Understanding Borderline Personality Disorder in Young People: An Exploration of the DECRYPT dataset

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Thesis Portfolio Abstract

This thesis portfolio presents two papers investigating Borderline Personality Disorder (BPD) in children and adolescents.

The first chapter explores the nature of BPD, Post Traumatic Stress Disorder (PTSD), Complex Post Traumatic Stress Disorder (CPTSD), and how these can present in young people under 18 years old, and why this is of clinical relevance.

The second chapter presents a systematic review and meta-analysis focused on the prevalence of BPD in young people living in the community who were not accessing mental health services. We reviewed ten papers and found a pooled prevalence of 12.9% (95% CI: 5.5, 22.7); Heterogeneity was high ($Q=(9)\ 749.3$, $p<0.001$). When four outlier studies were removed this prevalence rate reduced to 4.8% (95% CI: 2.9,7.3).

The third chapter presents the empirical study exploring secondary baseline data from the 'Delivering Cognitive Therapy for Young People After Trauma' (DECRYPT) study, a Randomised Control Trial which compared trauma-focused cognitive behaviour therapy to treatment as usual in a sample of young people with multiple traumas. This study adopted a quantitative approach to analyse the primary and secondary outcomes for a subset of the participants (N=98) whose parents had completed a self-report measure for BPD. Results confirmed a difference between BPD, PTSD and CPTSD, with 48% of participants meeting the clinical cut off for BPD and supporting other research classifying these conditions and further illustrated some commonalities between BPD and PTSD/CPTSD.

The final chapter presents a discussion and critical evaluation. Our findings suggest that BPD and subthreshold clinically significant traits of BPD are present in children and adolescents and more prevalent than expected. Clinical implications suggest services should seek to identify and support these individuals early before the impact of the condition has severe consequences. Future research should consider longitudinal studies to better understand the trajectory of this condition.

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Chapter One: Introduction to the Thesis Portfolio^1

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^1 Footnote: This thesis portfolio draws from materials written for the Thesis Proposal which was submitted as a summative assessment in preparation for the development of the thesis and as part of fulfilment of the Doctorate in Clinical Psychology. This material has been used throughout the portfolio.

Borderline Personality Disorder in Children and Adolescents

This introduction discusses the rationale behind researching Borderline Personality Disorder (BPD) and clinically significant traits (csBPT) in childhood, providing a context for the thesis portfolio. It additionally discusses the role of other psychopathology, functioning and cognition influences in BPD/csBPT experienced by a clinical group of young people with Post Traumatic Stress Disorder (PTSD) and/or Complex Post Traumatic Stress Disorder (CPTSD).

BPD is a mental health condition characterised by high impulsivity, high lability, high rates of self-injurious behaviours, interpersonal difficulties, marked impairments in functioning and increased relational conflict (American Psychiatric Association, 2013; Antoine et al., 2023; Boone et al., 2022). De Groot et al (2024) described BPD as being the most severe and common personality disorder in adult psychiatric practice with up to 28% of inpatients in mental health settings receiving the diagnosis.

The importance of diagnosis in mental health care can be contributed to the current medical model under which many health care provisions sit (Bach et al., 2022). The Diagnostic and Statistical Manual- version five (DSM-5; American Psychiatric Association, 2013) requires individuals to have five of nine possible symptoms, with the potential for 256 different symptom combinations, posing significant challenges for early identification and diagnosis due to its complicated symptomology and overlap with other mental health conditions (Sneesby & Nelson-Gray, 2025; Antoine et al, 2023; Semaan & Croarkin, 2025). Antoine et al (2023) conducted a latent class analysis and suggested that BPD has three latent subgroups of symptoms. They suggested that these subgroups may have important implications for how to redefine BPD treatment interventions.

GuoRong et al (2025) found that adolescents reported significantly higher frequencies of BPD traits and diagnoses than their older counterparts, as well as higher levels of emotional and physical abuse. They suggested that age-specific interventions for addressing childhood trauma and BPD were essential. Furthermore, they reported that there has been a significant rise in clinical settings of clinical presentation of BPD, which can often be overlooked, leading to gaps in assessment and understanding of both the prevalence and understanding of BPD in children and adolescents. Sneesby and Nelson-Gray (2025) have highlighted the need to investigate community samples given the vast majority of research has been with clinical samples, to broaden understanding of how BPD traits manifest in the general population. BPD's multifaceted nature is well documented but understanding of the how the symptoms manifest differently among individuals remains limited.

Much research has been conducted to determine whether BPD and CPTSD are distinct conditions or whether they overlap and therefore might be different presentations of the same condition (Cloitre et al., 2014). Both BPD and CPTSD are complex conditions with many facets which can cause significant distress and detrimental effects on any individual, and particularly so on young people. Therefore, understanding how they interact and present together and the effects this can have on young people cognitively and functionally is crucial in leading further research into how best to treat and support young people suffering from these conditions, particularly comorbidly. Mattingley et al (2024) suggested that there could be underlying mechanisms linking BPD with other conditions and suggested a transdiagnostic approach to diagnosis, i.e. focussing on the underlying mechanisms and processes common across different disorders rather than on specific diagnostic categories. It is possible given our results suggesting significant associations and correlations with aspects of trauma, PTSD, and CPTSD, that the two conditions, despite being discrete, may be linked by underlying mechanisms suggesting a more transdiagnostic approach to BPD and CPTSD would be appropriate.

Diagnosis of BPD in under 18-year-olds has more recently been accepted as a diagnosis (Larrivee., 2013), and yet research continues to suggest that clinicians are wary to give this diagnosis (Bozzatello et al., 2019; de Groot et al., 2024), despite the potential benefits of early intervention and support. Similarly, research has shown that this condition can change and remit over time and with intervention (de Groot et al., 2024), suggesting that the stigma around this diagnosis can be challenged and changed positively, from a pervasive long term debilitating condition to something that is treatable.

Current literature suggests that despite BPD typically emerging at 12-18 years (Chanen, 2015), a fact that has been recognised in both classification systems and national guidelines (Kaess et al., 2014), clinicians are often reluctant to diagnose pre-18, leading to delayed diagnosis (Griffiths, 2011; Laurenssen et al., 2013) and challenges accessing support for the condition (National Institute for Mental Health in England, 2003). Some research has suggested that the detrimental consequences of receiving a diagnosis might perpetuate or increase an individual's difficulties further, potentially adding to clinicians' reluctance to diagnose in pre-18's (Vickers et al., 2022). Furthermore, Hartley et al (2022) stated that concerns about the validity and usefulness of the label of BPD have also been raised, as well as potential psychosocial harms of diagnosis. This was reflected in comments from this study's PPI group, who felt the BPD label was 'useless' and can lead to a lack of treatment and support not only for BPD, but other comorbid conditions.

Guile et al (2018) suggested that the complexity of BPD diagnosis may increase clinician reluctance to diagnose in pre-18's. Alongside this, it has been suggested that the ongoing debate about the most appropriate way to conceptualise the disorder provides more uncertainty for the assessing clinician. Instead, Guile et al (2018) suggest it is more appropriate for clinicians to identify personality traits rather than disorder. Ibrahim et al (2017) further postulated that the shift from full diagnosis to exploring borderline traits and features in pre-18 is less stigmatising for children early in their development.

Papadopoullos et al (2022) conducted qualitative research with clinicians and found that concerns about the attitudes and cultures of other teams and professionals who might be supporting the young person could affect decisions on giving a full diagnosis of BPD. Furthermore, despite the advances in research and understanding of BPD in young people, clinicians reported feeling there was still a 'push and pull' between using a potentially harmful label while still acknowledging the potentially useful aspects of diagnosis.

Both the DSM-V and the ICD-11 have adapted and altered the diagnostic label and criteria by which BPD can be diagnosed. The results of our study suggests this continues to remain an area that should be developed, particularly taking into account the comments from our lived experience participant group. The DSM-IV-TR was clear that when personality traits are inflexible, chronic, and cause significant functional impairment or subjective distress, regardless of the age of the sufferer (Larrivee, 2013).

Early childhood adversity and psychopathology have been shown to increase the likelihood of BPD development (Boone et al., 2022). Given this, it follows that investigating the relationship between trauma and BPD in children and adolescents is pertinent and warranted. Boone et al (2022) highlighted that despite knowing these early risk factors for development of BPD, there is little research on moderating factors on development of BPD. Therefore, non-directional research comparing children and adolescents who both meet and do not meet diagnostic criteria allows for a less biased research study. Lawless and Tarren-Sweeney (2022) highlighted that research remains lacking into the developmental trajectory of borderline symptomology from early childhood through to late adolescence/early adulthood.

Given the high prevalence rates reported in research about children and adolescents in contact or under the care of mental health services, it is important to understand what the prevalence rates of BPD/csBPT in the community might be. This could highlight a population who are unable or not receiving support, or a population who might manage their symptoms and resolve them over time through other means than accessing mental health services. It is

also key to understanding the condition better, and who we might not be reaching for support who might need our help or be accessing services in the future.

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Chapter Two: Systematic Review and Meta-Analysis

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The prevalence of Borderline Personality Disorder in community samples of children and adolescents: A systematic review and meta-analysis

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Abstract

Introduction: This systematic review and meta-analysis examined the prevalence of borderline personality disorder (BPD) or clinically significant borderline personality traits (csBPT) in community samples of children and adolescents.

Clinical Relevance: While a contentious diagnosis, particularly in children and adolescents, BPD is associated with significantly impaired functioning and a chronic course. However, its prevalence is poorly understood.

Method: The review was pre-registered on PROSPERO. A systematic search of PsycInfo, PubMed, and Web of Science identified 10 eligible studies, with a total sample size of 18,347 (female: N=10,927; male: N=6,376). Participants ranged from 11 to 25 years Sensitivity analyses identified four outlier studies, resulting in sub-group analysis of six studies.

Results: The pooled prevalence of BPD/csBPT in community-recruited children and adolescents was 12.9% (95% CI: 5.5-22.7), with high heterogeneity (Q=(9) 749.3, p<0.001); this prevalence estimate was reduced to 4.8% (k=6, N=15,360; 95% CI: 2.9–7.3) when outlier studies were removed.

Clinical Implications: Pooled prevalence was higher than expected, even with outlier studies removed, suggesting a large gap in understanding about BPD in children and adolescents living in the community that should be explored further. These findings underscore the importance of contextual factors influencing BPD/csBPT prevalence in youth, particularly for those managing symptoms without professional intervention.

Keywords: Borderline, Children, Adolescents, Prevalence, Community, Personality

Introduction

Current diagnostic criteria for BPD in the Diagnostic and Statistical Manual (DSM-5; [3]) requires five of more of the following symptoms: efforts to avoid abandonment, pattern of unstable relationships, unstable sense of self, self-damaging impulsivity, recurrent suicidality, affective instability, chronic feelings of emptiness, inappropriate intense anger or stress related paranoid ideation. The International Classification for Diagnosis 11th revision (ICD-11;[53]) defines BPD as a borderline pattern of personality disturbance. It requires five of the same symptoms as the DSM-5, with impairments in interpersonal functioning and the self as core features. Symptoms must have been present for at least one year. A borderline pattern specifier has been included, based on DSM-5 criteria, to help identify individuals who may benefit from evidence-based treatments. This revision has also removed the previously used diagnostic label of Emotionally Unstable Personality Disorder (EUPD), although this is still preferred by some.

BPD typically emerges between 12-18 years, with diagnosis often delayed [14], possibly due to reluctance in diagnosing adolescents, stigma around the label, and clinician concerns about ongoing personality development [22, 29]. Research has demonstrated that BPD in adolescence continues into adulthood [14], and recognition of this has led to diagnosis pre-18 being included in classification systems and treatment guidelines [28]. BPD is now considered to be a reliable, valid diagnosis for children and adolescents [6]. De Groot et al [19] suggested that changes in BPD features in children and adolescents are less straightforward than in adulthood, indicating the need to understand BPD in childhood further.

Importance of Early Intervention

BPD is associated with severe functional impairment and high suicide rate [28]. In one study, up to 78% of suicidal adolescents presenting at emergency departments met criteria for BPD and 11% of adolescents in outpatient services [24], and inpatient setting prevalence rates can be as high as 49% [16]. BPD onset in childhood is often marked by poor outcomes such as reduced educational attainment, risk-taking behaviour, and increased healthcare usage [8]. Adolescence is a critical period for BPD onset, with even sub-threshold features linked to poorer adult outcomes. [46].

Early diagnosis and intervention are essential given the potential for remission in those diagnosed during adolescence. Álvarez-Tomás et al [2] suggested BPD groups with younger mean ages at baseline exhibited higher rates of remission in the long term (50-70%). The trajectory of BPD can be influenced by many factors including stressful life events, family

adversity, abuse, and comorbid conditions [50], with research suggesting BPD in adolescence is linked to some of the lowest quality-of-life scores among mental health conditions [15]. Noblin [43] argued that clinicians should consider screening and treating BPD traits in adolescents even without a formal diagnosis, with emerging csBPT shown to predict negative long-term trajectories [52]. Moreover, the interactions and comorbidity between BPD and conditions like PTSD/CPTSD highlight the importance of understanding BPD in youth [50, 43].

This research emphasises the significance of early identification and tailored interventions during childhood and adolescence to mitigate long-term consequences of BPD and improve outcomes across the lifespan.

Sex Differences

Features of BPD are reported in both sexes, but research into the differences between presentation in sexes remains limited [10, 54]. Epidemiological studies in general adult populations have estimated a prevalence ranging between 0.7-5.8%, with sex specific rates remaining unclear [5, 21]. Traditionally BPD has been considered more common in females, however recent research suggests that sex prevalence rates can differ between countries. For example, the United States reported 5.6% in males and 5.2% in females [21], a Norwegian community study reported 0.4% in males and 0.9% in females [46], and another study in the UK reported 1% in males and 0.4% in females [17].

Research has suggested biases in population sampling (community versus clinical), differences in diagnostic instruments (clinical versus self-report measures), and the diagnostic structure of BPD itself, which could account for some of the differences between prevalence studies [52]. Other studies suggest that prevalence in females in clinical samples is higher because females are more likely to seek support with mental health problems [10]. However, other research has suggested there could be sex bias in assessment tools and procedures, leading to under recognition of BPD in males [10, 7].

Method

The protocol for this review was pre-registered on the Prospective Register of Systematic Reviews (PROSPERO; CRD42024532058).

Selection of Studies

Relevant studies were identified through systematic searches in three electronic databases: PsycINFO, PubMed and Web of Science. Searches were restricted to empirical English-language papers published in peer reviewed papers between 1980 (when BPD was first introduced in the DSM-III) and April 25th 2024 when the searches were run by the first author. Emotionally Unstable Personality Disorder (EUPD) was included as search term; a previously used diagnostic label for BPD.

The following key terms were searched within title and abstract:

(prevalence or incidence or epidemiology or frequency or occurrence) AND ("borderline personality*" or bpd or "emotionally unstable personality*" or eupd) AND ("young people" or youth* or adolescen* or "young adult" or teenage* or child*).

Inclusion and Exclusion Criteria

The following eligibility criteria were used:

1) Participants were from a community sample e.g. school students.
2) Participants' mean age was equal to or less than 18 years of age, even if the upper age range exceeded 19 years.
3) The study assessed either BPD, csBPT or EUPD
4) The study provided a prevalence rate for BPD/csBPT or how to work this out.
5) The study provided the method of identifying BPD/csBPT within the sample e.g. structured clinical interview.

Ten percent of the title/abstract search results were screened by third author to check inclusion/exclusion criteria, with agreement on 194 of 216 studies (89.8%). All studies for full text review were checked by first and second authors, with agreement reached on 71 of 73 studies (97.3%). All disagreements were resolved on discussion.

Data Extraction

Ten studies were included in the meta-analysis. Data on sample characteristics (sample size, age range, mean age and standard deviation (SD), sex), prevalence of BPD/csBPT, and measure/technique used to derive BPD/csBPT status were extracted by the first author and all data was checked by the first and fourth authors.

Quality of Studies

Each study was assessed using a risk of bias tool from the Joanna Briggs Institute; Prevalence Critical Appraisal Tool [41]. The tool comprised of 10 questions and assessed the quality and representativeness of the sample, nonresponse rates and reasons, recruitment procedures, and inclusion/exclusion criteria. Each study was allocated a quality rating by the first author (low quality =0-3, medium quality= 4-6, high quality= 7-9). All studies were also rated by the second author, and agreement was reached on all 10 studies (100%).

Due to the high heterogeneity within this systematic review, a random-effects meta-analysis was conducted. High heterogeneity in a meta-analysis indicates high variation between studies, potentially high variance in the prevalence reported, and therefore suggests (alongside a broad confidence interval) that the pooled prevalence reported requires further investigation.

Statistical Analysis

Statistical Analysis was completed using the metafor package [51] in R (see Appendix G for syntax). The metafor package is a comprehensive tool for conducting meta-analytic models, allowing for flexibility in handling a wide range of effect size metrics and model types. A random effects model was chosen due to the variability expected across the studies, allowing for potential generalisation to a broader population.

Prevalence was calculated for all included studies (Fig. 2). Outliers were then removed in a sensitivity analysis and prevalence recalculated for the six remaining studies (Fig. 3). Forest plots were created to display the individual study effect sizes, overall summary effect, and confidence intervals for each study.

Following this, moderator analysis was conducted to look at the following areas:

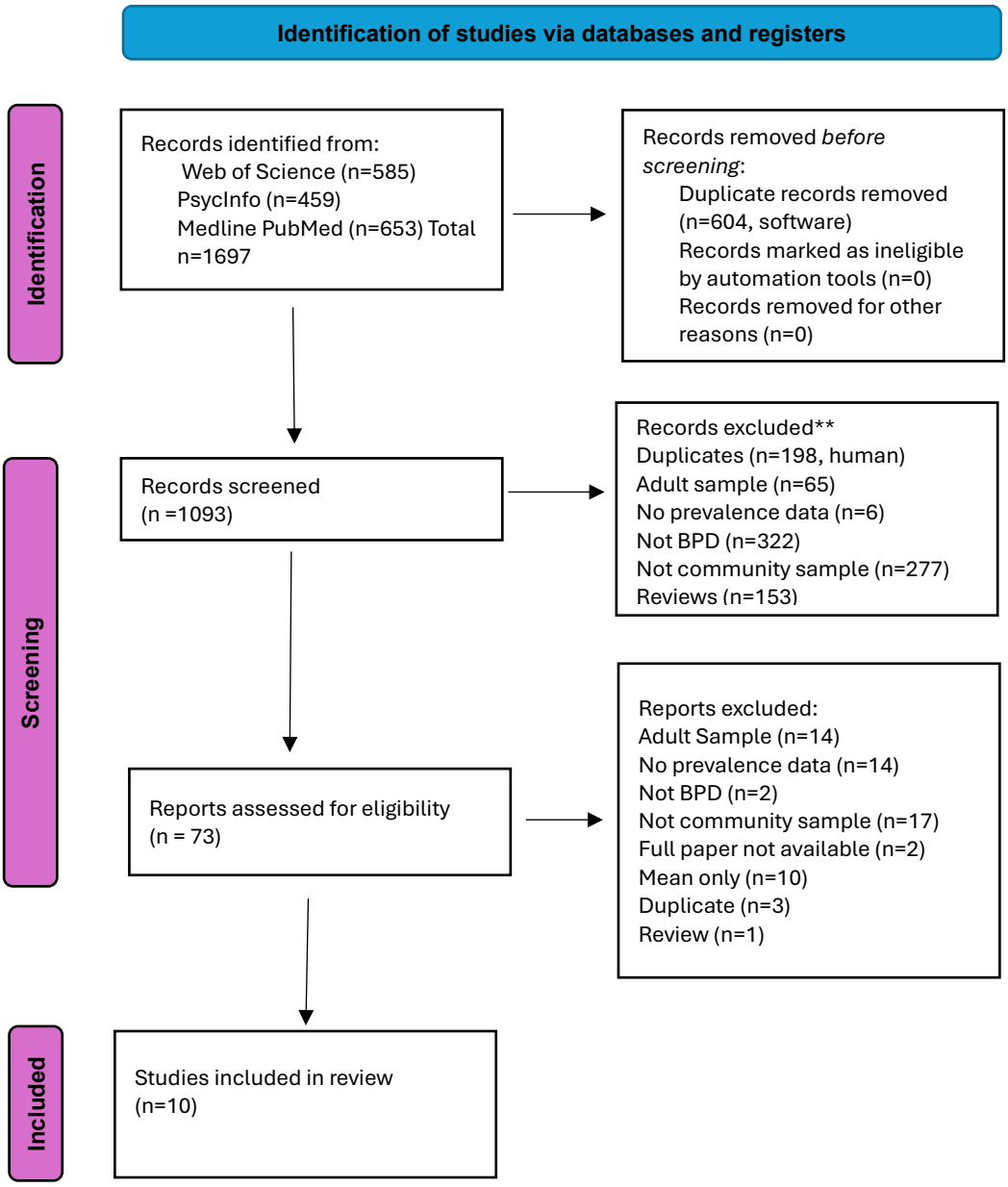
- Six studies comparing gender of BPD clients (k=10) followed by sensitivity analysis removing outlier studies (k=6)
- Comparison of clinical interviews (k=5) versus screening self-report tools (k=5), followed by a sensitivity analysis on the same data minus the outlier studies (k=6)
- Comparison of school populations versus general population samples

- Comparison of low income versus high income countries

Results

A Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flowchart is shown below (Fig.1) as a summary of the search selection and process.

