab. or severe mental*.ti,ab. or serious mental*.ti,ab. or major mental*.ti,ab. or psychiatric diagno*.ti,ab.

bullying/px [psychology];

bully*.ti,ab. or bullied.ti,ab. or peer victim*.ti,ab. or peer-victim*.ti,ab. or victim*.ti,ab. or cyberbully*.ti,ab. or cyber-

bully*.ti,ab. or cybervictim*.ti,ab. or cyber-victim*.ti,ab. or covert aggression.ti,ab. or overt aggression.ti,ab. or direct aggression.ti,ab. or indirect aggression.ti,ab. or relational aggression.ti,ab. or physical aggression.ti,ab. or physical violence.ti,ab. or teas*.ti,ab. or intimidat*.ti,ab. or gossip*.ti,ab. or rumour*.ti,ab. or rumor.ti,ab.

infant*.ti,ab. or toddler*.ti,ab. or preschool*.ti,ab. or pre-school*.ti,ab. or child*.ti,ab. or kid*.ti,ab. or kindergarten.ti,ab. or juvenile.ti,ab. or young*.ti,ab. or adolescen*.ti,ab. or teen*.ti,ab. or peer*.ti,ab. or same age.ti,ab. or same-age.ti,ab. or class mate*.ti,ab. or class-mate*.ti,ab. or school mate*.ti,ab. or school-mate*.ti,ab. or friend*.ti,ab.

EMBASE (search conducted 18th November 2016)

Exp psychosis/et (etiology); exp paranoia/et (etiology)

paranoi*.ti,ab. or persecutory delus*.ti,ab. or delus*.ti,ab. or schizo*.ti,ab. or psychot*.ti,ab. or psychosis.ti,ab. or psychoses.ti,ab. or severe mental*.ti,ab. or serious mental*.ti,ab. or major mental*.ti,ab. or psychiatric diagno*.ti,ab.

bullying/

bully*.ti,ab. or bullied.ti,ab. or peer victim*.ti,ab. or peer-victim*.ti,ab. or victim*.ti,ab. or cyberbully*.ti,ab. or cyber-bully*.ti,ab. or cybervictim*.ti,ab. or cyber-victim*.ti,ab. or covert aggression.ti,ab. or overt aggression.ti,ab. or direct aggression.ti,ab. or indirect aggression.ti,ab. or relational aggression.ti,ab. or physical aggression.ti,ab. or physical violence.ti,ab. or teas*.ti,ab. or intimidat*.ti,ab. or gossip*.ti,ab. or rumour*.ti,ab. or rumor.ti,ab.

child/ or boy/ or girl/ or infant/ or preschool child/ or school child/

infant*.ti,ab. or toddler*.ti,ab. or preschool*.ti,ab. or pre-school*.ti,ab. or child*.ti,ab. or kid*.ti,ab. or kindergarten.ti,ab. or juvenile.ti,ab. or young*.ti,ab. or adolescen*.ti,ab. or teen*.ti,ab. or peer*.ti,ab. or same age.ti,ab. or same-age.ti,ab. or class mate*.ti,ab. or class-

mate*.ti,ab. or school mate*.ti,ab. or school-mate*.ti,ab. or friend*.ti,ab.

WEB OF SCIENCE (Search conducted 18th November 2016)

Ts=psychosis; ts=schizophrenia; ts=paranoia

ti=(paranoi* or persecutory delus* or delu* or schizo* or psychot* or psychosis or psychoses or severe mental* or serious mental* or major mental* or psychiatric diagno*)

ts=bullying; ts=peer victimization

ti=(bully* or bullied or peer victim* or peer-victim* or victim* or cyberbully* or cyber-bully* or cybervictim* or cyber-victim* or covert aggression or overt aggression or direct aggression or indirect aggression or relational aggression or physical aggression or physical violence or teas* or intimidat* or gossip* or rumour* or rumor*)

ts=child; ts=adolescent

ti=(infant* or toddler* or preschool* or pre-school* or child* or kid* or kindergarten or juvenile or young* or adolescen* or teen* or peer* or class mate* or class-mate* or school mate* or school-mate* or friend*)

PROQUEST (search conducted 21st November 2016)

paranoi* or persecutory delus* or delus* or schizo* or psychot* or psychosis or psychoses or severe mental* or serious mental* or major mental* or psychiatric diagno*

bully* or bullied or peer victim* or peer-victim* or victim* or cyberbully* or cyber-bully* or cybervictim* or cyber-victim* or covert aggression or overt aggression or direct aggression or indirect aggression or relational aggression or physical aggression or physical violence or teas* or intimidat* or gossip* or rumour* or rumor*

infant* or toddler* or preschool* or pre-school* or child* or kid* or kindergarten or juvenile or young* or adolescen* or teen* or peer* or class mate* or class-mate* or school mate* or school-mate* or friend*

Appendix G

Quality Assessment Checklist

Study name:

Authors:

Year:

1	Did the study report an association between bullying (IV) and paranoid thinking (DV)?	Yes
		No
2	Was the study:	
	A: A randomised-control trial, or cohort, case-control or cross-sectional study?	Yes
	B: Any other type of study?	No
2a	Type of study:	

Sampling Method		
3	What was the sample population?	Adult (psychotic)
		Adult (general population)
		Adolescent (psychotic)
		Adolescent (at risk)
		Adolescent (general population)
3a	Was the sample representative of the population?	1
		0
		NA

4	How was the sample recruited?	
	A: probability sampling (including: simple random, systematic, stratified g, cluster, two-stage and multi-stage)	1
	B: non-probability sampling (including: purposive, quota, convenience and snowball)	0
5	Was a power analysis reported and did the sample meet the requirement?	1
		0
6	Was a response rate reported?	1
		0
7	Were appropriate inclusion and exclusion criteria described and applied?	1
		0

8	If participants were allocated to groups, was the methodology sound (i.e. blind / double blind)?	1
		0
		NA
9	If controls were used, were they matched appropriately?	1
		0
		NA

Measurement		
10	Was a clear definition of bullying used to underpin the study?	1
		0
11	Was a valid measurement of bullying used in the study?	1
		0
12	Was the assessment of bullying determined from more than one source?	1
		0
13	Was a valid measurement of paranoid thinking used in the study?	1
		0
14	Were potential confounding factors accounted for in the analysis?	1
		0
15	Were all participants given the same assessment, in the same conditions?	1
		0
16	Was the method of analysis appropriate?	1
		0
17	Did the study aim to find a positive relationship between the IV and the DV?	1
		0

Reporting		
18	Was an effect size reported for the association between the IV and the DV?	1
		0
19	Were confidence intervals reported for the effect size?	1
		0
20	Did the conclusions of the study logically follow from the study findings?	1
		0
21	Was ethical approval granted (and reported) for the study?	1
		0
22	Was a conflict of interest reported?	1
		0

Add all points and divide by total number of items for study quality:

Low = < 33%

Moderate = < 66%

High = $\geq$ 67%

Accepted into systematic review?	Yes
	No

Appendix H

Data Extraction Form

Study:

Authors:

Date:

Stage One

Project	
Measure of bullying	
Measure of paranoid thinking	
Study design	
Participants	
Mean age	
Conclusions	

Stage Two

Sample	
Procedure	
Analysis	
Result	
Strengths	
Limitations	