Fig.1 PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only



The total sample size across the ten studies was N=18,347, with all ten studies reporting gender data: female N=8728, male N=9378. The age range of the sample was 11 years to 25 years (mean range 11.96-17.70 years). Only two of ten studies reported the ethnicity of the sample, and the samples were taken from a variety of countries across the world; Canada (N=1), China (N=3), Italy (N=1), Spain (N=1), Tehran (N=1), United Kingdom (N=1), and United States of America (USA; N=2). All ten studies reported the number of females and males with clinically significant BPD/csBPT scores. Seven studies sampled from school students, two sampled from community surveys (secondary analysis), and one study sampled from a longitudinal, birth cohort study (secondary analysis). Of the screening criteria used in each study, five studies used a semi-structured interview and five used self-report assessment measures.

Table 1. Characteristics of Studies included in Meta-analysis (N=10)

Study	Age range in years	mean age (SD)	Type of sample	Sample size	BPD whole sample	BPD Females	Assessment	Country	Ethnicity
Cerutti et al., 2011	13-22	16.47	Italian High School Students	234	105		SCID-II	Italy	Not reported
Guilé et al., 2021	12 to 14		General Population	799	50		Ab-DIB-R	Canada	Not reported
Lazarus et al., 2017	14 to 17		Pittsburgh Girls Study (longitudinal)	2450	214	214	IPDE-BOR	USA	25% white, 75% black
Leung & Leung, 2009	12 to 20	14.6 (1.8)	High School Students	5224	326	246	MSI-BPD	China	Not reported
Liu et al., 2011		17.1	High School Students	350	91		PDQ-4+	China	Not reported
Lu et al., 2023	16 to 18		High School Students	1848	348	225	PDQ-4	China	Not reported
Marrero et al., 2023	12 to 25	16.82 (2.71)	High School Students	285	103	71	IPDE	Spain	Not reported
Meeker et al., 2002	13 to 15	14.4 (4.4)	American High School Students	161	10		MACI	USA	2% African American, 2% Asian, 77% Caucasian, 9% Hispanic,1% Native American, 4% endorsed 2 or 3 races, 4% missing data
Mohammadi et al., 2014	16 to 18	16.95	High School Students	422	4	2	DIB-R	Tehran	Not reported
Morales-Muñoz et al., 2020	11 to 12		Avon Longitudinal Study of Parents and Children Birth Cohort	6333	472	242	UK-CI-BPD	UK	Not reported

Note: UK Childhood Interview for DSM-IV Borderline Personality Disorder (UK-CI-BPD: [57]), International Personality Disorders Examination (IPDE: [34]), Personality Diagnostic Questionnaire-4 (PDQ-4: [26]), Personality Diagnostic Questionnaire-4+ (PDQ-4+: [11]), McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD: [55]), International Personality Disorder Examinations-Screen (IPDE-S; [31]), Structured Clinical Interview for the DSM-III-R Personality Questionnaire (SCID-II; [45]),

Abbreviated-Diagnostic Interview for Borderlines-Revised (Ab-DIB; [23]), Millon Adolescent Clinical Inventory (MACI; [38]), Revised Diagnostic Interview for Borderlines (DIB-R; [58]).

Main analysis of all 10 articles resulted in a pooled prevalence of 12.9% (N= 18,347; 95% CI: 5.5-22.7; 95% prediction interval PI 0.0-51.0) and high heterogeneity (Q[df=9]=749.28, p<0.001). Three studies [13, 33, 37] had 95% confidence intervals which did not overlap with the 95% confidence interval of the prevalence pooled estimate (Fig.2). These were classed as outliers, using Cuijiper's [18] definition. Following this, the forest plot was reconfigured (Fig.3), and a further study [35] was classed as an outlier and removed for the same reason. Sensitivity analysis was performed on the remaining six studies, and results for analysis on these resulted in a prevalence rate of 4.8% (N=15630, 95% CI: 2.9-7.3; 95% PI: 0.8-11.9) and high heterogeneity (Q[df=5]= 72.99, p<0.001). Despite the smaller number of studies in the sensitivity analysis, the sample size remained large (N=15,630), and the prediction interval was greatly reduced.

Fig.2. Forest plot showing 10 included studies prevalence data (K=10, N=18,347).

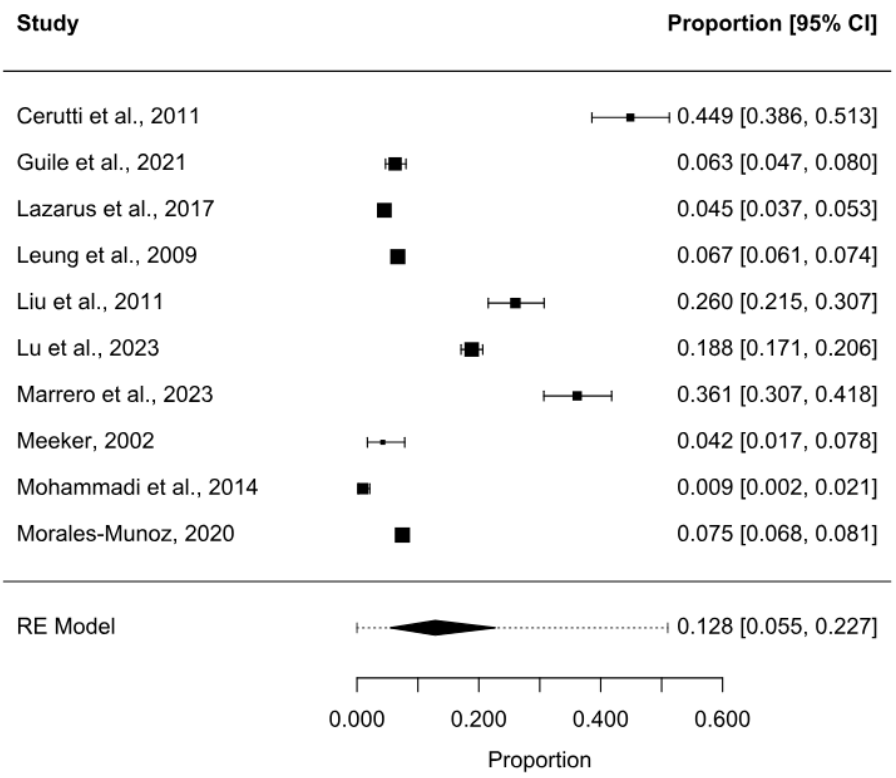
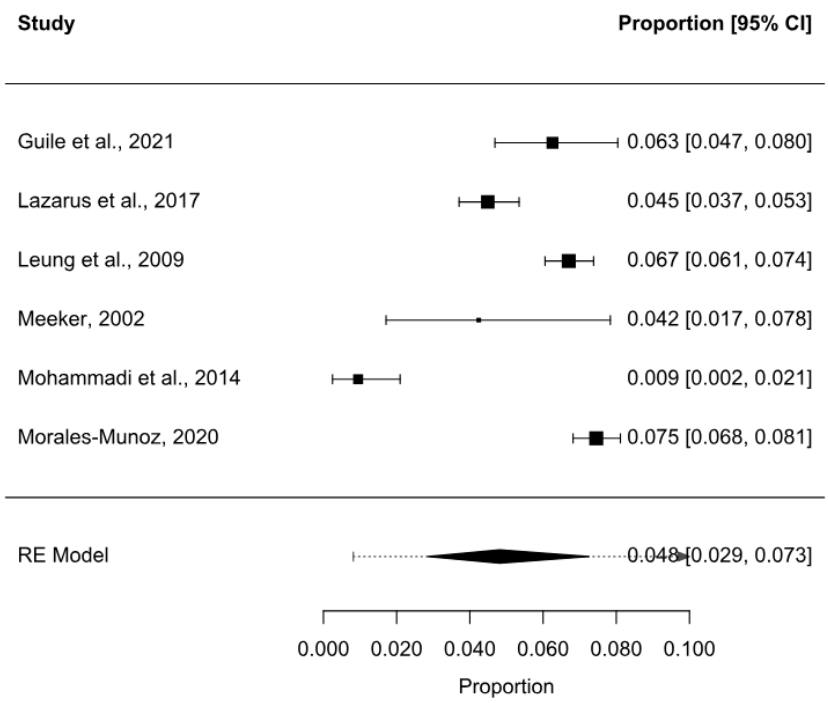


Fig.3 Forest plot showing prevalence following sensitivity analysis (K=6, N=15,630)



Egger's regression test was conducted to test for publication bias. For the main analysis (k=10) no statistically significant score was indicated (p=0.26); the same was also true for the sensitivity analysis (k=6; p=0.16). It can be suggested the reported results are unlikely to be skewed by publication bias.

Quality of Studies

Quality of studies was determined using the risk of bias tool from the Joanna Briggs Institute; Prevalence Critical Appraisal Tool ([41]; see Method section for more information). Eight of 10 studies were considered high quality, and two studies were considered medium quality (Table. 2). After outliers were removed, six studies remained which were all rated high quality.

Table 2. Quality of Studies

Article	Q1: Appropriate sample frame?	Q2: Appropriate sampling?	Q3: Adequate sample size?	Q4: detailed subject and setting description?	Q5: sufficient coverage of sample?	Q6: valid methods of identification	Q7: condition measure in standard and reliable way?	Q8: Appropriate analysis?	Q9: response rate adequate?	total score	low/med/high quality?
Morales-Muñoz et al 2020	1	1	1	1	1	1	1	1	1	9	high
Guilé et al 2021	1	1	1	1	1	1	1	1	1	9	high
Meeker 2002	1	1	0	1	1	1	1	1	1	8	high
Mohammadi et al 2014	1	1	1	1	1	1	1	1	0	8	high
Cerutti et al 2011	1	0	0	1	1	1	0	1	1	6	med
Lazarus et al 2017	1	1	1	1	1	1	0	1	1	8	high
Leung & Leung 2009	1	1	1	1	1	1	0	1	1	8	high
Deng et al 2023	0	1	1	1	1	1	0	1	1	7	high
Liu et al 2011	0	1	0	0	1	1	0	0	1	4	med
Lu et al 2023	1	1	1	1	1	1	1	1	1	9	high

Note: Table 2. Shows the quality rating for each study in the Systematic Review and Meta-Analysis, as agreed by the first and second author, with scores zero to three indicating low quality, four to six indicating medium quality, and seven to nine indicating high quality.

Moderator and subgroup analyses

The results of moderator and subgroup analyses are displayed in Table 3. The pooled prevalence estimate was not moderated by assessment type (questionnaire vs interview) or country type (high income vs low or middle income). There were too few studies to conduct a moderation analysis for sample type (school-recruited vs general population), but school-

recruited samples were characterised by greater heterogeneity and had a wider prediction interval than general population samples. Subgroup analyses were conducted for females and males for those studies where sex-specific data was available; while females had a higher prevalence than males their 95% confidence intervals were overlapping, suggesting that this would be unlikely to represent a significant difference.

Moderator analysis was not possible when outlier studies were removed due to the small number of studies. However, all sub-group estimates remained in the 3.6 to 6.6% range, suggesting no differences between groups.

Table 3. Summary of main, subgroup and sensitivity meta-analyses.

					Heterogeneity		
	K	**N**	**Prevalence (%)**	**95% CI**	**Q test**	**I^2**	**95% PI**
All studies	10	18347	12.9	5.5, 22.7	749.28	99.6	0.0, 51.0
Sub-group analyses							
Questionnaire vs Interview							
Questionnaire	5	8623	11.3	4.7, 20.2	281.42	98.9	0.2, 35.8
Interview	5	9724	14.6	2.2, 35.4	443.54	99.7	14.8, 63.7
Moderation analysis:			*Not significant ($Q_M(df = 1) = 0.13$, $p = 0.72$)*				
Sex							
Female	6	10494	11.6	3.7, 23.1	286.28	99.6	0.0, 4.7
Male	5	6064	9.4	2.3, 20.6	149.17	99.2	0.0, 41.3
High-income country vs low/middle-income country							
High income	6	10266	14.3	3.9, 29.7	394.23	99.6	0.0, 59.7
Low/middle income	4	8081	10.9	2.1, 25.3	340.16	99.5	0.0, 52.7
Moderation analysis:			*Non-significant ($Q_M(df = 1) = 0.13$, $p = 0.72$)*				
Population Type							
School	7	8765	16.5	3.7, 17.6	1293.6	99.3	0.0, 41.4
General Population	3	9582	6.0	0.0, 6.4	9.5	79.0	0.0, 12.8
Moderation analysis:			*Insufficient studies*				
Sensitivity Analyses							
Main Analysis (outliers removed)	6	15630	4.8	2.9, 7.3	72.99	97.0	0.8, 11.9
Questionnaire vs Interview							
Questionnaire	3	6425	6.6	6.0, 7.2	2.05	0.89	5.9, 7.2
Interview	3	9205	3.9	0.9, 8.7	70.02	98.48	0.0, 15.0
Sex							
Female	4	9259	5.7	2.4, 10.3	32.43	98.4	0.0, 17.4
Male	3	5170	3.9	1.0, 8.6	42.06	97.5	9.9, 29.7
High-income country vs low/middle-income country							
High Income	4	9747	5.8	4.3, 7.5	29.84	85.7	3.0, 9.4
Low/middle Income	2	5883	3.3	0.04, 11.3	42.33	97.6	0.0, 0.20
Population Type							
School	3	6048	3.6	0.0, 8.1	43.49	93.74	0.0, 13.8
General Population	3	9582	6.0	4.3, 7.8	28.16	90.39	3.0, 9.9

Note: Sensitivity studies did not have enough studies to complete moderator analyses.

Discussion

Summary of Findings

This systematic review and meta-analysis aimed to establish a prevalence rate for BPD/csBPT in children and adolescents in the community. Ten studies were identified and pooled prevalence was estimated at 12.9% (95% CI: 5.5, 22.7) with high heterogeneity. Six studies were included in the sensitivity analysis following removal of outlier studies, and pooled prevalence was estimated at 4.8% (95% CI: 2.9, 7.3). Heterogeneity remained high. While our research does have limitations, it suggests that BPD/csBPT in the community amongst children and adolescents is widespread, and future research should look to investigate this further.

Clinical Implications

The prevalence rates reported in this review are higher than expected. After accounting for outliers and conducting sensitivity analysis on the remaining studies, a prevalence rate of nearly 5% remained. The confidence intervals on the sensitivity studies remained at or above 0.9%.

BPD is considered a controversial diagnosis in those under 18, with support from mental health services challenging for those diagnosed [42]. Vickers et al [49] suggested that as understanding of the condition improves, clinicians' perceptions and patient experiences may improve, encouraging more individuals to seek support. They discussed how the detrimental consequences of receiving a diagnosis, particularly at a younger age, might perpetuate or increase individuals' difficulties. The use of a borderline pattern specifier in the ICD-11 diagnostic criteria may be a pragmatic solution to the stigma raised by the label, while also acknowledging the importance of recognising the condition.

It has been suggested that early diagnosis of BPD maybe beneficial to recovery [39, 28, 20]. Research supports BPD remittance [55], triggering debates on its diagnostic validity and whether it may be better reclassified, or classified as another condition [1, 28, 47, 50].

Our results indicate a higher-than-expected prevalence, emphasising the need for improved early detection and intervention. Services could implement targeted screening in schools and primary care to identify at-risk individuals early, preventing adverse outcomes and BPD symptoms that could disrupt an already challenging developmental period.

Historically, BPD has been viewed as a predominantly 'female' condition, however this study found similar prevalence percentages of males (9.4%) and females (11.6%) meeting criteria for BPD/csBPT. This suggests gender biases in clinical settings [44] may lead to underdiagnosis or misdiagnosis of BPD in males, and services should consider raising awareness amongst clinicians to identify symptoms of BPD in both sexes. Cavale et al [12] states that the prevalence of BPD amongst males is largely unknown. Males with BPD are more likely to exhibit externalised symptoms such as aggression and substance misuse, while females often experience internalised symptoms such as emotional dysregulation, PTSD and higher rates of mood and eating disorders [44]. This could have implications for effective treatment. A key strength of this meta-analysis is use of a community sample, reducing the likelihood of gender-based selection bias. Recognising that BPD may have similar prevalence rates in both sexes could improve early detection and reduce stigma.

Early diagnosis can be seen as positive in that it enables a patient to feel hope for change, lessen the sense of loneliness, reduce despair and hopelessness, and increase feelings of being understood by healthcare. However, alternatively it should be recognised that diagnosis (particularly diagnosis of BPD) can increase stigma.

Strengths and Limitations

Despite limited studies (k=10) this systematic review and meta-analysis had a large sample size (N=18347) covering a range of ages throughout childhood and adolescence (mean range= 11.96-17. 70 years). Studies included samples from various countries including the UK, USA, China, Italy, Spain, and Tehran, enhancing generalisability and reducing cultural bias. This diversity may contribute to high heterogeneity and help identify if the prevalence rates we found are consistent across diverse settings. It could also account for variability between healthcare systems, although this review remains focused on westernised approaches to mental health.

Early identification of BPD is still in its infancy, and providing a review of current literature is a strength of this review. Studying adolescence, a critical development period, is key for identifying early predictors, trajectories, and opportunities for intervention and treatment. Consideration of csBPT alongside 'full' diagnosis allows for better understanding of early markers of the condition and is important given sub-threshold markers are often underrepresented. Measures could be adjusted or validated at lower clinical cut-off scores, incorporating previously sub-threshold scoring individuals into full diagnosis. For example, the current validated cut off score is seven for the MSI-BPD [55], but research has also suggested scores of four or five [43].

One of the limitations of this systematic review is the large heterogeneity within the sample. High heterogeneity makes relying on a single pooled prevalence figure difficult, suggesting that a range of estimates is more appropriate. Limited reporting of ethnic background also highlights a research gap, complicating the assessment of BPD prevalence across cultural groups. High heterogeneity in our sample may result from variations in diagnostic tools, differences in sample collection time points (e.g., changes in prevalence or public health interventions), and disparities in sample sizes. Once outlier studies were removed, heterogeneity was reduced but remained high. A strength of this study was the use of a random-effects model meta-analysis to account for heterogeneity within this sample, and the inclusion of sensitivity analyses to test the robustness of our findings.

Another strength lies in consideration of both full diagnoses and csBPT, capturing a nuanced picture of the condition, highlighting sub-threshold markers that are often overlooked. This inclusive methodology is crucial for identifying early indicators that may inform intervention strategies. We included both clinician assessment and self-report measures. Bourvis et al [9] highlighted a limitation of self-report measures, finding that children and adolescents with BPD features are more sensitive to stress and show a lack of self-perception, and therefore self-report measures may provide inaccurate and unreliable results.

This review highlights gaps in the literature, such as the limited number of studies focusing on younger adolescents and insufficient reporting on the ethnic backgrounds of participants. More age-related data would have allowed for further moderator analysis to compare with data from Kaess et al [27], who found older adolescents (around 16.5 years) presented with more BPD criteria at commencement of therapy compared to younger adolescents (around 13.5 years). Addressing these issues in future research will be essential for refining diagnostic criteria and improving early intervention strategies in diverse populations.

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Chapter Three: Empirical Project

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Borderline Personality Traits in children and adolescents with Post Traumatic Stress Disorder

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Abstract

Background

Borderline Personality Disorder (BPD) is a serious condition marked by emotional instability, impulsivity, and relational dysfunction. Early indicators often emerge around age 12 and are linked to poorer outcomes in functioning, high service use, and high suicide risk. Although controversial, BPD diagnosis in under 18's is recognised in classification systems.

Objective

This study aimed to describe and understand the interactions between Post-Traumatic Stress Disorder (PTSD), Complex Post-Traumatic Stress Disorder Symptoms (CPTSD), and BPD (hereafter referred to as 'Emotional Instability [EI]') traits within a sample of children and adolescents accessing Mental Health Services.

Method

This study analysed baseline data from the 'Delivering Cognitive Therapy for Young People After Trauma' (DECRYPT) trial, investigating the prevalence, correlations, and impact of trauma and other symptoms associated with EI symptoms. Participants were aged 8-17 years and met criteria for a PTSD diagnosis.

Results

Of 98 participants, 48% met the clinical cutoff for elevated EI traits. Greater EI severity was significantly associated with greater trauma count, sexual trauma, CPTSD symptoms, emotional dysregulation, dissociation, and suicidal ideation. Elevated EI status was not related to CPTSD diagnosis ($\chi^2(1) = 0.04$, $p = 0.85$), but EI severity was correlated with disturbances in self-organisation (DSO) symptoms ($r = 0.36$, $p < 0.001$). Effect sizes ranged from low ($d = -0.15$) to high ($d = 0.95$), with most being moderate.

Conclusion

These findings highlight the need for trauma-informed approaches in assessing and treating BPD, given the high prevalence of trauma exposure. Despite limitations such as sample size and reliance on self-report measures, these results contribute to understanding the interplay between EI and trauma.

Borderline Personality Disorder in Children and Adolescents

Key Words: Borderline Personality Disorder, Trauma, Emotional Instability, Correlation, Children, Adolescents

Highlights:

- This research looked at an existing data set to examine links between trauma and Borderline Personality Disorder (BPD) in under 18's
- Nearly 50% of our sample met criteria for BPD on a screening measure
- Statistical analysis established significant links between different trauma characteristics and BPD, comparing those who met criteria on the screener and those who did not

Introduction

Borderline Personality Disorder/Emotional Instability

BPD is a severe mental health condition characterised by emotional instability, impulsivity, self-destructive behaviour, and dysfunction in relationships and self-image (Boone et al., 2022). Despite recognition in diagnostic manuals and treatment guidelines (Kaess et al., 2014), there have been calls for diagnostic criteria to better align with patient experiences. Research has shown that BPD is not pervasive (Chanen et al., 2022), meaning stigma surrounding the label, i.e. it is life-long and cannot be treated or 'cured', can be harmful towards sufferers. Many view the label as antiquated given it was first defined by Stern (1938) to describe patients on the borderline of neurosis and psychosis and had often suffered trauma, and suggest the nomenclature is unrepresentative and misunderstood by the public. The Patient and Public Involvement (PPI) group from the DECRYPT trial consulted on this research study and reported feeling that BPD diagnosis is 'pointless' and 'useless' and did not accurately reflect the experiences of individuals with BPD. They suggested that given this, and that the data collected was from a BPD screener which did not indicate a full BPD diagnosis, that the group above the cut off would be better named the 'Emotional Instability' (EI) group. This term is therefore used moving forward.

Controversary remains regarding diagnosis pre-18, with clinician concerns about psychosocial harms of diagnosis, and the validity and usefulness of the EI label (Hartley et al., 2022). Further concerns include adolescent emotional turbulence being misinterpreted as pathology, leading to potential stigma and underdiagnosis (Bozzatello et al., 2019). Marriner et al. (2024) found that individuals with EI experience distress due to unmet needs, highlighting the need for targeted identification and support. However, stigma concerns often lead to delayed diagnosis (Lustig et al., 2021), despite evidence that early intervention, even for sub-threshold BPD, is effective (Chanen et al., 2022).

EI is associated with significant functional impairment and a high suicide rate, with up to 78% of suicidal adolescents presenting at emergency departments meeting diagnostic criteria (Kaess et al., 2014). Symptoms can emerge from age 12 and are linked with poorer educational attainment, risk-taking, and high service use, suggesting adolescence is a critical period for identification and intervention (Bohus et al., 2021).

Younger individuals have shown higher remission rates (50-70%) over the longer term, (Álvarez-Tomás et al., 2019) and screening for EI traits in youth, even without formal diagnosis, is recommended given high risks and healthcare costs associated with EI (Noblin, 2014).

Research has emphasised the role of early trauma in EI development, highlighting the need for further research into the interplay between trauma factors and EI pathology. A better understanding of these mechanisms is essential for informing therapeutic approaches (D'Agostino et al., 2018).

DECRYPT

This study analysed baseline data from a national randomised control trial (RCT) examining trauma severity, potential CPTSD diagnosis, and EI traits in children and adolescents. Ethical approval was given by the East of England- Cambridge South Research Ethics Committee (IRAS ref. 16/EE/0233; Appendix E) and registered with the NHS Health Research Authority (IRAS ID: 188916, 2016; Appendix F). The DECRYPT trial is a randomised, single-blinded, phase two superiority trial comparing Cognitive Therapy for PTSD (CT-PTSD) with treatment as usual (TAU) to determine its effectiveness for youth exposed to multiple traumatic events.

Complex Post Traumatic Stress Disorder

CPTSD extends beyond core PTSD symptoms, encompassing disruptions in emotional regulation, relational capacity, and self-concept, often associated with prolonged or multiple traumas. It is recognised as a separate diagnosis in the ICD-11, while the DSM-5 groups it under PTSD, despite overlapping symptoms (World Health Organisation, 2019; American Psychiatric Association, 2013). Cloitre (2020) emphasised that individuals can be diagnosed with either condition but not both.

Childhood traumas and BPD

Childhood traumas are often reported by individuals with EI and considered an important risk factor for mental disorders (Baryshnikov et al., 2018).

Herzog and Schmahl (2018) theorised that childhood traumas may work as triggers for the development of EI characteristics, e.g. affect instability, emotion dysregulation, and self-destructive behaviours. They suggested more research is needed to understand the link between childhood trauma and development of EI in some individuals. Moreover, Hecht et al

(2014) suggested a cumulative effect of trauma: children who experienced more than one type of abuse across developmental periods had significantly higher severity of EI. They suggested research should focus on how certain trauma variables influence the presence of mental health disorders.

Research Gaps

Frost et al. (2018) found that while CPTSD and EI share some symptoms, they are distinct conditions. Lawless and Tarren-Sweeney (2023) noted limited evidence on BPD's developmental trajectory and link to early trauma, as most studies use deductive rather than exploratory methods. This highlights the need for research using existing datasets to further investigate the CPTSD-EI relationship.

Cyr et al. (2022) called for more research on the distinction between CPTSD and BPD, noting only four prior studies (Frost et al., 2018; Cloitre et al., 2014; Jowett et al., 2019; Knefel et al., 2016). Afifi et al. (2011) linked childhood abuse to personality disorders, with specific maltreatment types predicting different disorders.

Analysis of the DECRYPT baseline data aimed to identify differences between PTSD/CPTSD and EI, and clinical and subclinical EI in trauma survivors. A bottom-up approach was expected to address critical gaps in understanding comorbid EI and PTSD/CPTSD in children and adolescents.

This project was exploratory in nature, and sought to answer the following questions:

1) What is the prevalence of likely EI diagnosis in children and adolescents presenting at CAMHS with PTSD following multiple trauma exposure?
2) How common are individual EI symptoms in a sample of multiply traumatised children and adolescents with PTSD?
3) To what extent are elevated EI (i.e. scoring above cut-off) and EI traits associated demographics, trauma characteristics, psychopathology, and cognitive and psychosocial factors?
4) To what extent does EI overlap with CPTSD in a sample of trauma-exposed children and adolescents with PTSD?

Method

Participants

This study used baseline data from the DECRYPT trial. DECRYPT collected data from a sample of children and adolescents aged eight to 17 years at recruitment, from six National Health Service (NHS) Trusts' Child and Adolescent Mental Health Services (CAMHS) across England and Wales. Participants were recruited between February 2017 and July 2021. Participants gave consent for their data to be used (see Appendix B for example information sheets, consent, and assent forms) and were informed how to withdraw their data.

Of 120 DECRYPT participants, 98 caregivers completed the EI screener at baseline and were included in this study. All met DECRYPT inclusion/exclusion criteria; no additional criteria were applied for this study.

Procedure

For the DECRYPT trial, NHS clinicians identified potential participants. If an individual met inclusion criteria, trial information was provided to them and their family for consideration. Those who consented completed baseline assessments, after which eligibility was confirmed. Participants provided informed consent.

Caregivers completed the EI measure (MSI-BPD-C) and multiple secondary measures relating to mental health and trauma characteristics were completed by caregivers and youth participants. For this project the baseline data was anonymised and collated in an Excel spreadsheet for analysis.

Measures

EI traits were assessed using the McLean Screening Instrument for Borderline Personality Disorder- Carers version (Appendix A, MSI-BPD-C, Zanarini et al, 2003). The MSI-BPD is among the most studied screening scales for EI (Zimmerman & Balling, 2021). Each item is rated "1" if present and "0" if absent, and items are totalled for possible scores from 0 to 10. A score of seven or above indicates need for further assessment/presence of EI traits. Good validity has been shown at this cut-off score, with a sensitivity of 90% (percentage of correctly identified cases) and a specificity of 93% (percentage of correctly identified non-cases) for individuals younger than 25 years old (Zanarini et al., 2003). The measure is completed by caregivers, taking approximately five to ten minutes to complete. It is based on a subset of some

of the questions used for diagnosis within the DSM-5 and has been demonstrated to have satisfactory reliability with a Cronbach's alpha of 0.78 (Zanarini et al., 2003).

A number of secondary measures were also completed at baseline in DECRYPT (see Table 4).

Table 4: Secondary measures used in analysis

Variable	Measure (reference)
Trauma characteristics	
Trauma history	Child and Adolescent Trauma Screen (CATS; Sachser et al., 2017); administered as an interview
Other Psychopathology & functioning	
PTSD symptoms (intrusiveness & avoidance)	CRIES-8
DSM-5 PTSD symptoms (interview)	The Child PTSD Symptom Scale—Interview Version for DSM-5 (CPSS-I-5; Foa et al., 2018)
DSM-5 PTSD symptoms (questionnaire)	Post-traumatic Stress Diagnostic Scale, DSM-5 version (PDS-5; Foa et al., 2016)
Irritability	Affective Reactivity Index (ARI; Stringaris et al., 2012); caregiver & child report versions
Anxiety and depression	Revised Child Anxiety and Depression Scale (RCADS; Chorpita et al., 2000)
Suicidal ideation	Four items from the Mood and Feelings Questionnaire (MFQ; Costello & Angold, 1988)
Parent-reported emotional difficulties	Strengths and Difficulties Questionnaire (SDQ; (Goodman, 2001)
Overall functioning	Children's Global Assessment Scale (CGAS; Shaffer et al., 1983)
Cognitive & psychosocial	
Trauma-related appraisals	Children's Post-Traumatic Cognitions Inventory (CPTCI; Meiser-Stedman et al., 2009)
Trauma-related safety-seeking behaviours	Child Safety Behaviour Scale (CSBS; Alberici et al., 2018); two sub-scales!
Trauma memory characteristics	Trauma Memory Quality Scale (TMQQ; Meiser-Stedman et al., 2007)
Social support	Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988)

Caregivers also completed self-report measures of anxiety (Generalised Anxiety Disorder Assessment [GAD-7; Spitzer et al., 2006]), depression (Patient Health Questionnaire [PHQ-9; Kroenke et al., 2001]) and PTSD symptoms (Post-traumatic Stress Diagnostic Scale, DSM-5 version [PDS-5; Foa et al., 2016]).

Analysis

Descriptive analysis was conducted, followed by association and correlational analysis to compare two groups (above and below the MSI-BPD-C cutoff) and examine significant correlations with other measures. The study used both within-group and between-group designs, depending on the research question being addressed.

A Shapiro-Wilk test of normality was conducted to assess the distribution of raw scores on the MSI-BPD-C. A significant deviation from normality was indicated, $W = 0.95$, $p < 0.001$, suggesting EI data was not normally distributed (see supplementary data Fig.5). Further analysis was conducted on the demographic variables and secondary measures, and non-normality established for the two measures of PTSD severity (CRIES-8, CATS, CPSS-I-5, CPTCI), disturbances in self-organisation symptoms (DSO), panic (RCADS), anxiety (RCADS), social phobia (RCADS), separation anxiety (RCADS), obsessive compulsive disorder (RCADS), suicidality (MFQ), affect regulation (ARI), dissociation (SDQ), caregiver-reported emotional difficulties (SDQ), rumination, safety-seeking behaviours (CSBS), and self-blame (see Supplementary Table 9, Appendix I). Bootstrapped parametric tests were therefore used to provide more robust results.

Participants who scored seven or above on the MSI-BPD-C were allocated to the EI group and those who scored six or below to the non-EI group.

The EI and non-EI groups were compared using chi-square and t-tests. Correlational analyses were used to determine the degree of association between continuous index of EI severity (i.e. EI symptom count) and other variables (i.e. demographic, trauma-related, other psychopathology and cognitive and psychological factors). Linear regressions were conducted to determine whether any significant relationships were still present once caregiver reported depression and PTSD symptoms had been accounted for.

Due to using secondary data, a *post hoc* power calculation was conducted using G*Power calculator version 3.1.9.7 (Faul et al., 2007). For between group effect sizes with 100 participants at 80% power with a significance criterion of 0.05, it was calculated that a medium effect size (Cohen's $d = 0.57$) could be found (see Appendix C). For correlational analyses (see

Appendix D) it was calculated that at 80% power with a significance criterion of 0.05 that small correlations could be detected (r=0.28).

Results

1) Prevalence of EI

Baseline EI data was available for 98 participants from DECRYPT (N=98, mean=6.26, SD= 2.44). Of these, 47 (48%) scored seven or more and were assigned to the EI group.

2) Frequency of EI symptoms

The frequencies of each EI symptom are presented in Table 5. Chi-Square tests examined whether scores above (EI group) and below (non-EI group) the threshold of 7 on the measure were significantly associated with responses to each of the 10 items. The results indicated all 10 items were more frequently endorsed by participants in the EI group, i.e. all items discriminated between the groups.

At least 60% of the EI group endorsed each symptom, with six items endorsed by over 80%, and the lowest scoring item at 62% (“Frequently feel unreal or as if things around them are unreal”, i.e. dissociation). Within the non-EI group, only one item was endorsed at over 80% (“Extremely moody”) and the lowest scoring items were identity confusion (15.7%), and dissociation (19.6%).

Table 5. Frequency and association breakdown of MSI-BPD-C by item and group

Symptom	Total Sample (N=98), n (%)	EI group, (N=47), n (%)	Non-EI group (N=51), n (%)	Chi-square
1: Close relationships troubled by a lot of arguments or repeated break ups	60 (61.2%)	42 (89.4%)	18 (35.3%)	χ^2=30.12, p=<0.001**
2: Deliberately hurt him/herself physically (e.g. punched, cut, or burnt) / suicide attempt	69 (70.4%)	39 (83.0%)	30 (58.8%)	χ^2=6.85, p=0.014*
3: At least two other problems with acting impulsively (e.g. eating binges, drinking too much)	62 (63.3%)	38 (80.9%)	24 (47.1%)	χ^2= 12.02, p=<0.001**
4: Extremely moody	76 (77.6%)	30 (63.8%)	46 (90.2%)	χ^2= 21.42, p=<0.001**
5: Feel very angry a lot of the time, often acted in an angry or sarcastic manner	74 (75.5%)	44 (93.6%)	30 (58.8%)	χ^2=16.01, p=<0.001**
6: Often distrustful of other people	80 (82.5%)	44 (93.6%)	36 (70.6%)	χ^2= 10.51, p=0.001**
7: Frequently feel unreal or as if things around them are unreal	39 (39.8%)	29 (61.7%)	10 (19.6%)	χ^2= 18.09, p=<0.001**
8: Feel chronically empty	63 (64.9%)	41 (87.2%)	22 (43.1%)	χ^2= 19.89, p=<0.001**
9: No idea of who they are, or that they have no identity (e.g. excessively confused about their self-image)	42 (42.9%)	34 (72.3%)	8 (15.7%)	χ^2= 32.06, p=<0.001**
10: Make desperate efforts to avoid feeling abandoned or being abandoned	47 (48.0%)	34 (72.3%)	13 (25.5%)	χ^2=21.51, p=<0.001**

Note: Frequency of responses of 'yes' to the presence of each question on the MSI-BPD-C.
**indicates significant association at p=0.05, ** indicates significant association at p<0.001.*

3) Association between EI and demographic, trauma-related, psychopathology, cognitive and psychosocial variables

As seen in Tables 6 and 7, higher EI scores were linked to significantly higher scores on several other variables. For example, higher EI scores have significantly higher Complex PTSD scores on the CATS than those with lower scores. This suggests a meaningful relationship between EI and CPTSD in this sample. The variable 'trauma frequency' was significantly skewed so a non-parametric Mann-Whitney test was conducted. The median for the EI group was 20.50, with an interquartile range of 4.75- 43.00. The median for the non-EI group was 10.00, with an interquartile range of 4.00-26.00. The Mann-Whitney U test comparing the two groups on trauma frequency differed significantly, U= 781.50, z= -3.01, p=0.003. A medium effect size was found at r=-0.30.

Table 6: Between groups comparison and correlation of EI symptom severity with demographics and trauma variables.

	Between groups comparisons				
Variables	**EI (N=47) m (sd); N [%]**	**Non-EI (N=51) m (sd); N**	**Statistical test**	**Effect size (Cohen's d or Odds Ratio [Confidence Interval]**	**Correlation with EI symptom severity**
Sex			$\chi^2(1) = 0.66$, $p = 0.42$	OR=1.43, CI: 0.60, 3.37	0.18, p=0.09 [-0.03, 0.38]
Male	13 [27.7%]	18 [35.29%]			
Female	34 [72.3%]	33 [64.71%]			
Ethnicity			$\chi^2(1) = 0.94$, $p = 0.33$	OR= 0.63, CI:0.24, 1.62	-0.11, p=0.30 [-0.31, 0.14]
White British	38 [80.9%]	37 [72.55%]			
Other	14 [29.8%]	9 [17.65%]			
Age	14.64 (2.15); 47 [100%]	14.27 (2.78); 51 [100%]	t=0.45, p=0.005*	d= -0.15	0.08, p=0.45 [-0.10- 0.26]
Trauma Frequency †	53.22 (97.23); 47 [100%]	171.68 (535.80); 46 [90.2%]	t= 1.49, p=0.20 (-16.48, 312.92)	d=0.306	-0.08, p=0.45 [-0.25- 0.05]
Trauma type count†	5.09 (2.23); 47 [100%]	3.73 (1.71); 51 [100%]	t=-3.37, p=0.003* (-2.13, -0.58)	d= -0.69	0.218, p=0.04 * [0.02, 0.38]
Sexual Trauma	23 [48.9%]	10 [19.61%]	$\chi^2(1) = 0.94$, $p = 0.002$*	OR=3.93, CI:1.60, 9.64	0.39, p=<0.001** [0.24, 0.54]
Intrafamilial Abuse	35 [74.5%]	37 [72.55%]	$\chi^2(1) = 0.05$, $p = 0.83$	OR=1.10, CI:0.45, 2.17	0.05, p=0.62 [-0.16, 0.27]

Note: † *indicates boot strapped test; * indicates significant at p=0.05, ** indicates significant at p<0.001*.

Table 7: Between groups comparisons on secondary variables, effect size and correlation with EI symptom severity

	Between groups comparisons				
Variables	**EI (N=47) m (sd); N**	**Non-EI (N=51) m (sd); N**	**Statistical test**	**Effect size (Cohen's d)**	**Correlation with EI symptom severity**
Comorbid psychopathology					
PTSD severity (CRIES-8)	31.11(5.99); 47	30.73 (6.05); 51	t(95.50)=-0.31†	d= -0.06	0.14†
PTSD severity (CATS)	42.94 (8.14); 47	37.42 (10.08); 51	t(94.41)=-2.99**†	d=0.60	0.38**†
PTSD severity, interview-based (CPSS-I-5)	48.47 (12.78); 47	42.04 (14.45); 51	t(95.85)=-2.33*†	d=-0.47	0.34**†
DSO (complex PTSD questionnaire items)	36.64 (7.03); 47	33.16 (8.27); 51	t(95.40)= -2.25*†	d= -0.45	0.35**†
RCADS total	79.95 (22.43); 47	79.58 (27.06); 51	t(96)= -0.07	d= -0.02	0.14
Depression (RCADS)	19.46 (5.61); 47	18.00 (6.60); 51	t(96)= -1.17	d= -0.24	0.23**
Anxiety (RCADS)	60.48 (19.12); 47	61.59 (21.85); 51	t(96)= 0.27	d= 0.05	0.10
GAD (RCADS)	11.47 (3.81); 47	12.02 (4.18); 51	t(95.99)= 0.68†	d=0.14	0.05†
Panic (RCADS)	13.66 (6.42); 47	13.62 (7.62); 51	t(95.26)= -0.03†	d= -0.01	0.05†
Social Phobia (RCADS)	17.29 (5.73); 47	17.55 (6.33); 51	t(95.98)=0.21†	d= 0.04	0.15†
Separation (RCADS)	8.94 (4.83); 47	9.85 (5.29); 51	t(95.99)=0.89†	d= 0.18	-0.004†
OCD (RCADS)	9.13 (3.95); 47	8.55 (4.79); 51	t(94.85)= -0.65†	d=-0.13	0.13†
Functioning (CGAS)	47.23 (8.78); 47	52.82 (11.10); 51	t(96)= 2.75*	d= 0.56	-0.23†*
Voices (Child Interview)	N=16 (34%)	N=14 (29.8%)	X^2(1,N=98)= 0.5	OR=1.35	0.11
Affect Regulation (ARI, child report)	16.11 (4.05); 47	13.64 (4.30); 51	t(95.95)= -2.92†*	d=-0.59	0.31†*
Affect Regulation (ARI, caregiver report)	17.00 (3.96); 46	13.04 (4.35); 48	t(91.77)=-4.62†**	d=-0.95	0.46†**
Caregiver-reported Emotional difficulties (SDQ)	7.66 (2.08); 47	6.85 (2.45); 47	t(89.62)= -1.73†*	d=-0.36	0.25†*
Dissociation	6.92 (1.97); 47	5.96 (2.52); 51	t(93.49)=-2.10†*	d= -0.42	0.24†*
Suicidal Ideation (MFQ)	5.11 (2.41); 46	4.16 (2.63); 51	t(94.98)= -1.86	d=-0.38	0.30†*

Cognitive & psychosocial processes					
Appraisals (CPTCI)	75.21 (13.98); 45	69.47 (16.53); 50	t(92.66)= -1.83†**	d= -0.37	0.28†*
Trauma Memory quality (TMQQ)	30.53 (4.88); 47	29.87 (6.26); 50	t(95)= -0.58	d= -0.12	0.12
Safety-seeking behaviours, hypervigilance (CSBS)	10.39 (5.01); 44	11.45 (5.53); 50	t(92)= 0.98†	d=0.20	-0.07†
Safety-seeking behaviours, suppression (CSBS)	11.42 (4.19); 45	11.76 (3.17); 50	t(81.60)= 0.44†	d=0.09	0.05†
Rumination	6.70 (1.39); 45	6.89 (1.18); 51	t(87.10)= 0.73†	d=0.15	0.004†
Self Blame	4.82 (1.99); 45	4.18 (2.38); 51	t(93.75)= -1.45†	d= -0.29	0.14†
Social support (MSPSS)	59.13 (11.66); 46	61.25 (11.97); 51	t(95)=0.88†	d=0.18	-0.09†

*Note: † indicates boot strapped *indicates significant at p=0.05, ** indicates significant at p<0.001*

The EI group had significantly higher trauma exposure, especially trauma count and sexual trauma. They showed greater PTSD, DSO, depression, emotion regulation difficulties (both child and caregiver reported), negative trauma-related appraisals, and dissociation, along with lower global functioning. However, there were no significant differences between groups in terms of anxiety, safety-seeking behaviours or social support. Effect sizes ranged from 0.36 to 0.95, with most suggesting moderate effect size.

EI severity was significantly associated with trauma count, sexual trauma, age, PTSD severity (CATS, CPSS-I-5), CPTSD (DSO items), overall functioning (CGAS), emotion regulation (ARI, ARI-P, SDQ), trauma appraisals (CPTCI), and dissociation (SDQ), with effect sizes ranging from low to high, but mostly moderate.

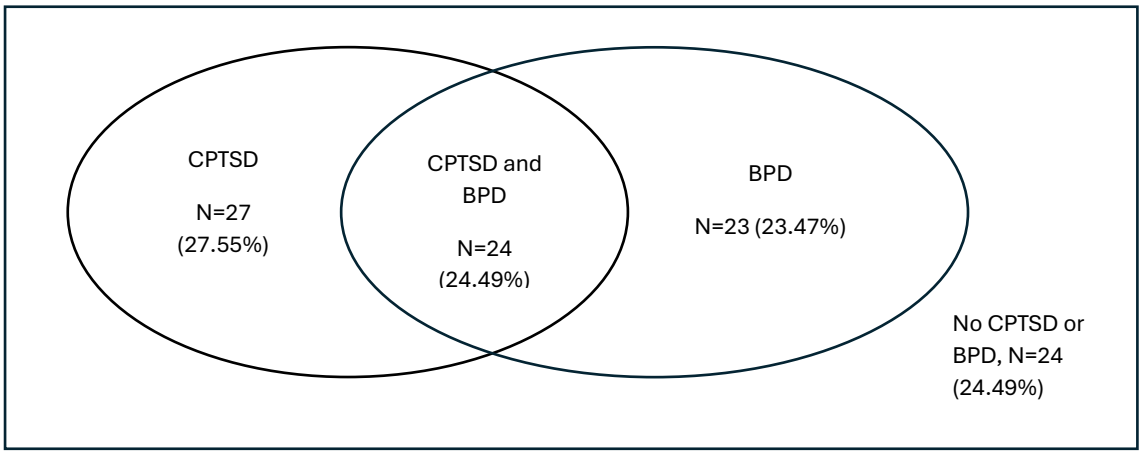
Significant associations between PTSD symptoms and EI severity were present for two measures (CATS and CPSS-I-5, self-report questionnaire and interview respectively) that addressed the full range of DSM-5 PTSD symptoms; however, the CRIES-8 measure of PTSD (only indexes intrusiveness and avoidance) was non-significant. Furthermore, the negative association between EI severity and overall functioning indicates individuals with more severe EI tend to have poorer functioning, which aligns with well-established impacts of EI on functioning. As expected, higher EI severity was strongly linked to increased emotional dysregulation, a core feature of the disorder. In addition, significant associations with dissociation further support that trauma-related symptoms are prevalent in EI.

EI severity was significantly correlated with sex, depression (RCADS), emotional regulation (ARI, ARI-P, SDQ), trauma appraisals (CPTCI), dissociation (SDQ), and suicidal ideation (MFQ). The positive correlation between EI severity and suicidal ideation suggests higher EI increases risk of suicidal thoughts, highlighting the need for monitoring and intervention.

Q4. Relationship between EI status and CPTSD

Complex PTSD scores were calculated using the ICD-11. Of 98 cases, 66 were considered to have CPTSD. A chi-square comparing EI status with CPTSD status found no clinically significant result ($\chi^2(1) = 0.04$, p=0.85). A Venn diagram showing the overlap between EI and CPTSD is presented in Figure 4. Further analysis used correlation and association tests to examine the relationship between DSO symptoms and EI status. Correlational analysis between an interview-based measure of DSO symptoms and EI status revealed a significant result (r=0.36, CI [0.17, 0.50], p= <0.001), while an association between child-reported DSO symptoms and EI status was also found to be significant (r=0.35, CI [0.15, 0.51], p=<0.001). Since DSO symptoms are required alongside core PTSD symptoms for an ICD-11 CPTSD diagnosis, these significant findings suggest that more severe and complex trauma may increase likelihood of meeting the threshold for EI status.

Figure 4: Distribution of comorbid psychopathology within the sample



Note: Venn diagram showing proposed groups using the secondary data showing prevalence of symptomology within the sample, using EI cut-off score of 7 or more.

Further Sensitivity Analyses

Caregiver-rated EI symptoms were associated with caregivers' ratings of their own PTSD severity (on the PDS-5; r=0.36, p=<0.001, bootstrapped 95% CI = 0.20, 0.50), their own depression severity (on the PHQ-9; r=0.31, p=0.003, bootstrapped 95% CI 0.14, 0.47) and their

own anxiety severity (on the GAD-7; r=0.31, p= 0.003, bootstrapped 95% CI 0.14, 0.46). Sensitivity analyses were undertaken to see if the significant associations observed above in Tables 4 and 5 might be attributable to a relationship with the caregiver's mental health, rather than EI symptoms. Multiple linear regression models were conducted investigating the effect of a predictor variable on caregiver-reported EI severity after controlling for caregiver mental health (either PTSD or depression). Sexual trauma, PTSD severity (CATS, CPSS-I-5), CPTSD items (DSO), emotional regulation difficulties (ARI, ARI-P, SDQ emotional symptoms), trauma appraisals (CPTCI) and suicidal ideation (MFQ) remained significant after controlling for caregiver PTSD (see Table 8), but the relationships with depression (RCADS), overall functioning (CGAS), and dissociation were no longer significant. The same findings were also found when controlling for caregiver depression (see Supplementary Table 11).

Table 8. Relationships between significant predictors and EI severity after controlling for caregiver PTSD severity

Variable	Regression coefficient (bootstrapped 95% CI)	Standardised regression coefficient (beta)
Trauma history		
Trauma type count	0.188 (-0.027, 0.363)	0.164
Sexual trauma	1.457** (0.599, 2.305)	0.289
Comorbid psychopathology		
PTSD severity (CATS)	0.084** (0.037, 0.129)	0.330
PTSD severity (CPSS-I-5)	0.048** (0.016, 0.084)	0.279
DSO complex PTSD items	0.101**(0.038, 0.162)	0.324
Depression (RCADS)	0.065 (-0.017, 0.142)	0.168
Overall Functioning (CGAS)	-0.034 (-0.077, 0.007)	-0.143
Affect Regulation- child report (ARI)	0.172** (0.072, 0.265)	0.308
Affect Regulation- caregiver report (ARI)	0.219*** (0.130, 0.312)	0.417
Cognitive & psychosocial		
Trauma Appraisals (CPTCI)	0.037** (0.007, 0.068)	0.236
Dissociation	0.177 (-0.015, 0.365)	0.167
Emotional Symptoms (SDQ)	0.209** (0.017, 0.378)	0.195
Suicidal Ideation (MFQ4)	0.306*** (0.137, 0.484)	0.325

*Note: ** indicates significant at p=0.05, *** indicates significant at p<0.001*

Discussion

Summary of results/findings

Our study revealed a high prevalence of EI traits among children and adolescents accessing CAMHS, with 48% scoring in the clinical range on the caregiver-report measure. The most highly endorsed items were item six 'often distrustful of others' (82.5% of the whole sample, 93.6% of the EI group, 70.6% of the non-EI group), and item four 'extremely moody' (77.6% of the whole sample, 63.8% of the EI group, 90.2% of the non-EI group). There was over 60% endorsement within the EI group for every item.

EI severity was strongly linked to trauma history (number of types of trauma and sexual trauma, but not intrafamilial trauma), PTSD severity, and CPTSD symptoms, highlighting the need to address trauma in EI-focused treatment and reinforcing previous research identifying trauma as an important risk factor in EI development (Baryshnikov et al., 2018). Furthermore, lower overall functioning and increased suicidality underscore the need for targeted interventions in severe EI sufferers.

Significant correlations between EI and CPTSD severity suggest shared underlying mechanisms, e.g. emotion dysregulation, supporting previous research on the overlap between the two conditions (Hecht et al., 2014). Causality remains unclear and may reflect a degree of symptom overlap between the two conditions (e.g. emotional dysregulation, difficulties around identity and self-concept). This underscores the importance of careful diagnosis and treatment formulation, as incorrect or delayed diagnoses could lead to ineffective treatment and increased distress. The significant correlation between suicidality and EI severity emphasises the need for accurate screening, given the controversy surrounding EI diagnosis in under 18s, and risk of diagnostic overshadowing.

Theoretical & clinical significance

Our study suggests that emerging EI or EI traits may affect a significant (nearly half) proportion of children and adolescents with multiple traumas and PTSD. Clinicians should consider reviewing DSO symptoms or using more detailed PTSD measures to help identify individuals at higher risk of developing EI, based on their trauma history. It is important to note that all the participants in this study met criteria for PTSD, so even those allocated to the 'non-EI' group had significant trauma exposure.

Our analysis showed no significant association between sex and EI status, suggesting trauma-exposed females with PTSD are not more likely to develop EI than trauma-exposed males with PTSD. This can contrast with existing literature suggesting EI is more common in females (Bozzatello et al., 2024) but supports other recent suggesting no differences in prevalence by sex (Sansone & Sansone, 2011). Our sample contained a higher percentage of females versus male (68.4% versus 31.6%), meaning the sample is skewed to females and might explain why we did not find a significant association between sex and EI status. Sansone and Sansone (2011) also postulate that females are more likely to present to services than males, explaining why females might be overrepresented in services. Further research should consider investigating sex and EI status further.

Our findings support growing evidence that EI and CPTSD share underlying mechanisms, suggesting a common vulnerability between the two conditions. Crucially, our research found that the two conditions were still distinctly different, supporting previous research (Cloitre et al., 2014). This highlights the importance of screening for both disorders together in clinical settings and considering their overlap in future theoretical models of trauma and BPD.

On two PTSD measures (CATS; CPSS-I-5), there was a relationship between PTSD severity and EI severity. This was not true for the third measure, the CRIES-8, which was not significantly associated with EI severity or EI status. This may be due to the CRIES-8 being a brief measure of PTSD versus the other two measures which fully encompass all 20 DSM-5 PTSD symptoms; it may be that the broader range of symptoms covered by these DSM-5 measures (i.e. seven negative alterations in cognition and mood symptoms and six hyperarousal symptoms) may account for the relationship between these measures and EI, rather than re-experiencing or avoidance .

The non-significant results for TMQQ suggests that intrusive memories in PTSD are not related to EI severity. However, a significant relationship between negative trauma-related appraisals and EI suggest an individual's perception of the trauma is related to EI severity. Despite self-image being recognised as a core indicator of EI, self-blame and rumination were not significantly related to EI severity. This could be a key area to explore in further research to understand better the mechanisms between how trauma may affect self-image but not lead to self-blame or rumination in individuals with higher EI severity. As expected, given that emotional instability is a core factor in EI, irritability (both child and caregiver rated) was significantly associated and correlated with EI severity. Depression (child reported) was also significantly

correlated with EI severity, but there was a lack of significant relationship between anxiety and EI severity, suggesting emotional difficulties are not simply related to overwhelming anxiety.

We found significant associations and correlations between sexual trauma and EI severity, but not intrafamilial trauma and EI severity. One explanation for no relationship between intrafamilial trauma and EI severity could be that the as a category, intrafamilial trauma was too broad and contained too many variables, meaning that there was a higher number of participants in that group versus the no intrafamilial trauma group (approximately 75% of the non-EI and EI groups endorsed intrafamilial trauma). Approximately 50% of the EI group and 20% of the non-EI group endorsed the sexual trauma factor. The significant association between sexual trauma and EI status could be related to damage to self-concept/image, a link previously made in research (Okunlola et al., 2020). It is possible that this damage may also lead to distrust in others (which was commonly endorsed in our sample) and fear of abandonment, which is a core feature of EI.

Social Support

Surprisingly given that serious relationship difficulties are a symptom of EI, social support was not significantly related to EI severity. This suggests youth with PTSD and EI symptoms can perceive benefits of social support in their lives (e.g. from friends, family, teachers), even if some relationships are still characterised by instability or they feel distrustful of others.

Suicidal Ideation

The between groups t-test was non-significant, showing no difference between the two groups. However, a correlational analysis suggested a small to medium effect size, suggesting the between groups result might reflect the sample being slightly underpowered. Nevertheless, the between groups effect size was only small. A relationship was expected between suicidal ideation and the EI group given the evidence base for suicidal ideation as a core feature of EI.

Future research

Further research should consider the use of child report measures of EI as opposed to the caregiver report used in this study. Our results suggest investigation of EI in youth with trauma is important, but reliance on caregiver report could bias findings. However, our additional regression analyses suggested only modest influence of the caregivers' mental

health on the relationship between EI score and different correlates, i.e. most relationships remained significant even when controlling for caregiver mental health.

Given the link that this research has suggested between CPTSD and EI, particularly considering the significant correlation with DSO symptoms, further research should explore this further to understand whether trauma characteristics are a causal factor for EI or whether EI itself increases vulnerability to PTSD symptoms such as dissociation and emotional dysregulation. It also suggests that investigating the effect of trauma treatment on individuals with EI could be beneficial.

Limitations

While this study provides valuable insights into the relationship between EI, PTSD, and CPTSD symptoms, several limitations must be acknowledged.

The sample size in both groups, while adequate, may limit statistical power. A larger sample would increase confidence in detecting small effects and improve generalisability to broader populations. Furthermore, the sample was specifically selected based on participants meeting criteria for PTSD and accessing CAMHS, which restricts the broader applicability of the results.

Causal relationships between EI, PTSD and CPTSD symptoms cannot be inferred in the current study. Longitudinal designs would help clarify whether EI symptoms exacerbate CPTSD over time or vice versa, while larger samples might allow for the use of statistical techniques to detect latent factors.

The reliance on caregiver self-report measures for assessing EI symptoms presents another limitation; susceptibility to social desirability and response biases. Given the sensitive nature of the topics, e.g. trauma and emotional dysregulation, caregivers may have underreported or overreported symptoms, introducing measurement error. Future studies could benefit from using structured clinical interviews or multi-method assessments for a more nuanced understanding of EI severity.

It is important to note that the MSI-BPD-C measure is a screener, not a diagnostic tool. Zimmerman and Balling (2021) emphasised the distinction between diagnostic testing and screening, as screeners are part of a two-stage diagnostic process, which should be considered in interpreting the results.

Conclusion

This study characterises the relationship between PTSD/CPTSD and EI. Our findings suggest that traumatic experiences, particularly sexual trauma, may be an important factor in the development and maintenance of EI, but not always. These results advocate for trauma-informed approaches in treating EI and emphasise the importance of considering comorbid conditions like CPTSD in clinical assessments. The study's limitations further highlight the need for larger samples and more robust assessment methods.

Data Availability Statement

As this research used data from a randomised controlled trial, data will be made available after publication of the main trial paper for participants who consented to sharing their data.

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Chapter Four: Discussion and Critical Evaluation of Thesis Portfolio

Word count: 2141

Summary of Findings

Systematic Review and Meta-Analysis

This thesis explored BPD symptomology in children and adolescents. The systematic review and meta-analysis focused on research looking at the prevalence of BPD and clinically significant BPD traits in children and adolescents in the community, not accessing mental health services. Initially ten studies were analysed resulting in a pooled prevalence of 12.9% (95% CI:5.5, 22.7), with four outlier studies being removed and the resulting six studies leaving a pooled prevalence of 4.8% (95% CI: 2.9–7.3). These results need to be considered carefully given high heterogeneity. This was higher than expected and suggests that BPD/csBPT needs to be taken into consideration more frequently by clinicians, as well as researched further through longitudinal study.

Empirical Paper

The empirical paper used secondary data from the DECRYPT trial, looking at trauma symptomology and BPD symptomology in a sample of multiply traumatised children and adolescents. Our data revealed nearly equal EI (N=47) and non-EI (N=51) groups, indicating a high prevalence of BPD traits among children and adolescents accessing CAMHS for trauma support. Our results suggest that PTSD/CPTSD and BPD are modestly related, and that BPD symptoms are correlated with a number of variables including history of sexual trauma, dissociation, and suicidal ideation, but further research is needed to determine directionality and causation. Our findings suggest that PTSD/CPTSD are linked but still distinctly different to BPD, and clinicians should be considering BPD when encountering trauma-exposed children and adolescents. Furthermore, these results highlight the need to address trauma in treatment for EI and supports conclusions regarding trauma as an important risk factor for development of BPD (Baryshnikov et al., 2018).

Strengths and Limitations

Systematic Review and Meta-Analysis

The systematic review and meta-analysis included ten studies (N=18347), with participants spanning a wide age range (mean range= 11.96-17.70 years). The study demonstrated high heterogeneity (Q=(9) 749.3, p<0.001) and this should be taken into consideration when reviewing the resulting pooled prevalence of 12.9% (95% CI: 5.5, 22.7). Given this, confidence in a single pooled prevalence figure is reduced, and therefore it might be more appropriate to report a range of figures. Four outlier studies were removed leaving six studies for sensitivity analyses. This reduced the pooled prevalence from 12.9% to 4.8% (95% CI: 2.9, 7.3), which is likely to be a more reliable estimate. Despite removal of outlier studies, the sample size remained large (N=15630). Studies from a variety of countries were included, with low/middle income and high-income countries accounted for, suggesting the estimates are broadly generalisable. Both self-report questionnaires and clinician interview methods were included, although it was noted that there was no significant difference between the two groups and assessment method. Studying adolescent populations, during an important period of development, is key for identifying factors that might shed light on early predictors, trajectories, and opportunities for intervention and treatment (Marriner et al., 2024). Furthermore, our consideration of clinically significant traits alongside 'full' diagnosis allows for nuanced understanding of the early markers of the condition and is important given that sub-threshold markers are often underrepresented in research. Providing an overview of the current literature relating to this topic is a strength of the review, given that research about early identification of BPD remains in its infancy.

Empirical Paper

This study provides valuable insights into the relationship between PTSD, CPTSD, and BPD symptomology in multiply-trauma exposed children and adolescents accessing mental health services. Since the sample only included children and adolescents who meet criteria for PTSD, the generalisability of our findings is limited, i.e. these results may not occur in non-clinic-recruited children and adolescents, or children and adolescents without PTSD. It also does not account for those who may have symptoms but are on waiting lists or not currently accessing mental health services. Furthermore, the sample size is small to moderate (N=98) which may limit the statistical power of some analyses. While significant associations and correlations

were found between PTSD/CPTSD and BPD symptomology, it is not possible to make any causal conclusions, and longitudinal designs could clarify these relationships further; the significant associations between PTSD/CPTSD and BPD may simply reflect symptom overlap.

Finally, this study relied on a self-report screener to identify individuals with BPD/csBPT, which may be susceptible to social bias, response bias, and also used caregiver responses rather than from the participant themselves. This could result in potential over or under-reporting by caregivers, introducing measurement error. Furthermore, screeners are part of a two-part diagnostic process and cannot be relied upon to provide a full and accurate diagnosis (Zimmerman & Balling, 2021).

Theoretical and clinical implications

Systematic Review and Meta-Analysis

To the author's knowledge, this was the first systematic review and meta-analysis to provide an estimate of the prevalence of children and adolescents living in the community with BPD/csBPT, not accessing mental health services. The prevalence rate was 4.8% after outlier removal (k=6), suggesting up to one in 20 children and adolescents living in the community may meet BPD criteria. This figure was higher than expected given the high impact BPD is known to have on individuals with the condition. These findings suggest early screening and consideration of BPD/csBPT is important for children and adolescents, and previous research has also suggested this is beneficial to treatment (Miller et al., 2008; Kaess et al., 2014; Fonagy et al., 2015; Zanarini et al., 2003) This is especially important given symptoms of BPD/csBPT could place them at higher risk of adverse outcomes such as impairments in functioning and high suicide rate (Kaess et al., 2014; Chanen et al., 2008). Services should also consider the need to raise awareness amongst clinicians to identify symptoms of BPD in both sexes, given research suggests clinician bias in diagnosis (Sansone & Sansone, 2011). Recognising that BPD may have similar prevalence rates in males as in females could improve early detection and reduce stigma, particularly for males who might be more hesitant to seek mental health support. Furthermore, previous research suggests that better clinician awareness can improve perception over time, leading to improvement in patient care and outcomes (Vickers et al., 2022).

Given our results suggest a higher-than-expected prevalence of BPD in young people in the community not receiving mental health support, efforts to enhance early detection and intervention are important. Health providers should consider targeted screening in schools and primary care, as well as community programs, which could help identify at risk individuals and prevent adverse outcomes as well as development of BPD symptoms which could negatively impact an already challenging developmental period.

Empirical Paper

To the author's knowledge, this is the first study to look at BPD in a sample of multiply traumatised children and adolescents. There were nearly equal number of participants meeting criteria for the EI group (N=47) as in the non-EI group (N=51), suggesting BPD is common

problem in trauma-exposed youth accessing CAMHS, moderately associated with other psychopathology and trauma.

This suggests that sub threshold/emerging BPD should be an important consideration for clinicians when working with children and adolescents who present with multiple traumas/PTSD/CPTSD. There was no association or correlation between sex and BPD status, suggesting trauma exposed females are not more likely to develop BPD symptomology than males, challenging traditional stereotypes of BPD being a predominantly female condition (Bozzatello et al., 2024; Sansone & Sansone, 2011). Therefore, given these findings, we suggest higher prevalence rates of females vs males sometimes seen in research might instead be the result of other factors, such as difference in presenting symptoms leading to differences in likelihood of accessing services (Sansone & Sansone, 2011).

Finally, our study suggests links between childhood traumatic experiences and development of BPD/csBPT, corresponding with Linehan's (1993) biopsychosocial model, which suggests that individuals who develop BPD are predisposed to emotional dysregulation and more vulnerable to trauma. However, future research should focus on causation and directionality amongst variables as we were not able to ascertain this in our study.

Conclusions

In conclusion this thesis portfolio explored the presence of BPD symptoms in children and adolescents. BPD has long been considered a controversial diagnosis particularly in those under 18, and there have been arguments about the validity of BPD as a diagnosis, or whether it should be reconceptualised or reclassified (Akiskal, 2004; Tyrer, 1999; Kaess et al., 2014; Videler et al., 2019). Future research, particularly longitudinal studies, could yield information about if and how BPD should be classified and whether it might be more representative of a transient condition.

Our findings across both the systematic review and meta-analysis, and the empirical study, suggest that BPD/csBPT are present in children and adolescents and are more prevalent than perhaps previously considered. Given this, it is key that clinicians and services start to consider how to identify and support these individuals early, before the impact of this condition has severe consequences e.g. suicide (Kaess et al., 2014). Given a high proportion of healthcare systems use a medical model (Bach et al., 2022), which relies on diagnosis in order to receive support, early diagnosis can be seen as important in reducing negative long-term outcomes. In contrast, early diagnosis can also enable patients to feel hope for change, lessen the sense of loneliness, reduce despair and hopelessness, and increase feelings of being understood by healthcare. However, alternatively it should be recognised that diagnosis (and particularly diagnosis of BPD) can increase stigma (Vickers et al., 2022). Given that the confidence intervals on the sensitivity studies in our systematic review and meta-analysis never fell below 0.9%, our results suggest that there is at least one child or adolescent in each classroom that could meet criteria for csBPT. This makes efforts to enhance early detection and intervention important, and healthcare providers should consider targeted screening in schools and primary care. This could help identify at risk individuals and prevent adverse outcomes as well as development of BPD symptoms which could negatively impact an already challenging developmental period.

While there remains significant reluctance and controversy around the concept and diagnosis of BPD, our research clearly demonstrates the presence of a condition which cannot be fully accounted for under another label such as CPTSD and highlights the need for further research in this area.

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Chapter Six: Appendices

Appendix A: McLean Screening for Borderline Personality Disorder- Caregiver version

MacLean Screening Instrument (Carer)

1.	Has your child's close relationships been troubled by a lot of arguments or repeated break-ups?	Yes____ No____
2.	Has your child deliberately hurt him/herself physically (e.g. punched, cut or burnt him/herself)? How about made a suicide attempt?	Yes____ No____
3.	Have they had at least two other problems with acting impulsively (e.g. eating binges and spending sprees, drinking too much, verbal outbursts)?	Yes_____ No____
4.	Have they been extremely moody?	Yes_____ No____
5.	Do you think they feel very angry a lot of the time? How about often acted in an angry or sarcastic manner?	Yes_____ No____
6.	Do you think they have often been distrustful of other people?	Yes_____ No____
7.	Do you think, or have they ever told you they frequently feel unreal or as if things around them are unreal?	Yes_____ No____
8.	Do you think, or have they ever told you that they feel chronically empty?	Yes_____ No____
9.	Do you think, or have they ever told you they have no idea of who they are, or that they have no identity? (e.g. excessively confused about their self-image)	Yes_____ No____
10.	Have they made desperate efforts to avoid feeling abandoned or being abandoned (e.g., repeatedly called someone to reassure themselves that the other person still cared, begged them not to leave, clung to them physically)?	Yes_____ No____

Appendix B: DECRYPT Participant and Caregiver Information Sheets, Consent forms, and Assent Forms

The DECRYPT Study:
Delivery of Cognitive therapy for Young People after Trauma

We are carrying out the DECRYPT study to improve our treatment of post-traumatic stress disorder (PTSD) for children and teenagers who have been through several very scary or upsetting experiences. Post-traumatic stress often involves thoughts or memories of the experiences, nightmares, and other forms of anxiety and distress.

We would like to invite you and your child to participate in the DECRYPT study. Please read this information sheet if you are interested in learning more. *It is completely up to you if you would like to take part in this study*. You are welcome to ask questions about and discuss the study with a member of our team. You do not have to make your mind up immediately.

What is the purpose of the study?
Children and young people who have PTSD might receive help from Child and Adolescent Mental Health Services (CAMHS) and other NHS services. We are trying to see if we can improve the care that CAMHS and similar services offer to young people with PTSD.

We want to compare the standard care and support that NHS services offer with a type of talking therapy called "cognitive therapy" (more information on this is given below).

We think that cognitive therapy might be a better way to help young people, but we don't know for sure - this study will help us answer this question. This is the first study (a clinical trial) to look at the treatment of PTSD in children and young people by NHS services.

Why have we been invited to take part?
You and your child have been invited to take part in the DECRYPT study as your child has been through very scary or upsetting experiences and is experiencing symptoms of PTSD.

Do we have to take part?
No! It is up to you and your child to decide. If you do want to join in we'll ask you to sign a consent form, a copy of which you can keep with this information sheet.

You and your child are free to stop taking part in the study any time you like. You do not have to give us a reason if you choose to withdraw, but if you can give us any information that would help us to improve the study and think about how we offer care to young people with PTSD.

If you don't want to take part in the study or you decide to withdraw from the study the care you receive from NHS services or your doctor will not be affected.

What happens in the study?
Initially, you and your child will have an assessment to see how the experiences have affected your child and you. This will involve you both completing an interview (taking about 30-60 minutes each) and some questionnaires (taking 20-40 minutes for your children, about 20 minutes for you). These

are thorough and an important part of the study. We would encourage your child to take breaks if they are getting tired.

It may be after this assessment that we decide that it is not appropriate for your child to enter this study. In this case we will let you and the people who referred you to the study know, and we will pass on information that is relevant for your child's care (if you and child agree to this). You will still receive the normal care the NHS service (e.g. CAMHS) offers.

If we decide you and your child are eligible for this study, we will let you know and you are free to enter the study or not. If you decide to enter the study, your child will receive help and support in the local CAMHS team or other NHS service (see below for details of what this will involve).

After two and a half months we would like your child to complete some questionnaires (these will take about 15-30 minutes to complete). After five months we will repeat the interview (about 30 minutes to complete) and questionnaires (20-40 minutes to complete) to see how your child is feeling and doing. We will also see how they are doing six months after that, and, if funding is available, two years later. The same parent/caregiver would need to complete our questionnaires and measures throughout the study.

As far as possible we will try to make participation in this study as easy as possible, and minimise the disruption to your child's education, e.g. conducting interviews at home or on the phone. Any treatment sessions or other appointments however will conducted in the normal way at your local CAMHS or other NHS service.

We would like to audio record some interviews and clinical sessions that you and your child participate in – this is so that we can check we are conducting these interviews and sessions properly. If you do not wish for your sessions to be recorded, that is fine.

What kind of help will my child receive?

If you decide to take part in this study, your child will receive one of two types of care. Which one your child receives will be decided randomly (e.g. like a coin toss) – *we do not choose* who gets which type of care. This is a really important part of this study – it means the study is fair and that we will learn the best way of helping young people with PTSD.

One type of care will be the standard help and care that your local CAMHS or other NHS service offers children and young people who have had very scary or upsetting experiences. This care might involve different things – it really depends on what your local clinical team think is best and what they currently offer.

The other type of care will be a new kind of support called cognitive therapy. In cognitive therapy people learn how to feel better and talk about the very scary or upsetting things that have happened to them, often in lots of detail. Your child will meet a therapist in the clinic for these sessions. They will normally see you about once a week, for up to 15 sessions (this many meetings may not be needed). Sessions usually last 60-90 minutes.

Who is running this study?

The study is run by our team at the University of East Anglia. It is funded by the National Institute of Health Research (the part of the NHS that does research into how best to help people).

Who is taking part in the study?
We will recruit 120 children and young people (aged 8-17 years) into this study who are being seen by CAMHS or other NHS services and have post-traumatic stress that they are finding difficult.

Will taking part in this study help my child?
It could do. Both types of support often help children and young people feel better. Having cognitive therapy *might* help children and young people to feel better than normal support and care – we don't know. That is why we are doing this study.

Will taking part in this study be difficult or distressing?
We do not think that taking part in this study will hurt your child or you. Sometimes, young people say that at first that it can be difficult to talk about very scary upsetting things that have happened to them. We find that most young people think it helps in the long run to talk about the things they have experienced.

What samples will you need from my child?
We would like to collect some of your child's saliva to look at their DNA and genes. We would like to do this at the beginning of their involvement in the study and five months later (see below). Collecting saliva is pretty easy – your child will just need to spit into a plastic tube.

Why do you need to do this?
It is thought that genes – the "instruction manual" in every cell of our bodies that tell them how to grow and work – may be involved in how children and young people respond to mental health care. We want to see if genes have anything to do with PTSD and response to therapy sessions.

We will store the genetic samples for potential use in future studies looking at genes and how people respond to very scary or upsetting events. These samples would be stored *anonymously* – no one outside the study team will be able to identify who the sample belongs to. Your child's saliva sample will be stored at the University of East Anglia's Biorepository until we are able to analyse it. The samples may be sent to another place in the UK for analysis but we will ensure that your child will not be identifiable.

We do not believe that we will learn any information from your child's DNA that will be important for your child's future health and care, e.g. a particular risk factor for ill health. Therefore we will not be providing any information to participating families about the DNA samples we collect.

This is an *optional* part of the study. Your child is welcome to participate in this study and *not* provide a saliva sample if you wish.

Will we receive any payment?
Yes, we will be able to make a small payment for each interview assessment to cover travel costs and as a thank you for your time and support of this study.

Confidentiality – who will know we are taking part in this study?
We will let your GP (family doctor) know that you and your child are helping with this study. We will also let the person who told you about this study know you are taking part.

All information collected about you during the research will be kept strictly confidential. The only exception to this is if we believe that someone is in danger or at risk of being harmed, when we

might need to seek help from other agencies. All information and samples we collect will be stored in secure locations and on encrypted computers, and we will keep your personal information (i.e. how you might be identified) separate from the other information and samples we collect.

Some data we collect in this study may be passed on anonymously to other researchers. This is because collecting data from lots of different studies can sometimes help us to learn much more than single studies on their own. However, we would ***never*** share any information that would allow you and your child to be identified (e.g. name, address, date of birth, details of what happened to your child).

The results we obtain will be published in order to help other people working with children who have been in very scary or upsetting events, but you and your child will *not* be named.

If you agree that your child should take part in the study they will be given a study number and information will be transferred and stored at UEA using this number on a secure database. We will also store a copy of your consent form in a secure cabinet at UEA and your contact details on a separate secure database to allow us to contact you about the study.

If you decide to withdraw your child from the study we would remove your contact details from our records, but keep other information (e.g. questionnaire responses) you or your child have provided for use in our research. This is important for a clinical study, as we need to report information on all people who join the study.

Personal and research information will be kept securely at UEA for 10 years after the study ends; after 10 years your personal information will be deleted or destroyed.

Has this research study been approved by an ethics committee?
Yes, this study has been checked by The Cambridge South Research Ethics Committee (16/EE/0233) and they are approved the research, i.e. they are satisfied that the study is safe and will be useful.

I have some questions about this study, who do I contact?
You can speak to the person who told you about this study. You can also contact Dr Richard Meiser-Stedman at the University of East Anglia who is over-seeing this project. His contact details are:

Direct line: 01603 593601
Email: r.meiser-stedman@uea.ac.uk

What if I am not happy about the research study or wish to make a complaint?
If you are not happy about this research study or wish to make a complaint about it, then please contact the NHS Patient Advisory Liaison Service at Norfolk & Suffolk NHS Foundation Trust, PALS-0800 279 7257 or by email at pals@nsft.nhs.uk or Professor Ken Laidlaw at the University of East Anglia (phone 01603 593600, email k.laidlaw@uea.ac.uk).

REMEMBER:

You and your child don't have to take part in this study
You and your child can leave the study any time you like

Thank you very much for reading this information sheet

DECRYPT Child Information Sheet 8-12 years

DECRYPT Norfolk and Suffolk NHS Foundation Trust NHS National Institute for Health Research UEA University of East Anglia

Helping Children after Very Scary or Upsetting Events Study

What is a research study?
A research study is a careful way of finding out the answer to a question.

Why have I been asked to do this research study?
You have been through some things that are very scary or upsetting, and have been offered help through your local child mental health service.

Why is this study being done?
This study is to help us find the best way of helping children who have been through something very scary or upsetting.

Do we have to take part?
No, it is up to you and your family!
You can decide to leave the study at any point, and *you do not have to tell us why*.
You will not be treated any differently by any hospital or doctor if you decide that you do not want to take part in this study.

What happens in the study?
First we would like to ask you questions about how you are feeling. After this you will have some help and support.

There will be more times when we ask you questions about how you are feeling; about two months, five months, 11 months and possibly 29 months after you join the study. These questions will be about how you are thinking and feeling. These can take some time to finish, but you can have as many breaks as you need.

We would like to record some of the meetings you have with us. This is so we can check we are doing things properly. If you don't want this to happen, that is fine!

We would also like to take some of your spit – at the beginning of your sessions and at the end of your sessions. If you don't want to do this, that is fine.

What happens during the therapy sessions?

If Norfolk and Suffolk NHS Foundation Trust you decide to take part in this study, you will receive one of two types of care. Which one you get will be decided *randomly*, a bit like a coin toss – **we do not choose** who gets which type of care.

One will be the standard help given to children who have been in very scary or upsetting things.

The other will be a new type of support called "cognitive therapy". In cognitive therapy people talk about the very scary or upsetting things that have happened to them. Children will have a weekly meeting with a grown up for these sessions. There will up to 15 meetings (but that many may not needed). The meetings last for 60 to 90 minutes.

Who is running this study?
The study is a project run by scientists at the University of East Anglia. It is funded by the National Institute of Health Research (part of the government).

Who is taking part?
We are asking 120 children and teenagers who have been through very scary or upsetting experiences to take part in this study.

Will taking part in this study help me?
It could do! Both types of support often help children feel better. Having cognitive therapy *might* help children to feel better than normal support and care – we don't know. That is why we are doing this study.

Will taking part in this study be difficult or upsetting?

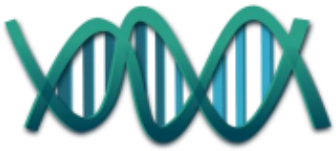
We do not think that taking part in this study will hurt you. Sometimes, children say that at first it can be upsetting to talk about very scary or upsetting things that have happened to them. We find that most children think it helps to talk about the very scary or upsetting things.

Who will know I am taking part in this study?
We will tell your GP (family doctor) that you are helping with this study. We will also tell the person who let you know about this study that you are taking part.

No one else will know about you taking part in this study. We won't tell anything about you to anyone else, unless we think that you or someone else is at risk of being hurt.

We will use all the things that people tell us to try and help other children in the future, but we won't tell your name and address to anyone else.

What will you do with my spit?



We will use your spit to look at your genes. All plants and animals have genes – they are the "instruction manual" in every cell of our bodies that tell them how to grow and work. We want to see if genes affect how we feel after very scary or upsetting things, or after having therapy sessions.
If you don't want to give us a spit sample that is fine!

Did anyone else check the study is OK to do?

Yes, this study has been checked by several people. The group of people who checked this study is called an "ethics committee". The Cambridge South Research Ethics Committee (16/EE/0233) checked this study and they are happy for the study to take place.

I have some questions about this study, who do I contact?

You can speak to the person who told you about this study. You can also contact Dr Richard Meiser-Stedman at the University of East Anglia who is in charge of the study. His contact details are:

Direct line: 01603 593601
Email: r.meiser-stedman@uea.ac.uk

***REMEMBER*:**
You don't have to take part in this study
You can leave the study any time you like

Thank you very much for reading this information sheet!

Child Information Sheet 12-15 years

Helping children and young people after very scary and upsetting experiences (the DECRYPT study)

Sometimes young people who go through very scary or upsetting experiences can have some scared feelings that do not go away on their own. These scared feelings are sometimes called post-traumatic stress.

The DECRYPT study is trying to find the best way to help young people who have been through very scary or upsetting experiences and have post-traumatic stress. We would like you to take part.

Please read this information sheet if you are interested in taking part. It's completely up to you if you would like to take part in the study.

You do not have to make your mind up right away. You are welcome to ask questions about the project and to talk about it with other people.

What is the purpose of the study?
Children and young people who have post-traumatic stress might receive help from Child and Adolescent Mental Health Services (CAMHS) and/or other NHS services. We are trying to see if we can improve the care that services offer.

We want to compare the standard care and support that services offer with a talking therapy called "cognitive therapy". We think that cognitive therapy might be a better way to help young people, but we don't know. This study will give us an answer.

Why have we been invited to take part?
You have been invited to take part in the DECRYPT study as you have been through some very scary or upsetting things and have some post-traumatic stress.

Do we have to take part?
No! It is up to you and your family.

You are free to stop taking part in the study any time you like.

If you don't want to take part in the study or decide to stop taking part in the study you will not be treated any differently by NHS staff or your doctor now or any time in the future.

What happens in the study?
First we will see how you are doing now. We would like to interview you and ask you to complete some questionnaires. The interview will about 30-60 minutes to complete and the questionnaires will take around 20-40 minutes to complete. We will make sure that you can have breaks if you need them.

After this you will have some help and support in your CAMHS/local NHS service. We will then check how you are feeling and coping, 2.5 months after you entered the study; this will just involve

some questionnaires (taking about 15-30 minutes to complete). We will also see how you feeling and coping five months and 11 months after you joined the study (and possibly two years later as well). These will involve more questionnaires (about 30 minutes to complete) and sometimes an interview (about 30 minutes).

We would like to audio record some interviews and meetings with you – this is so that we can check we are doing these interviews and meetings properly. If you do not wish for your sessions to be recorded, that is fine.

What kind of help will I get?
If you decide to take part in this study, you will receive one of two types of care. Which one you get will be decided randomly, a bit like a coin toss – *we do not choose* who gets which type of care. This is a really important part of this study – it means the study is fair and that we will learn the best way of helping young people with post-traumatic stress.

One type of care will be the standard help and care that your local service offers children and young people who have been through very scary or upsetting things. This care might involve different things – it really depends on what they think is best and what they currently offer.

The other type of care will be a new kind of support called "cognitive therapy". In cognitive therapy people learn how to feel better and talk about the very scary or upsetting things that have happened to them. You will meet a therapist in the clinic for these sessions. They will normally see you about once a week, for up to 15 sessions (it may not need that many sessions).

Who is running this study?
The study is run by our team at the University of East Anglia. It is funded by the National Institute of Health Research (the part of the NHS that does research into how best to help people).

Who is taking part in the study?
We will recruit 120 children and young people who have post-traumatic stress into this study.

Will taking part in this study help me?
It might do! Both types of support often help children and young people feel better than they did before. Having cognitive therapy *might* help children and young people to feel better than normal support and care – we don't know. That is why we are doing this study.

Will taking part in this study be difficult or distressing?
We do not think that taking part in this study will hurt you. Sometimes, children and young people say that at first that it can be hard to talk about very scary or upsetting things that have happened to them. We find that most child and young people feel better after talking about these things.

What else happens in the study?
We would also like to take some of your spit – at the beginning of your sessions and at the end of your sessions. We collect spit by asking people to spit into a plastic tube.

We will use your spit we collect to look at your genes. All plants and animals have genes – they are the "instruction manual" in every cell of our bodies that tell the cells how to grow and work. We can learn about genes from spit.

We want to see if genes affect how people feel after very scary or upsetting events. We will store the genes information we get from your spit so we can learn more about genes and how people feel after very scary or upsetting events in the future.

This is an *optional* part of the study. If you do not want to give us a spit sample that is fine. You can still take part in this study.

Will we receive any payment?
Yes, we will be able to make a small payment for each interview assessment to cover travel costs and as a thank you for your time and support of this study.

Confidentiality – who will know that I am taking part in this study?
We will let your GP (family doctor) know that you are helping with this study. We will also let the person who told you about this study know that you are taking part.

All information collected about you during the research will be kept strictly confidential – that means we will not tell anything about you to anyone else – unless we believe that you or someone else is in danger of being hurt.

Some information we collect in this study may be passed on to other scientists. This can help to support other research. However, we would ***never*** share any information that would allow you to be identified (e.g. your name, your date of birth, where you live).

The results we obtain may be published in order to help other people working with children who have been in very scary or upsetting events, but you will *not* be named.

Has this study been checked?
Yes, this study has been checked by several people; the group of people who checked this study is called an "ethics committee". The Cambridge South Research Ethics Committee (16/EE/0233) checked this study and they are happy for the research to take place.

I have some questions about this study, who do I contact?
You can speak to the person who told you about this study. You can also contact Dr Richard Meiser-Stedman at the University of East Anglia who is over-seeing this project. His contact details are:

Direct line: 01603 593601
Email: r.meiser-stedman@uea.ac.uk

What if I am not happy about the study or wish to make a complaint?
If you are not happy about this research study or wish to make a complaint about it, then please contact the NHS Patient Advisory Liaison Service at Norfolk & Suffolk NHS Foundation Trust, PALS-0800 279 7257 or by email at pals@nsft.nhs.uk or Professor Ken Laidlaw at the University of East Anglia (phone 01603 593600, email k.laidlaw@uea.ac.uk).

REMEMBER:
You don't have to take part in this study
You can leave the study any time you like

Thank you very much for reading this information sheet

DECRYPT Child information sheet 16-17 years

The DECRYPT Study:
Delivery of Cognitive therapy for Young People after Trauma

Sometimes young people who go through very scary or upsetting experiences can have some anxious feelings that do not go away on their own. These anxious feelings are sometimes called post-traumatic stress. The DECRYPT study is trying to find the best way to help young people who have been through very scary or upsetting experiences and have post-traumatic stress. We would like you to take part.

Please read this information sheet if you are interested in taking part. Your participation is *entirely voluntary* – it's completely up to you if you would like to take part in the study. You do not have to make your mind up immediately. You are welcome to ask questions about the project and to talk about it with other people.

What is the purpose of the study?
Children and young people who have post-traumatic stress might receive help from Child and Adolescent Mental Health Services (CAMHS) and/or other NHS services. We are trying to see if we can improve the care that services offer. We want to compare the standard care and support that services offer with a talking therapy called "cognitive therapy". We think that cognitive therapy might be a better way to help young people, but we don't know. This study will give us an answer.

Why have we been invited to take part?
You have been invited to take part in the DECRYPT study as you have been through some very scary or upsetting things and have some post-traumatic stress.

Do we have to take part?
No! It is up to you and your family. You are free to stop taking part in the study any time you like. If you don't want to take part in the study or decide to stop taking part in the study you will not be treated any differently by hospital staff or your doctor now or any time in the future.

What happens in the study?
First we will see how you are doing now. This will involve completing an interview and some questionnaires. The interview will about 30-60 minutes to complete and the questionnaires will take around 20-40 minutes to complete. We will make sure that you can have breaks if you need them.

After this you will have some help and support in your CAMHS/local NHS service. We will then check how you are feeling and coping, 2.5 months after you entered the study; this will just involve some questionnaires (taking about 15-30 minutes to complete). We will also see how you feeling and coping five months and 11 months after you joined the study (and possibly two years later as well). These will involve more questionnaires (about 30 minutes to complete) and sometimes an interview (about 30 minutes).

We would like to audio record some interviews and meetings with you – this is so that we can check we are doing these interviews and meetings properly. If you do not wish for your sessions to be recorded, that is fine.

What kind of help will I get?

If you decide to take part in this study, you will receive one of two types of care. Which one you get will be decided randomly, a bit like a coin toss – *we do not choose* who gets which type of care. This is a really important part of this study – it means the study is fair and that we will learn the best way of helping young people with post-traumatic stress.

One type of care will be the standard help and care that your local CAMHS/NHS service offers children and young people who have been through very scary or upsetting things. This care might involve different things – it really depends on what they think is best and what they currently offer.

The other type of care will be a new kind of support called "cognitive therapy". In cognitive therapy people learn how to feel better and talk about the very scary or upsetting things that have happened to them. You will meet a therapist in the clinic for these sessions. They will normally see you about once a week, for up to 15 sessions (it may not need that many sessions).

Who is running this study?

The study is run by our team at the University of East Anglia. It is funded by the National Institute of Health Research (the part of the NHS that does research into how best to help people).

Who is taking part in the study?

We will recruit 120 children and young people into this study who are being seen by CAMHS/local NHS services and have post-traumatic stress that they are finding difficult.

Will taking part in this study help me?

It might do! Both types of support often help children and young people feel better than they did before. Having cognitive therapy *might* help children and young people to feel better than normal support and care – we don't know. That is why we are doing this study.

Will taking part in this study be difficult or distressing?

We do not think that taking part in this study will hurt you. Sometimes, young people say that at first that it can be hard to talk about very scary or upsetting things that have happened to them. We find that most young people think it helps to talk about these things.

What else happens in the study?

We would also like to take some of your spit – at the beginning of your sessions and at the end of your sessions. This involves spitting into a plastic tube.

We will use your spit we collect to look at your genes. All plants and animals have genes – they are the "instruction manual" in every cell of our bodies that tell the cells how to grow and work. We can learn about genes from spit.

We want to see if genes affect how people feel after very scary or upsetting events. We also want to see if genes have anything to do with post-traumatic stress and how people feel after therapy sessions. We will store the genetic information we get from your spit so we can learn more about

genes and how people feel after very scary or upsetting events in the future. These samples would be stored anonymously – no one outside the study team will be able to identify who the sample belongs to. Your spit sample will be stored at the University of East Anglia's Biorepository until we are able to analyse it. If the saliva is to be analysed at another place, we will make sure that you cannot not be identified. The sample may then be transferred to another place in the UK for analysis but, we will ensure that you cannot be identified from the sample.

We do not believe that we will learn any information from your DNA that will be important for your future health and care, e.g. a particular risk factor for ill health. Therefore we will not be providing any information to young people and their families about the DNA samples we collect.
This is an *optional* part of the study. If you do not want to give us a spit sample that is fine. You can still take part in this study.

Will we receive any payment?
Yes, we will be able to make a small payment for each interview assessment to cover travel costs and as a thank you for your time and support of this study.

Confidentiality – who will know that I am taking part in this study?
We will let your GP know that you are helping with this study. We will also let the person who told you about this study know that you are taking part.

All information collected about you during the research will be kept strictly confidential unless we believe that you or someone else is in danger of being hurt.

Some information we collect in this study may be passed on to other researchers. This is because collecting information from lots of different studies can sometimes help us to learn much more than single studies on their own. However, we would ***never*** share any information that would allow you to be identified (e.g. your name, your date of birth, where you live).

The results we obtain may be published in order to help other people working with children who have been in very scary or upsetting events, but you will *not* be named.

If you agree to take part in the study you will be given a study number and information will be transferred and stored at UEA using this number on a secure database. We will also store a copy of your consent form in a secure cabinet at UEA and your contact details on a separate secure database to allow us to contact you about the study.

If you decide to withdraw from the study we would remove your contact details from our records, but keep other information (e.g. questionnaire responses) you have provided for use in our research. This is important for a clinical study, as we need to report information on all people who join the study.

Personal and research information will be kept securely at UEA for 10 years after the study ends; after 10 years your personal information will be deleted or destroyed.

Has this study been checked?
Yes, this study has been checked by an NHS ethics committee, who check that studies are fair, safe and going to be helpful. The Cambridge South Research Ethics Committee (16/EE/0233) checked this study and they are happy for the research to take place.

I have some questions about this study, who do I contact?

You can speak to the person who told you about this study. You can also contact Dr Richard Meiser-Stedman at the University of East Anglia who is over-seeing this project. His contact details are:

Direct line: 01603 593601
Email: r.meiser-stedman@uea.ac.uk

What if I am not happy about the study or wish to make a complaint?

If you are not happy about this research study or wish to make a complaint about it, then please contact the NHS Patient Advisory Liaison Service at Norfolk & Suffolk NHS Foundation Trust, PALS-0800 279 7257 or by email at pals@nsft.nhs.uk or Professor Ken Laidlaw at the University of East Anglia (phone 01603 593600, email k.laidlaw@uea.ac.uk).

REMEMBER:

You don't have to take part in this study
You can leave the study any time you like

Thank you very much for reading this information sheet

Child Assent Form 8-15 years

Site number: _____

Participant ID number: _____

CHILD/YOUNG PERSON ASSENT FORM

Title of project: **DECRYPT – Delivery of Cognitive Therapy for Young People after Trauma**

		Please *TICK* box if YES
1.	I have read an information sheet (v2.0, dated 20/1/2018) about this study (or someone read the information sheet to me). I have had the chance to ask questions about this study.	☐
2.	I understand that I don't have to take part in this study unless I want to. I understand that I can stop taking part in the study any time I want. I know that if I don't take part in this study or if I decide to leave the study, this won't affect the care I get from hospitals.	☐
3.	I know that people from the DECRYPT team will read information about me that is stored at the clinic. I am happy for this to happen.	☐
4.	I am happy for information about me to be shared with other people who do research studies. I know that if this happens, you will NOT tell anyone else my name, where I live or any information that could identify me. (*Optional* – you can still participate and not agree to this bit).	☐
5.	I am happy for you to tell my doctor that I am taking part in this study	☐
6.	I am happy if you contact me in the future about other studies.	☐
7.	I agree to give the study a spit sample for looking at my genes. (*Optional* – you can still participate and not agree to this bit).	☐
8.	I agree to my appointments being recorded. (*Optional* – you can still participate and not agree to this bit).	☐
9.	I agree to take part in the study.	☐

If you do want to take part, please sign below:

Name of child/young person	Name of Parent/caregiver	Date	Signature

Name of person taking consent	Date	Signature

DECRYPT Child Consent form 16+

Site number: _____

Participant ID number: _____

YOUNG PERSON CONSENT FORM

Title of project: **DECRYPT – Delivery of Cognitive Therapy for Young People after Trauma**

		Please *INITAL* box if YES
1.	I have read an information sheet (v2.0, dated 20/1/2018) about this study (or someone read the information sheet to me). I have had the chance to ask questions about this study, and my questions were properly answered.	☐
2.	I understand that I don't have to take part in this study unless I want to, and that I can stop taking part in the study any time I want. If I decide I don't want to take part in this study I understand that this will NOT affect the care I receive.	☐
3.	I understand that relevant sections of my medical notes and data collected during the study, may be looked at by trial team members from University of East Anglia, from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records. I give permission for my contact details and a copy of this consent form to be kept confidentially and securely by the trial team at University of East Anglia and I agree that the trial team can send me study questionnaires and can contact me by telephone or post.	☐
4.	I understand that the information collected about me may be shared *anonymously* with other researchers. (*Optional* – you can still participate and not agree to this bit)	☐
5.	I agree to my General Practitioner being informed of my participation in the study.	☐
6.	I consent to being contacted about future research.	☐
7.	I consent to audio recordings being made of assessments and clinical sessions I am involved with. (*Optional* – you can still participate and not agree to this bit)	☐
8.	I agree to provide a spit sample for genetics analysis. (*Optional* – you can still participate and not agree to this bit)	☐
9.	I consent to take part in the study.	☐

Name of child/young person	Name of Parent/caregiver (if appropriate)	Date	Signature

Name of person taking consent	Date	Signature

DECRYPT Caregiver Consent Form 8-15 years

Site number: _____

Participant ID number: _____

PARENT or CAREGIVER CONSENT FORM

Title of project: **DECRYPT – Delivery of Cognitive Therapy for Young People after Trauma**

Name of Researcher: _____

	Please *INITIAL* box
1. I confirm that I have read an information sheet (version 2.0, dated 20/1/2018) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2. I understand that my child's participation is voluntary and that we are free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.	☐
3. I understand that relevant sections of my child's medical notes and data collected during the study, may be looked at by trial team members from University of East Anglia, from regulatory authorities or from the NHS Trust, where it is relevant to my child's taking part in this research. I give permission for these individuals to have access to my child's records. I give permission for my contact details and a copy of this consent form to be kept confidentially and securely by the trial team at University of East Anglia and I agree that the trial team can send me study questionnaires and can contact me by telephone or post.	☐
4. I understand that some information collected about my child and me may be shared *anonymously (i.e. not identifying me or my child)* with other researchers. (*Optional* – you can still participate and not agree to this bit)	☐
5. I agree to my General Practitioner being informed of my child's participation in the study.	☐
6. I consent to being contacted about future research.	☐
7. I consent to audio recordings being made of assessments and clinical sessions involving myself and my child. (*Optional* – you can still participate and not agree to this bit)	☐
8. I consent to my child providing a saliva sample for genetics analysis. (*Optional* – you can still participate and not agree to this bit)	☐
9. I consent to my child and myself taking part in the above study.	☐

Name of child/young person	Name of Parent/caregiver	Date	Signature

Name of person taking consent	Date	Signature

DECRYPT Caregiver Assent Form

Site number: _____

Participant ID number: _____

PARENT or CAREGIVER ASSENT FORM

Title of project: **DECRYPT – Delivery of Cognitive Therapy for Young People after Trauma**

Name of Researcher: _____

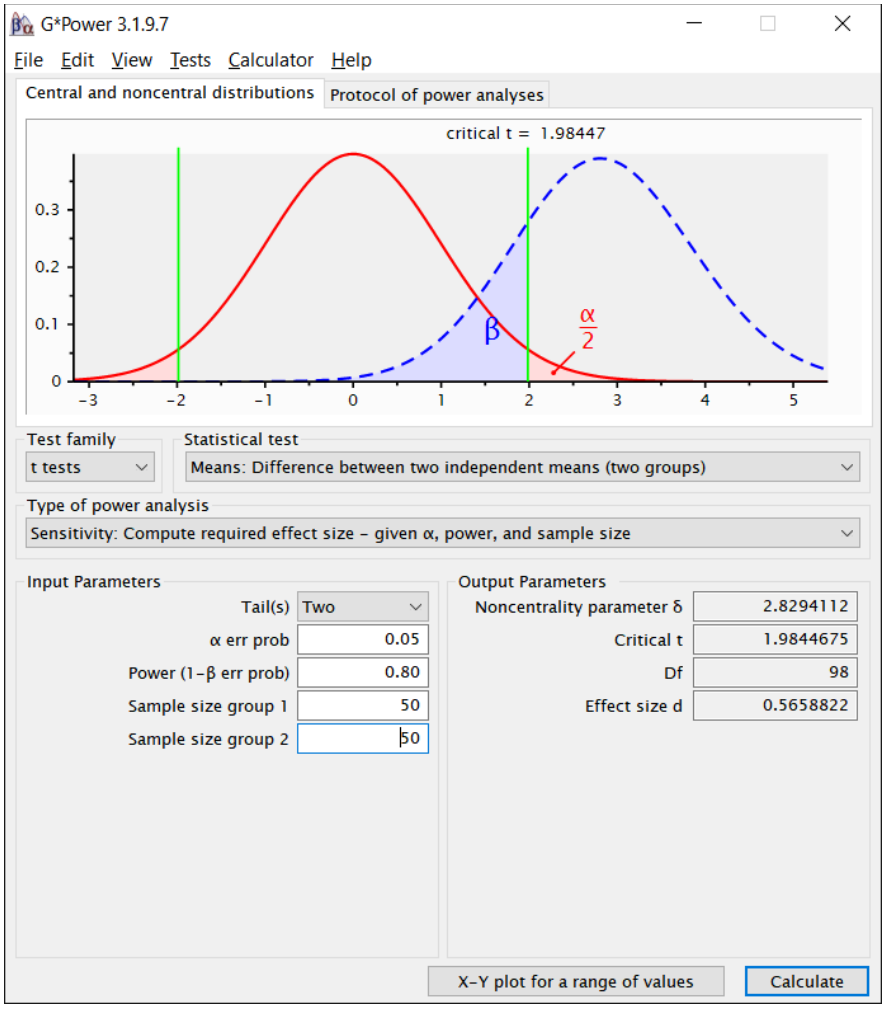
	Please *INITIAL* box
1. I confirm that I have read an information sheet (version 2.0, dated 20/1/2018) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2. I understand that my child's participation is voluntary and that we are free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.	☐
3. I understand that relevant sections of my child's medical notes and data collected during the study, may be looked at by trial team members from University of East Anglia, from regulatory authorities or from the NHS Trust, where it is relevant to my child's taking part in this research. I give permission for these individuals to have access to my child's records. I give permission for my contact details and a copy of this consent form to be kept confidentially and securely by the trial team at University of East Anglia and I agree that the trial team can send me study questionnaires and can contact me by telephone or post.	☐
4. I understand that some information collected about my child and me may be shared *anonymously (i.e. not identifying me or my child)* with other researchers. (*Optional* – you can still participate and not agree to this bit)	☐
5. I agree to my General Practitioner being informed of my child's participation in the study.	☐
6. I agree to being contacted about future research.	☐
7. I agree to audio recordings being made of assessments and clinical sessions involving myself and my child. (*Optional* – you can still participate and not agree to this bit)	☐
8. I agree to my child providing a saliva sample for genetics analysis. (*Optional* – you can still participate and not agree to this bit)	☐
9. I agree to my child and myself taking part in the above study.	☐

Name of child/young person	Name of Parent/caregiver	Date	Signature

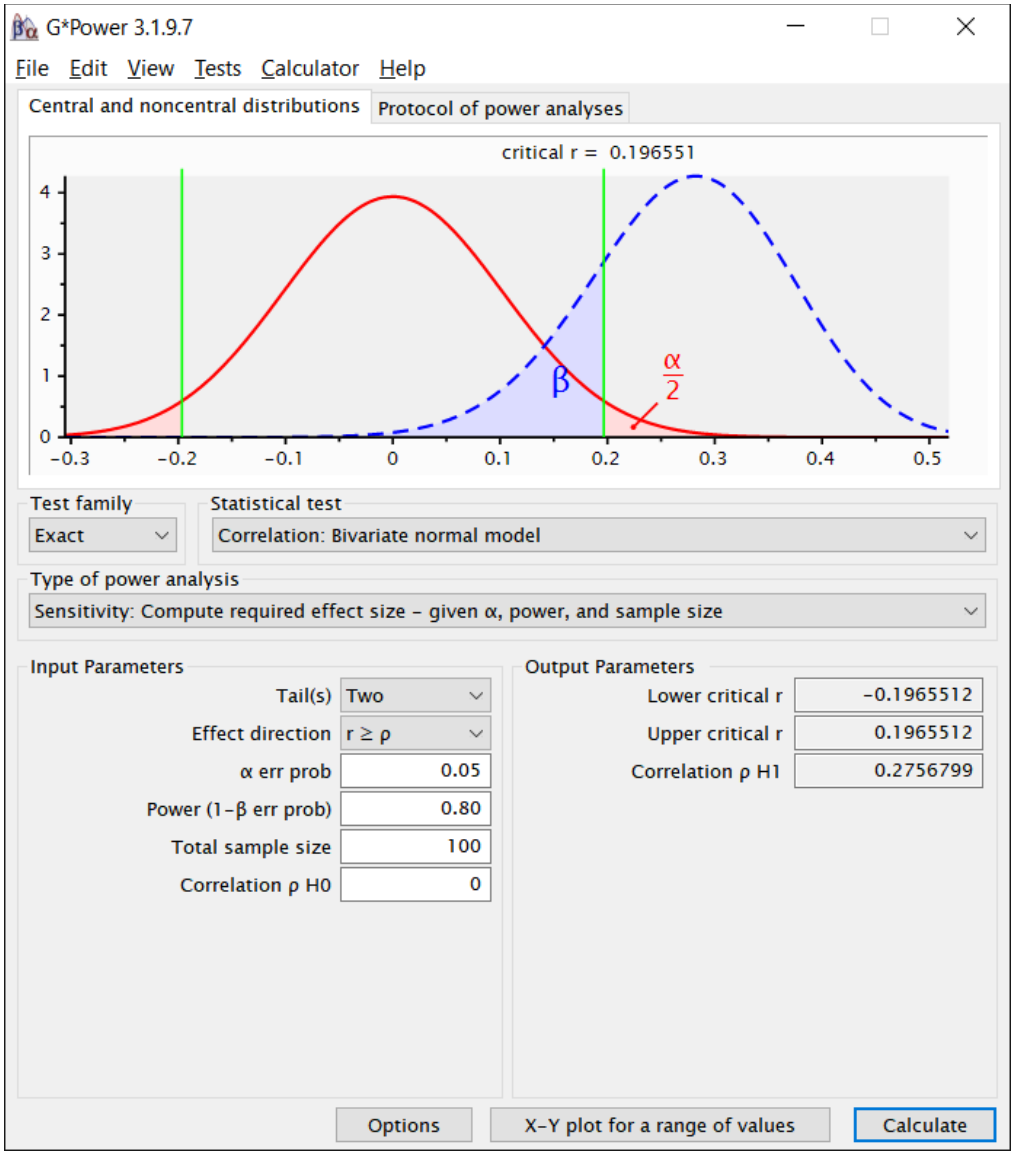
Name of person taking consent	Date	Signature

Parent/caregiver assent form (yp 16+), DECRYPT v2.0 (20.1.2018), IRAS no. 188916
When completed: 1 for participant; 1 for researcher site file; 1 (original) to be kept in medical notes.

Appendix C: GPower Calculation for Between Groups

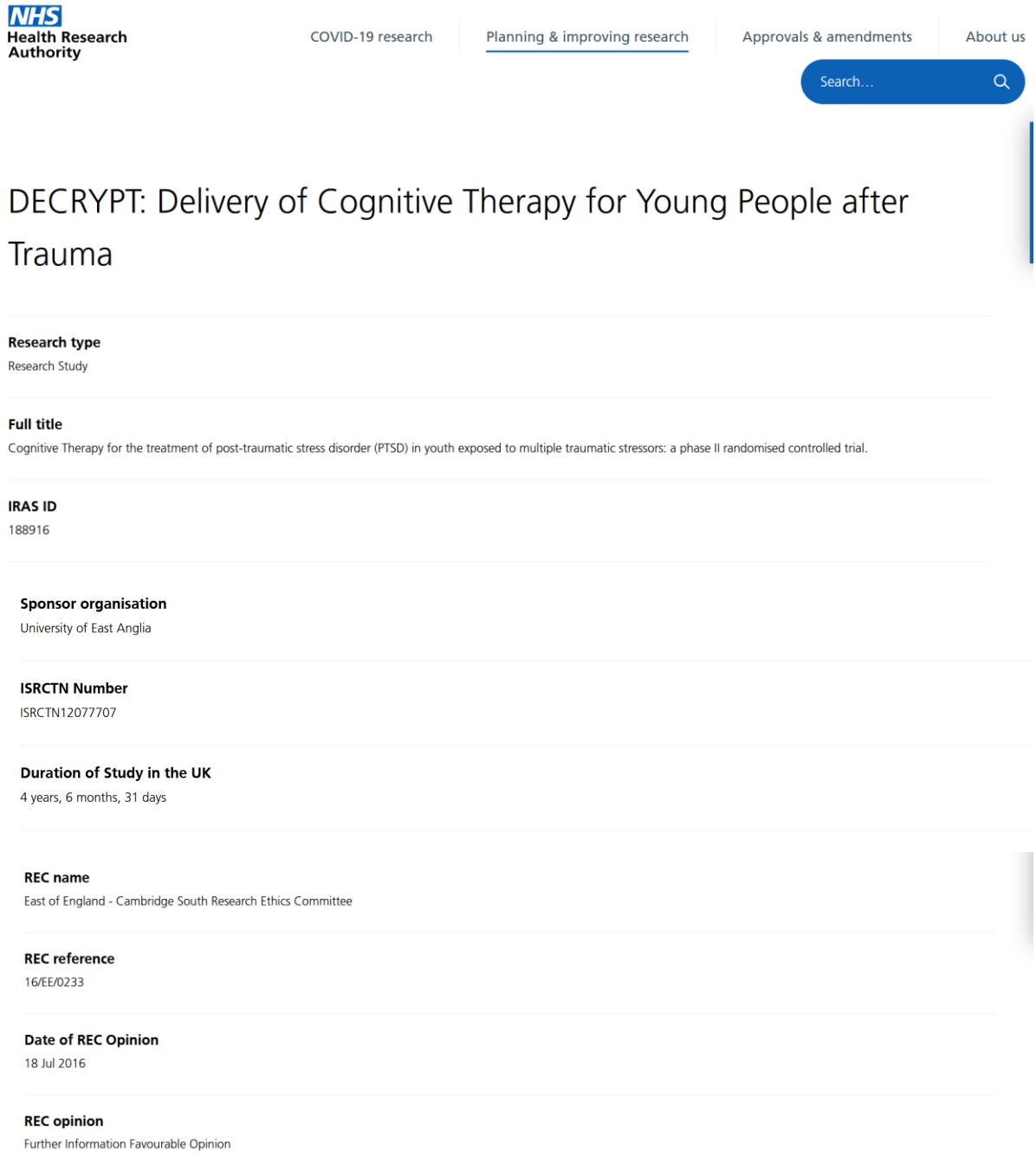


Appendix D: Power Calculation for Correlational Analysis



Appendix E: Screenshot of IRAS approval/registration

Appendix F: Screenshot of NHS HRA approval/registration



Appendix G: Syntax used in R in Metafor to conduct meta-analysis and sensitivity analyses

```
library("metafor")
library(dplyr)

 ###setwd("C:/Users/tkb14umu/OneDrive - University of East Anglia/ClinPsyD TRAINEE/Sarah Robertson/SR/Analysis")

setwd("C:/Users/SERob/OneDrive - University of East Anglia/Documents/thesis/Systematic Review")

# C:/Users/SERob\OneDrive - University of East Anglia\Documents\thesis\Systematic Review

###
### main analysis, all 10 studies
###

mydata =read.csv("data.csv") #reads from a .csv file
mydata <- escalc (measure="PAS", xi=xi, ni=ni, data=mydata)

### PAS is the type of prevalence we're looking at [arcsine square root transformed proportion]; xi is the number of cases, ni is total number of participants
#
head(mydata)

sink(file = "main rma.txt") # this creates a text file with the results
res <- rma(yi, vi, data= mydata)
res   #gives result, in particular the heterogeneity statistics

predict(res, transf=transf.iarcsin)  #gives reverse transformation – with 95% CI & 95% PI

sum(mydata$ni, na.rm=TRUE)  #gives N
sink()

svg(file='bpd prev forest.svg')
forest (res, transf=transf.iarcsin, slab = paste(mydata$study), digits=3, refline=FALSE, addpred=TRUE, header=TRUE)
dev.off()

svg(file='bpd prev funnel.svg')
funnel(res)
dev.off()

sink(file = "main rma – publication bias.txt") # this creates a text file with the results

print("Egger's test, regression")
regtest (res)

print("Trim and fill procedure")
taf <- trimfill(res) # carry out trim-and-fill analysis
taf # give Trim and Fill result
funnel(taf, legend=TRUE) ### draw funnel plot with missing studies filled in
predict(taf, transf=transf.iarcsin)
sink()

###
### BPD assessment method [all 10 studies]
###
```

```
sink(file = "main, assess.txt")

print("Moderation, main")
res.assess <- rma(yi, vi, mods =~ assess, data=mydata)
res.assess

print("Questionnaire, main")

# Self-report questionnaire subgroup
res.q <- rma(yi, vi, data=mydata, subset=assess=="q")
res.q
predict(res.q, transf=transf.iarcsin)

# N for this subgroup
mydata %>%
    filter(assess =="q") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

svg(file='BPD Questionnaire forest.svg')
forest (res.q, transf=transf.iarcsin, slab = paste(mydata$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

print("Interview, main")

# INTERVIEW subgroup [10 studies]
res.int <- rma(yi, vi, data=mydata, subset=assess=="int")
res.int
predict(res.int, transf=transf.iarcsin)

# N for this subgroup
mydata %>%
    filter(assess =="int") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

svg(file='BPD interview forest.svg')
forest (res.int, transf=transf.iarcsin, slab = paste(mydata$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

sink()

###
### SENSITIVITY ANALYSIS (6 studies)
###

sink(file = "sensitivity, no outliers.txt")

mydata =read.csv("data.csv") #reads from a .csv file
mydata1 = subset(mydata, subset=include=="1")
# head(mydata1)
mydata1 <- escalc (measure="PAS", xi=xi, ni=ni, data=mydata1)

### PAS is the type of prevalence we're looking at [arcsine square root transformed proportion]; xi is the number of
cases, ni is total number of participants
head(mydata1)

res <- rma(yi, vi, data= mydata1)
res   #gives result, in particular the heterogeneity statistics
predict(res, transf=transf.iarcsin)  #gives reverse transformation – with 95% CI & 95% PI
```

```
sum(mydata1$ni, na.rm=TRUE)  #gives N

svg(file='bpd prev forest, sens.svg')
forest (res, transf=transf.iarcsin, slab = paste(mydata1$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

svg(file='bpd prev funnel, sens.svg')
funnel(res)
dev.off()

regtest (res)

taf <- trimfill(res) # carry out trim-and-fill analysis
taf # give Trim and Fill result
funnel(taf, legend=TRUE) ### draw funnel plot with missing studies filled in
predict(taf, transf=transf.iarcsin)

# retest from data extraction after altering included studies in data sheet
sink()

###
### BPD assessment method (6 studies)
###

sink(file = "sensitivity, no outliers, assess.txt")

res.assess <- rma(yi, vi, mods =~ assess, data=mydata1)
res.assess

print("Sensitivity, no outliers, questionnaire sub-group")
# Self-report questionnaire subgroup
res.q <- rma(yi, vi, data=mydata1, subset=assess=="q")
res.q
predict(res.q, transf=transf.iarcsin)

# N for this subgroup
mydata1 %>%
    filter(assess =="q") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

svg(file='BPD Questionnaire forest, sens.svg')
forest (res.q, transf=transf.iarcsin, slab = paste(mydata1$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

# INTERVIEW subgroup (6 studies)
print("Sensitivity, no outliers, interview sub-group")

res.int <- rma(yi, vi, data=mydata1, subset=assess=="int")
res.int
predict(res.int, transf=transf.iarcsin)

# N for this subgroup
mydata1 %>%
    filter(assess =="int") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

svg(file='BPD interview forest, sens.svg')
forest (res.int, transf=transf.iarcsin, slab = paste(mydata1$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
```

```
dev.off()

sink()

###
### Females only, all studies (10 studies)
###
sink(file = "Females only.txt")

print("Main, females only")

mydata =read.csv("data.csv") #reads from a .csv file
mydata.fem <- escalc (measure="PAS", xi=xi_female, ni=ni_female, data=mydata)

### PAS is the type of prevalence we're looking at [arcsine square root transformed proportion]; xi is the number of cases, ni is total number of participants

head(mydata.fem)

res.fem <- rma(yi, vi, data= mydata.fem)
res.fem   #gives result, in particular the heterogeneity statistics

predict(res.fem, transf=transf.iarcsin)  #gives reverse transformation – with 95% CI & 95% PI

mydata.fem %>%
    filter(!is.na(xi_female))%>%
    select(ni_female) %>%
    sum (na.rm=TRUE)

svg(file='bpd prev forest, female.svg')
forest (res.fem, transf=transf.iarcsin, slab = paste(mydata.fem$study), digits=3, refline=FALSE, addpred=TRUE, header=TRUE)
dev.off()

# svg(file='bpd prev funnel, female.svg')
# funnel(res.fem)
# dev.off()

# regtest (res.fem)

# taf <- trimfill(res) # carry out trim-and-fill analysis
# taf # give Trim and Fill result
# funnel(taf, legend=TRUE) ### draw funnel plot with missing studies filled in
# predict(taf, transf=transf.iarcsin)

### females, sensitivity (6 studies)
print("sensitivity, no outliers, females only")

mydata =read.csv("data.csv") #reads from a .csv file
mydata1 = subset(mydata, subset=include=="1")
mydata.fem <- escalc (measure="PAS", xi=xi_female, ni=ni_female, data=mydata1)

### PAS is the type of prevalence we're looking at [arcsine square root transformed proportion]; xi is the number of cases, ni is total number of participants

head(mydata.fem)

res.fem <- rma(yi, vi, data= mydata.fem)
res.fem   #gives result, in particular the heterogeneity statistics

predict(res.fem, transf=transf.iarcsin)  #gives reverse transformation – with 95% CI & 95% PI

mydata.fem %>%
```

```
    filter(!is.na(xi_female))%>%
    select(ni_female) %>%
    sum (na.rm=TRUE)

svg(file='bpd prev forest, female,sens.svg')
forest (res.fem, transf=transf.iarcsin, slab = paste(mydata.fem$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

sink()

###
### Males only, all studies (10 studies)
###
sink(file = "Males only.txt")

print("Main, males only")

mydata =read.csv("data.csv") #reads from a .csv file
mydata.ma <- escalc (measure="PAS", xi=xi_male, ni=ni_male, data=mydata)

### PAS is the type of prevalence we're looking at [arcsine square root transformed proportion]; xi is the number of
cases, ni is total number of participants

head(mydata.ma)

res.ma <- rma(yi, vi, data= mydata.ma)
res.ma   #gives result, in particular the heterogeneity statistics

predict(res.ma, transf=transf.iarcsin)  #gives reverse transformation – with 95% CI & 95% PI

mydata.ma %>%
    filter(!is.na(xi_male))%>%
    select(ni_male) %>%
    sum (na.rm=TRUE)

svg(file='bpd prev forest, male.svg')
forest (res.ma, transf=transf.iarcsin, slab = paste(mydata.ma$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

# svg(file='bpd prev funnel, male.svg')
# funnel(res.ma)
# dev.off()

# regtest (res.ma)

# taf <- trimfill(res) # carry out trim-and-fill analysis
# taf # give Trim and Fill result
# funnel(taf, legend=TRUE) ### draw funnel plot with missing studies filled in
# predict(taf, transf=transf.iarcsin)

### males, sensitivity (6 studies)

print("sensitivity, no outliers, males only")

mydata =read.csv("data.csv") #reads from a .csv file
mydata1 = subset(mydata, subset=include=="1")
mydata.ma <- escalc (measure="PAS", xi=xi_male, ni=ni_male, data=mydata1)

### PAS is the type of prevalence we're looking at [arcsine square root transformed proportion]; xi is the number of
cases, ni is total number of participants
```

```
head(mydata.ma)

res.ma <- rma(yi, vi, data= mydata.ma)
res.ma   #gives result, in particular the heterogeneity statistics

predict(res.ma, transf=transf.iarcsin)  #gives reverse transformation – with 95% CI & 95% PI

mydata.ma %>%
    filter(!is.na(xi_male))%>%
    select(ni_male) %>%
    sum (na.rm=TRUE)

svg(file='bpd prev forest, male,sens.svg')
forest (res.ma, transf=transf.iarcsin, slab = paste(mydata.ma$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

###
### Population Type (10 studies)
###

sink(file = "Population type.txt")

print("Population - School vs Gen pop")

mydata =read.csv("data.csv")
mydata <- escalc (measure="PAS", xi=xi, ni=ni, data=mydata)

res.assess <- rma(yi, vi, mods =~ pop, data=mydata)
res.assess

# School subgroup
print("School subgroup")

res.sch <- rma(yi, vi, data=mydata, subset=pop=="sch")
res.sch
predict(res.sch, transf=transf.iarcsin)

# N for this subgroup
mydata %>%
    filter(pop =="sch") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

# Gen Pop subgroup
print("Gen pop subgroup")

res.gp <- rma(yi, vi, data=mydata, subset=pop=="gp")
res.gp
predict(res.gp, transf=transf.iarcsin)

# N for this subgroup
mydata %>%
    filter(pop =="gp") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

# Pop sensitivity group! (6 studies)

print("School vs Gen pop – sensitivity, k=6")

mydata1 = subset(mydata, subset=include=="1")
mydata1 <- escalc (measure="PAS", xi=xi, ni=ni, data=mydata1)  # using k=6!
```

```
res.assess <- rma(yi, vi, mods =~ pop, data=mydata1)
res.assess

# School subgroup
print("School subgroup – sensitivity, k=6")

res.sch <- rma(yi, vi, data=mydata1, subset=pop=="sch")
res.sch
predict(res.sch, transf=transf.iarcsin)

# N for this subgroup
mydata1 %>%
    filter(pop =="sch") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

# Gen Pop subgroup
print("Gen pop subgroup – sensitivity, k=6")
res.gp <- rma(yi, vi, data=mydata1, subset=pop=="gp")
res.gp
predict(res.gp, transf=transf.iarcsin)

# N for this subgroup
mydata1 %>%
    filter(pop =="gp") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

sink()

### moderator analysis – HI vs LIMC (10 studies)

mydata =read.csv("data.csv")
mydata <- escalc (measure="PAS", xi=xi, ni=ni, data=mydata)

sink(file = "country.txt")

res.country <- rma(yi, vi, mods = ~ country, data=mydata)
res.country

# HIC subgroup
print("HIC")
res.hic <- rma(yi, vi, data=mydata, subset=country=="hic")
res.hic
predict(res.hic, transf=transf.iarcsin)

# N for this subgroup
mydata %>%
    filter(country =="hic") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

# LMIC subgroup
print("LMIC")
res.lmic <- rma(yi, vi, data=mydata, subset=country=="lmic")
res.lmic
predict(res.lmic, transf=transf.iarcsin)

# N for this subgroup
mydata %>%
    filter(country =="lmic") %>%
    select(ni) %>%
```

```
    sum (na.rm=TRUE)

sink()

# HIC SENS subgroup
print("Sensitivity, no outliers, HI sub-group")

res.hic <- rma(yi, vi, data=mydata1, subset=country=="hic")
res.hic
predict(res.hic, transf=transf.iarcsin)

# N for this subgroup
mydata1 %>%
    filter(country =="hic") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

svg(file='BPD country forest, sens.svg')
forest (res.hic, transf=transf.iarcsin, slab = paste(mydata1$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

sink()

#LMIC SENS subgroup
print("Sensitivity, no outliers, LMIC sub-group")

res.lmic <- rma(yi, vi, data=mydata1, subset=country=="lmic")
res.lmic
predict(res.lmic, transf=transf.iarcsin)

# N for this subgroup
mydata1 %>%
    filter(country =="lmic") %>%
    select(ni) %>%
    sum (na.rm=TRUE)

svg(file='BPD interview forest, LMIC sens.svg')
forest (res.lmic, transf=transf.iarcsin, slab = paste(mydata1$study), digits=3, refline=FALSE, addpred=TRUE,
header=TRUE)
dev.off()

sink()
```

Appendix H: Diagnostic Interviews and Screeners included in Systematic Review and Meta-Analysis

The UK-CI-BPD (United Kingdom Childhood Interview for DSM-IV Borderline Personality Disorder) is a semi-structured clinical interview adapted from the American CI-BPD and focuses on identifying symptoms according to the DSM-IV criteria for BPD in young populations. The UK-CI-BPD includes nine categories such as intense anger, affective instability, feelings of emptiness, identity issues, and impulsivity, among others.

The **Ab-DIB-R** (Abbreviated Diagnostic Interview for Borderlines-Revised) is a brief assessment tool adapted from the DIB-R. This self-report instrument assesses key BPD characteristics such as impulsiveness, emotional instability, and identity issues.

The MACI (Millon Adolescent Clinical Inventory) is a self-report psychological assessment tool primarily used in clinical settings to evaluate personality traits, emotional concerns, and clinical symptoms.

The DIB-R (Revised Diagnostic Interview for Borderlines) is a semi-structured clinical interview. It builds on the original Diagnostic Interview for Borderlines (DIB) and is widely used in both research and clinical settings.

The SCID-II (Structured Clinical Interview for DSM-III-R Personality Disorders) is a diagnostic semi-structured interview used to assess personality disorders based on the DSM criteria.

The IPDE-BOR is a version of the International Personality Disorder Examination (IPDE) designed specifically to assess Borderline Personality Disorder (BPD). It consists of nine items related to DSM-IV diagnostic criteria for BPD, such as intense relationships and mood swings.

The McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD) is a 10-item self-report tool designed to screen individuals for symptoms of borderline personality disorder (BPD). The questions address key symptoms of BPD, such as emotional instability, impulsivity, identity issues, and relationship difficulties.

The Personality Diagnostic Questionnaire-4 (PDQ-4) is a self-report tool designed to help screen for the presence of personality disorders according to the DSM-IV criteria. It consists of 99 true/false statements that assess a wide range of personality traits.

The PDQ-4+ is an updated version of the original PDQ-4. While it retains the **100-item true/false format**, it has added **enhanced scoring and clinical significance measures**. The PDQ-4+ includes improvements in its scoring algorithms and the CSS section, offering a more detailed analysis of how much the identified symptoms interfere with daily life, whether they co-occur with Axis I disorders (like depression), and the overall severity of the personality traits.

The IPDE (International Personality Disorder Examination) is a semi-structured clinical interview used to assess personality disorders based on the ICD-10 and DSM-IV classification systems. Originally developed by the World Health Organization (WHO) and other international bodies, it is designed to standardize the assessment of personality disorders in different cultural and clinical settings.

Appendix I: Supplementary Results for Empirical study

EI cut off score 5+

Using the cut off score of five or more symptoms present, there were 74 (75.5%) individuals that would meet criteria for the EI group, and 24 (24.5%) individuals who would be in the non-EI group.

Fig.5 Histogram showing distribution of data, non-normality and skewness of data.

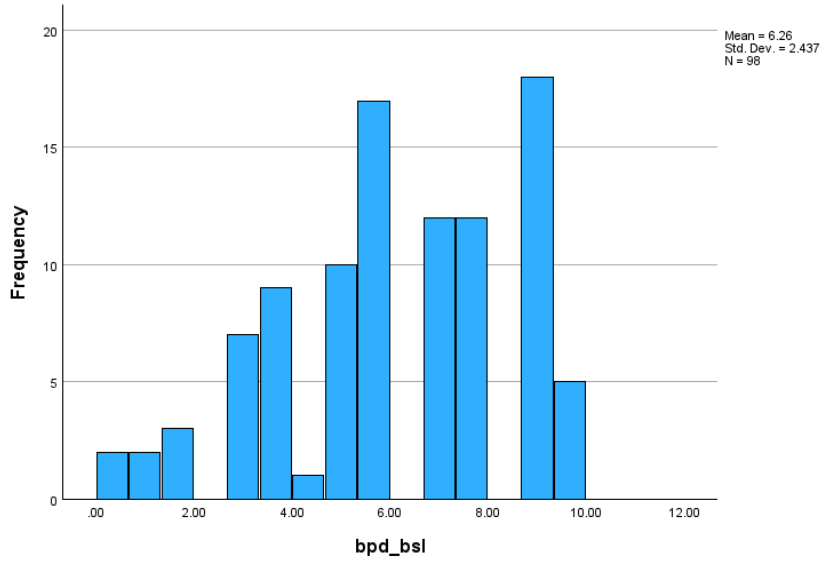


Table 9: Secondary measures showing means, confidence intervals and normality of data.

Variable	Mean	Confidence interval	Shapiro Wilks statistic
Trauma history count	4.38	3.96-4.79	0.94**
Trauma history frequency	113.09	32.87-193.3	0.30**
CRIES-8	30.91	29.71-32.11	0.92**
CATS	40.10	38.16-41.99	0.97*
CPSS	45.13	42.32-47.93	0.97*
DSO	34.83	33.25-36.4	0.98*
CGAS	50.14	48.06-52.23	0.98
RCADS total	79.76	74.78-84.73	0.98
RCADS depression	18.70	17.46-19.93	0.97
RCADS panic	13.64	12.23-15.05	0.96*
RCADS GAD	11.76	10.95-12.56	0.97*
RCADS social phobia	17.42	16.22-18.63	0.97*
RCADS separation anxiety	9.41	8.40-10.43	0.96*
RCADS OCD	8.83	7.95-9.71	0.98**
RCADS anxiety	61.1	56.95-65.17	0.94
MFQ-4	4.61	4.09-5.12	0.92**
ARI child	14.82	13.95-15.69	0.94**
ARI caregiver	14.98	14.04-15.92	0.92**
SDQ total	21.53	20.27-22.78	0.99
SDQ Emotional Symptoms	7.26	6.79-7.73	0.92**
SDQ dissociation	6.42	5.96-6.88	0.95*
Age	14.45	13.95-14.95	0.25**
CPTCI	72.19	69.02-75.36	0.96*
TMQQ	30.19	29.06-31.32	0.99
Rumination	6.80	6.54-7.06	0.85**

CSBS total	22.57	21.03-24.11	0.97*
CSBS hypervigilance	10.95	9.87-12.04	0.98
CSBS Suppression	11.60	10.85-12.35	0.97*
Self-blame	4.48	4.03-4.93	0.86**
MSPSS	60.25	57.87-62.63	0.98

Note: * indicates significant at p=0.05, ** indicates significant at p<0.001

Table 10: Trauma History characteristics

	Between groups comparisons				
Variables	**EI (N=47)**	**Non-EI (N=51)**	**Statistical test**	**Effect size**	**Correlation with EI symptom severity** r (95% CI)
Serious natural disaster	N= 0	N=2	X2(1;N=98)= 1.88, p=0.50***	OR=0.96 [0.91- 1.02]	-0.14, p=0.18 [-0.32- 0.00]
Serious accident or injury	N=16	N=14	X2(1; N=98)= 0.50, p=0.48	OR= 0.81 [0.44- 1.47]	-0.08, p=0.42 [-0.28- 0.11]
Robbed by threat, force or weapon	N=5	N=3	X2(1, N=98)= 0.74, p=0.48***	OR= 0.55 [0.14- 2.19]	0.15, p=0.15 [-0.09- 0.34]
Slapped, punched or beat up in your family	N=25	N=17	X2(1,N=98)= 3.94, p=0.05*	OR= 0.63 [0.39- 1.00]	0.09, p=0.41 [-0.12- 0.30]
Slapped, punched or beat up by someone not in your family	N=23	N=23	X2(1, N=98)= 0.15, p=0.70	OR= 0.92 [0.61-1.40]	-0.07, p=0.50 [-0.26-0.13]
Seeing someone get slapped, punched or beat up	N=25	N=24	X2(1, N=98)= 0.37, p=0.54	OR=0.89 [0.60-1.31]	0.07, p=0.51 [-0.13- 0.28]
Seeing someone in the community get slapped, punched or beat up	N=24	N=20	X2(1, N=97)= 1.20, p=0.27	OR= 0.78 [0.51-1.22]	-0.01, p=0.96 [-0.22- 0.19]
Someone older touching your private parts when they shouldn't	N=15	N=7	X2(1, N=97)= 4.34, p=0.04*	OR= 0.44 [0.20- 0.98]	0.31, p=0.002 [0.12- 0.46]
Someone forcing or pressuring sex, or	N=11	N=6	X2(1, N=96)=2.05, P=0.15	OR=0.52 [0.21- 1.30]	0.23, p=0.03 [0.05- 0.37]
Someone close to you dying suddenly or violently	N=22	N=21	X2(1, N=98)= 0.32, p=0.58	OR= 0.88 [0.56- 1.38]	0.09, p=0.40 [-0.12- 0.28]
Attacked, stabbed, shot at or hurt badly	N=6	N=4	X2(1, N=98)= 0.65, p=0.51***	OR= 0.61 [0.19- 2.04]	0.14, p=0.17 [-0.05- 0.32]

	Between groups comparisons				
Variables	**EI (N=47)**	**Non-EI (N=51)**	**Statistical test**	**Effect size**	**Correlation with EI symptom severity** r (95% CI)
Seeing someone attacked, stabbed, shot at, hurt badly or killed	N=13	N=12	X2(1, N=98)= 0.22, p=0.64	OR= 0.85 [0.43- 1.67]	0.002, p=0.98 [-0.20- 0.21]
Stressful or scary medical procedure	N=15	N=9	X2(1, N=97)= 2.52, p=0.11	OR= 0.56 [0.27-1.16]	0.12, p=0.25 [-0.06- 0.30]
Being around war	N=0	N=0	NA	NA	NA- variable is constant
Other stressful or scary event	N=39	N=28	X2(1, N=98)= 8.92, p=0.003*	OR= 0.66 [0.50-0.88]	0.21, p=0.04 [0.02- 0.40]

Note: *indicates significance at p=0.05, **indicates significance at p=<0.001, ***indicated Fishers Exact used due to lack of count in cells.

Table 11: Significant correlations between EI severity and secondary variables after controlling for caregiver depression (PHQ-9)

Variable	Regression coefficient (bootstrapped 95% CI)	Standardised regression coefficient (beta)
Trauma history		
Trauma count	0.167 (-0.055, 0.339)	0.147
Sexual trauma	1.443** (0.481, 2.303)	0.289
Comorbid psychopathology		
PTSD severity (CATS)	0.086** (0.035, 0.133)	0.344
PTSD severity (CPSS-I-5)	0.045 ** (0.013, 0.082)	0.265
DSO complex PTSD items	0.102** (0.041, 0.165)	0.332
Depression (RCADS)	0.059 (-0.030, 0.133)	0.153
Overall Functioning (CGAS)	-0.038 (-0.077, 0.012)	-0.165
Affect Regulation- child report (ARI)	0.173** (0.081, 0.274)	0.313
Affect Regulation- caregiver report (P-ARI)	0.225*** (0.130, 0.311)	0.431
Cognitive & psychosocial		
Trauma Appraisals (CPTCI)	0.037** (0.005, 0.069)	0.239
Dissociation (SDQ)	0.196 (0.001, 0.401)	0.187
Emotional Symptoms (SDQ)	0.221** (0.029, 0.410)	0.208
Suicidal Ideation (MFQ4)	0.278** (0.119, 0.456)	0.298